UGANDA HUMAN DEVELOPMENT REPORT 2005

Linking Environment to Human Development: A Deliberate Choice

United Nations Development Programme

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PREFACE

The 2005 Human Development Report for Uganda (NHDR) is the sixth in a series reporting on the country's trends in human development. The Report is the outcome of a wide participatory and consultative process that involved Government, Parliamentarians, Academia, Development Partners and Civil Society.

The theme of this Report is environment and human development. Previous reports have argued that development is about expanding choices so that people can have full and creative lives. There is no doubt that understanding environment is critical to expanding human development and choices. Increasingly, people are concerned about how the interaction between the environment and growth affects human development.

Understanding how environment and changes in its state impact on development is necessary to inform policy choices. A clear empirical link has been established between poverty, environment and sustainable development. These are linked in a vicious cycle. Poverty affects the environment in the sense that the poor are too pre-occupied with day-to-day survival to have much interest in the implications of their actions on the environment. When people become vulnerable, they are unable to cope with physical threats, including natural resource degradation and natural disasters.

The poor are both victims and agents of environmental degradation, although the wealthy have more means to inflict greater environmental damage. An analysis of MDG 7, ensuring environmental sustainability, concludes that policies to deliver on environment will help to deliver on other MDGs; likewise policies that deliver on the other MDGs will also ensure environmental sustainability.

In recent years, the conventional wisdom that poverty is the cause of natural resource and environmental degradation has been challenged. It is now believed that the relationship between poverty and environment may be two-way, with incomes not only affecting but also being affected by natural resources.

Poverty can cause households to extract resources intensively, leading to their degradation because poor households depend largely on natural resources for their daily livelihood. In turn, degradation of resources degradation could lead to impoverishment and destruction. It is however important to note that there is still limited understanding of the effect and extent of natural resources degradation on household incomes.

Stress on the natural resources base is manifested by loss of agricultural productivity, loss of forest cover, water pollution, disease prevalence, over-fishing, encroachment on wildlife areas and wetlands, etc. All this is attributed to increasing population pressure on the natural resource base and destructive environment management practices.

Although government has put in place several strategies and plans to address sustainable development and promote sound environmental management, the impact of such government efforts on the quality of environment is yet to be assessed.

The National Human Development Report for Uganda 2005 has investigated the relationship between environment and human development, standard of living and livelihood. While articulating the extent of the relationship between environment and human development, the Report shows that Uganda has made progress in human development. In 2003, the Human Development Index (HDI) was 0.4888 compared to 0.449 in 2002. The significance of such progress is seen in the improvement in the literacy levels and life expectancy. Life expectancy rose from 43 to 45.7 years. Literacy on the other hand was estimated to have risen from 65% in 1997 to 70% in 2003. I should add that the HDI would have been much higher had it not been for the rise in the incidence of income poverty from 35% in 2002 to 38% in 2003.

With respect to regional levels of human development, the Central region had the highest HDI of 0.547, followed by Western region with an index of 0.487, while Eastern region registered 0.450. On the basis of the available data on the Northern region, the HDI was 0.418.

The contribution of the environment and natural resources to the economy of Uganda, especially in supporting rural livelihoods, is beyond question. Uganda has abundant natural resources, which if well harnessed can contribute significantly to sustainable human development. There is a growing awareness that the natural capital is on the decline; climate changes and environmental degradation are affecting the improvement in the human development as well as the prospects for the attainment of the Millennium Development Goals.

The challenges are many and I hope that considerable effort shall be made to provide information to the society at large on the impact of their livelihood on the environment as well as the other way round.

Given the pervasive impact of environment on virtually all aspects of human development and livelihood, it is imperative that a concerted effort is made to propagate the findings of this Report as well as the various policy recommendations. This will have considerable influence on both the policy makers as well as the population.

UNDP looks forward to continued collaboration with the Government of Uganda, Civil Society organisations and other development partners towards the attainment of both global and Uganda's development goals.

Daouda Toure
UNDP Resident Representative/
UN Resident Coordinator

Acknowledgements

This Report could not have been prepared without the generous contributions of many individuals and organisations. We are grateful for their assistance. As a result of their invaluable help, the Report meets most of the guiding principles of the National Human Development Reports, namely; national ownership, participatory and inclusive preparation, independence of analysis, quality of analysis, flexibility in presentation as well as a process of sustained follow-up.

The authors are particularly grateful to Mr. Daouda Toure, UNDP Resident Representative and UN Resident Coordinator for his leadership and guidance throughout the preparation of the Report. In addition to guiding the work of the team of consultants and the Steering Committee, he provided substantive inputs to help improve the quality of the Report.

The Aid Liaison Department of the Ministry of Finance Planning and Economic Development facilitated the preparation of the Report and also demonstrated active interest in its writing and during various stages of the preparation. In this regard, special thanks go to Dr. Katebalirwe Amooti and Ms. Angela Katagyira

The overall responsibility of the Report rested with the Economic Unit of the UNDP Uganda Country Office, which guided the work of the consultants by providing inputs through regular discussions and assessment of all drafts. A team of national consultants wrote the various chapters of the Report after a series of consultative processes. The team was comprised of Dr. Yakobo Moyini, Mr. Cornelius Kazoora and assisted by Jessica Acipa, John Stephen Okuta, Amardra ori Okido and Gladys Natugonza. Mr. John Kevin Ogen Aliro edited the Report.

Several resource persons helped to enrich the quality of the Report. These included Hon. Ken Lukyamuzi, MP; Mr. Fred Kafeero, Environment Alert; Ms. Elizabeth Kharono, Living Earth; Ms. Sara Ssewanyana, EPRC; Dr. J. B. Nyakaana, Makerere University; Dr. Elizer Kateyo, Makerere University; Mr. James Kaweesi, Ministry of Water, Lands and Environment; Mr. Sempala Patrick, Ministry of Education and Sports; Mr. Ronald Kaggwa, NEMA; Mr. Mwesigye Abraham, Makerere University; Mr. James Okoth, FAO; Mr. Ashie Mukungu, ADB and Prof. Joseph Opio-Odong, UNDP Regional Service Centre.

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Mr. Alexander Aboagye, Economic Adviser of the Country Office, coordinated and directed the preparation of the Report. He was assisted by Ms. Regina Akello, Programme Assistant; Mr. Alexandre Lamige, Junior Professional Officer and Ms. Diana Sekaggya, Associate Economist. Ms. Faith Karyanrugookwe provided administrative and secretarial support.

In addition to persons and institutions mentioned above, many institutions and organisations provided technical inputs and data. Special thanks go to NEMA and UBOS.

The value of a report such as this derives from the indepence of its analysis and conc-lusions. The views expressed in this report do not therefore reflect those of UNDP or the UN.

Executive Summary

Sir Winston Churchill, Britain's wartime Prime Minister, called Uganda "*The Pearl of Africa*" after his many journeys across the continent. He found the country with diverse physical features, hospitable people and good climate. Ugandans too treasure their natural heritage so much that they conveyed their appreciation in the motto of Vision 2025: *Prosperous People, Harmonious Nation, Beautiful Country.*

This year's theme: ***Linking Environment To Human Development: A Deliberate Choice*** recognises the importance and close linkage of the environment to sustainable human development. It affirms that human beings are the focus of sustainable development. Accordingly, they have a human right to a healthy and productive life in harmony with nature. In this context, human development and environmental sustainability are essential components of the same ethic of universalism of life claims. There is no tension between the two concepts for they are a part of the same overall design.

Recognising the above linkage requires Uganda to integrate human development in environmental management. In fact, the revised Poverty Eradication Plan 2004 includes a new pillar on human development. Besides, delivering on MDG 7 on ensuring environmental sustainability, it also delivers on other MDGs with bearing on human development. For example, improved income and nutrition from better natural resource management helps to eradicate extreme poverty and hunger under MDG 1. Improved learning because of access to energy services delivers on MDG 2 for achieving universal primary education.

By ensuring access to safe water and sanitation, women save a lot of time which in turn contributes to gender equity under MDG 3. Reduced child mortality under MDG 4 can be attained by reducing incidence of ARI associated with indoor air pollution. Finally, the protection of the quality of regional and global commons reduces competition or conflicts over their use, thereby promoting global partnerships for development under MDG 8.

Likewise, policies to deliver on human development also contribute to the attainment of MDG 7 on ensuring environmental sustainability. For example, by eradicating extreme poverty and hunger under MDG 1, there can be reduction on dependency on natural resources for livelihood. By investing in human capital through UPE under MDG 2, the opportunities to seek off-farm employment are increased.

Opportunities for approaching human development and environmental management in an integrated manner are many. However, government needs to identify them early, during project and programme design, and take advantage of them during implementation.

Uganda's challenge therefore is to address barriers to both environmental management and human development. Uganda's population growth rate of 3.4% exerts pressure on environment and increases the dependency ratio. In education, by inflicting heavy tolls on the students, parents and teachers, HIV/AIDS

is affecting the great pillars of human development. Many people in northern Uganda need to be resettled out of the IDP camps to start engaging in productive activities. Unemployment, and especially in urban areas, is a major cause of poverty. The low revenue base incapacitates the government on the delivery of its commitments.

Despite the above setbacks, Uganda has made progress in human development. In 2003, the HDI was 0.4888. In 2002, it was 0.449. This progress is explained by improvement in literacy levels, and life expectancy from 43 years in 2000 to 45.7 years in 2004. The HDI would have been higher had it not been for increase in poverty from 35% in 2002 to 38% in 2003.

In ranking, Central region has the highest HDI of 0.547, followed by Western region (0.487), Eastern region (0.450) and finally Northern region (0.418). Further, GEM for Uganda improved from 0.417 in 2001 to 0.549 in 2003.

Whereas Uganda has abundant natural resources with which it can contribute to human development, the natural capital is on the decline. Climate change and environmental degradation have led to food shortages and increased pressure on water and pasture, especially in north-eastern Uganda. The forest cover has declined over the years, with negative repercussions for biodiversity conservation, water regulation and agricultural productivity. Wildlife in protected areas declined dramatically in the 1970s and early 1980s and has yet to recover. Fish catch from the lakes has also declined. In short, Uganda should start to be concerned that its current development is not sustainable because it is based on mining the natural capital. If this trend is not checked, the current generation will be leaving an ecological debt to the future generations.

Already, the population size and growth rate are exerting pressure on natural resources because people lack appropriate technology with which to harness the resources in a sustainable way. Land fragmentation is increasing in areas of high population densities. The integration of the natural resources-based products in a global market has brought its own challenges like competition for fish for domestic and external markets, pollution and importation of products that undermine value addition to locally produced products (e.g. shoes and textiles). Lack of energy is holding back industrialisation and the service sector that would otherwise absorb pressure from land.

The other concern is that low access to energy is likely to hold back the country's progress towards the attainment of all MDGs. The communities are not sufficiently empowered through awareness creation and technology transfer to use the natural resources in a sustainable way. Many do not know of the livelihood opportunities presented in the policies and laws on environment and natural resources.

Otherwise, Uganda has made good strides in formulating relevant policies, laws, regulations and standards for environment, especially after the Rio Summit in 1992. These have potential

to contribute to human development because, *inter alia*, they highlight environment as a human right, incorporate the relevant provisions of global conventions and treaties; they promote equity and participation, and they empower the resource users through their local institutions.

In terms of the way forward, Uganda should seek financial and technical assistance from its development partners so that it develops capacity to harness the strong linkage between environment and human development. Likewise, the linkages create a strong case and rationale for government to develop capacities and tools for mainstreaming environment in all spheres of development.

Uganda needs to quickly resettle and rehabilitate the population of northern Uganda mainly confined in IDP camps. The disruption to economic activities, education and health service delivery shows in the region's HDI, which is the lowest in the country. Nationwide, the productivity of natural resources needs to be improved through policies that promote appropriate technologies, support small and medium enterprises and improve access to modern and affordable energy, and enhance access to global markets for natural resource based products.

KEY MESSAGES

Country Setting

- Sir Winston Churchill named Uganda the "The Pearl of Africa."

- Ugandans treasure their natural heritage so much that they could not resist conveying that appreciation as part of the motto in the Vision 2025. This year's theme is: **'Linking Environment To Human Development; A Deliberate Choice'.**

- The strong economic growth has been accompanied by a reduction in the population of Ugandans living in absolute poverty from 56% in 1992 to 38% in 2004. Beyond economic growth, other aspects of human development like health, knowledge, participation, equity and human security have to be assessed.

Human Development

- Uganda's poverty eradication target is more ambitious than the Millennium Development Goal (MDG) for poverty reduction. Human development is now one of the PEAP pillars.

- Human development and sustainability are essential components of the same ethic of universalism of life claims. There is no tension between the two concepts for they are a part of the same overall design. The quantity and quality of human development and other outcomes at the end of each year become the opening stock in the subsequent year.

- Policies to deliver on the MDG 7 on environment will also deliver on other MDGs. Uganda has not yet benefited from its human capital in making choices that would graduate the country from the classification of poor nations.

- The humanitarian situation for the 1.6 million internally displaced persons (IDPs) in northern Uganda deserves urgent and coordinated effort.

- In 2003, Uganda's HDI was 0.4888 compared to 0.449 in 2002. Literacy rates have risen from 65% in 1997 to 70% in 2003. Life expectancy for Uganda is estimated to have improved from 43 years in 2000 to 45.7 years in 2004.

- GEM for Uganda is estimated to have improved from 0.417 in 2001 to 0.549 in 2003.

Environmental goods and services

- The extent and quality of Uganda's natural capital is on the decline driven largely by demographic factors but also some policy failures. Regional inequalities exist in the quality, access and use of natural resources across Uganda. A key driving force of environmental degradation is the rural character of Uganda's population.

- The value of soil nutrient loss in the country is about U.S. $625 million per annum, equivalent to *per capita* debt of $210 (2002 estimates). This debt is invisible and largely unappreciated but undermines sustainable development. Access to land is the basis for rural livelihoods, but it is also increasingly becoming a major constraint for poorer people.

- Forests and woodlands provide a range of ecological services vital for better living conditions and enhanced agricultural production. Deforestation rates are worryingly high. In the absence of appropriate interventions, forests and woodlands on private land could be wiped out in 17-62 years. Wetlands are granaries for water. They occupy 13% of Uganda. Wetlands degradation rates are high but the situation is slowly improving as a result of significant Government interventions.

- Ugandans can harvest 330,000 metric tonnes of fish per year without jeopardising the sustainability of the country's fisheries. But this level is not enough to satisfy both domestic consumption and export demand on a long-term basis. Over-fishing has been reported on all Ugandan lakes.

- Tourism, especially eco-tourism, is fast becoming a major source of foreign exchange earnings. Tourism contributed one quarter of the total value of export earnings in 2001. Being rural, tourism offers significant scope for poverty reduction. However, there are threats to the wildlife resource base.

- Uganda is biodiversity rich although lately this richness is being eroded. Biodiversity contributes about $1,000 million per year. Conserving this biodiversity incurs a cost, especially in terms of farmland foregone by establishing protected areas. Furthermore, local communities in biodiversity rich areas bear a disproportionately higher responsibility and costs for conservation. The global community ought to compensate them fairly.

- On a best case basis, minerals can generate $200 million per year and could become a major contributor to rural development and poverty reduction.

- The percentage of people in Uganda with access to safe water is on the increase. However, there are regional differences which call for greater attention. Only 16 districts out of 56 had safe water coverage above 60% by 2001. Sanitation coverage is improving but progress is slow and there is no lead institution championing the cause.

- About 10% of the urban solid waste generated annually enters the environment and remains undecomposed. This is equivalent to about 70,000 metric tonnes per year. In Kampala City alone, only 41% of the annual solid waste generated is disposed of properly.

Sustainability

- Out of 147 countries whose WPI was calculated in 2002, Uganda was ranked 129.

- The higher a country's ESI score, the more likely it is to maintain favourable environmental conditions in the future. Uganda's ESI score is 51.3, giving it a ranking of 57 out of 146 of the countries for which ESI was constructed in 2005.

- Sustainability is multidimensitional and not easily summarised in a single figure. Uganda's EWI is 44, making it rank 93 out

of 180 countries whose EWI was calculated. This suggests Uganda is consuming its environmental resources in an unsustainable manner.

- As part of its future development path, the Government has formulated a Health Sector Strategic Plan II, 2005/06-2009/2010.

- Majority of people in Uganda are still constrained in accessing modern energy sources.

- There is also a steep increase in HDI as per capita energy consumption increases. Although there is no explicit MDG on energy, energy is essential for achieving all the goals.

Linkages

- Cooperation is important in environmental management because it reduces conflict. There are three gains: benefits to environment (e.g. reduced BOD), benefits to the organisations (costs reduction) and benefits to the health of workers (improved work conditions). In drafting environmental laws, policies or designing programmes issues of human development are not consciously incorporated.

- This report, whose theme is: 'Linking Environment to Human Development: A Deliberate Choice', serves as baseline to monitor future linkages between environment and human development.

Policy responses

- Government should support environmental agencies to develop methodologies, tools and capacities to consciously integrate human development in environmental management.

- UNDP should support government and other agencies to develop capacities for integrated planning with respect to MDGs.

- The government should therefore build on emerging peace restoration efforts to rehabilitate and integrate IDPs in normal socio-economic activities.

- Uganda must restore resource productivity.

- Communities should be supported to upgrade micro enterprises in environmental and natural resource management which improve national and global conditions. Government must increase its investment in energy, short of which the achievement of all MDGs will be frustrated.

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Acronyms and Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANS	Adjusted Net Savings
ARI	Acute Respiratory Infections
BoD	Biological Oxygen Demand
CDM	Cleaner Development Mechanism
CFR	Central Forest Reserve
CP	Cleaner Production
CPI	Corruption Perception Index
DDT	Dichlorodiphenyltrichloroethane
DFID	Department for International Development
EAC	East African Community
EDEP	Equally Distributed Equivalent Percentage
EIA	Environment Impact Assessment
EMA	Environmental Management Associates
ERT	Energy for Rural Transformation
ESI	Environmental Sustainability Index
EU	European Union
EWI	Ecosystem Wellbeing Index
FAO	Food and Agriculture Organisation of the United Nations
FD	Forest Department
FIRRI	Fisheries Resources Research Institute
GAD	Gender and Development
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEM	Gender Empowerment Measure
GHD	Gender & Human Development
GHDR	Global Human Development Report
GNI	Gross National Income
GNP	Gross National Product
GPI	Genuine Progress Indicator
GS	Genuine Savings
HD	Human Development
HDI	Human Development Index
HDR	Human Development Report
HIV/AIDS	Human Immune Virus
HPI	Human Poverty Index
HTII	Hotel and Tourism Training Institute
HWI	Human Wellbeing Index
IDP	Internally Displaced Person
IFPRI	International Food Policy Research Institute

ISEW	Index of Sustainable Economic Welfare
ITN	Insecticide Treated Net
IUCN	Nature Conservation Union
LFR	Local Forest Reserve
MBIFCT	Mgahinga Bwindi Impenetrable Forest Conservation Trust
MD	Millennium Declaration
MDG	Millennium Development Goal
MEMD	Ministry of Energy and Mineral Development
MFPED	Ministry of Finance, Planning and Economic Development (often also referred to as MoFPED)
MGLSD	Ministry of Gender, Labour and Social Development
MNR	Ministry of Natural Resources
MoH	Ministry of Health
MTWA	Ministry of Tourism, Wildlife and Antiquities
MUIENR	Makerere University Institute of Environment and Natural Resources
MWLE	Ministry of Water, Lands and Environment
NARO	National Agricultural Research Organisation
NEAP	National Environment Action Plan
NELSAP	Nile Equatorial Lakes Subsidiary Action Programme
NEMA	National Environment Management Authority
NGO	Non-Governmental Organisation
NTFP	Non-Timber Forest Product
NWSC	National Water and Sewerage Corporation
OPM	Office of the Prime Minister
PAH	Polyaromatic Hydrocarbon
PEAP	Poverty Eradication Action Plan
PFE	Permanent Forest Estate
PLE	Primary Leaving Education
PMA	Plan for Modernisation of Agriculture
SEA	Strategic Environmental Assessment
SHD	Sustainable Human Development
SWM	Solid Waste Management
TAC	Technical Advisory Committee
UAC	Uganda Aids Commission
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

UNHS	Uganda National Housing Survey
UNIDO	United Nations Industrial Development Organisation
UNP	Uganda National Parks
UN	United Nations
UPE	Universal Primary Education
UPPAP	Uganda Participatory Poverty Assessment Process
UTB	Uganda Tourist Board
UWA	Uganda Wildlife Authority
UWEC	Uganda Wildlife Education Centre
UWTI	Uganda Wildlife Training Institute
VFO	Victoria Fisheries Organisation
VoC	Volatile Organic Compound
WCED	World Commission on Environment and Development
WI	Wellbeing Index
WID	Women in Development
WIDER	World Institute for Development Economics Research
WPI	Water Poverty Index
WSI	Wellbeing Stress Index
WSSD	World Summit on Sustainable Development
WWF	World Wildlife Fund

1 Uganda at a glance

1.1 Uganda, the Pearl of Africa

The former British Prime Minister, Sir Winston Churchill named Uganda "*The Pearl of Africa*" after his many journeys across Africa. He found the country with diverse physical features, hospitable people and good climate. Ugandans too treasure their natural heritage so much that they captured that as part of the motto in Vision 2025: *Prosperous People, Harmonious Nation, Beautiful Country* (Republic of Uganda, 1998).

Micro-level institutions also reflect the value of the environment. For example, the mission statement of Rugarama sub-county in Ntungamo District is, "To have an educated, healthy population and beautiful environment." (MFPED/UBOS 2000/2001).

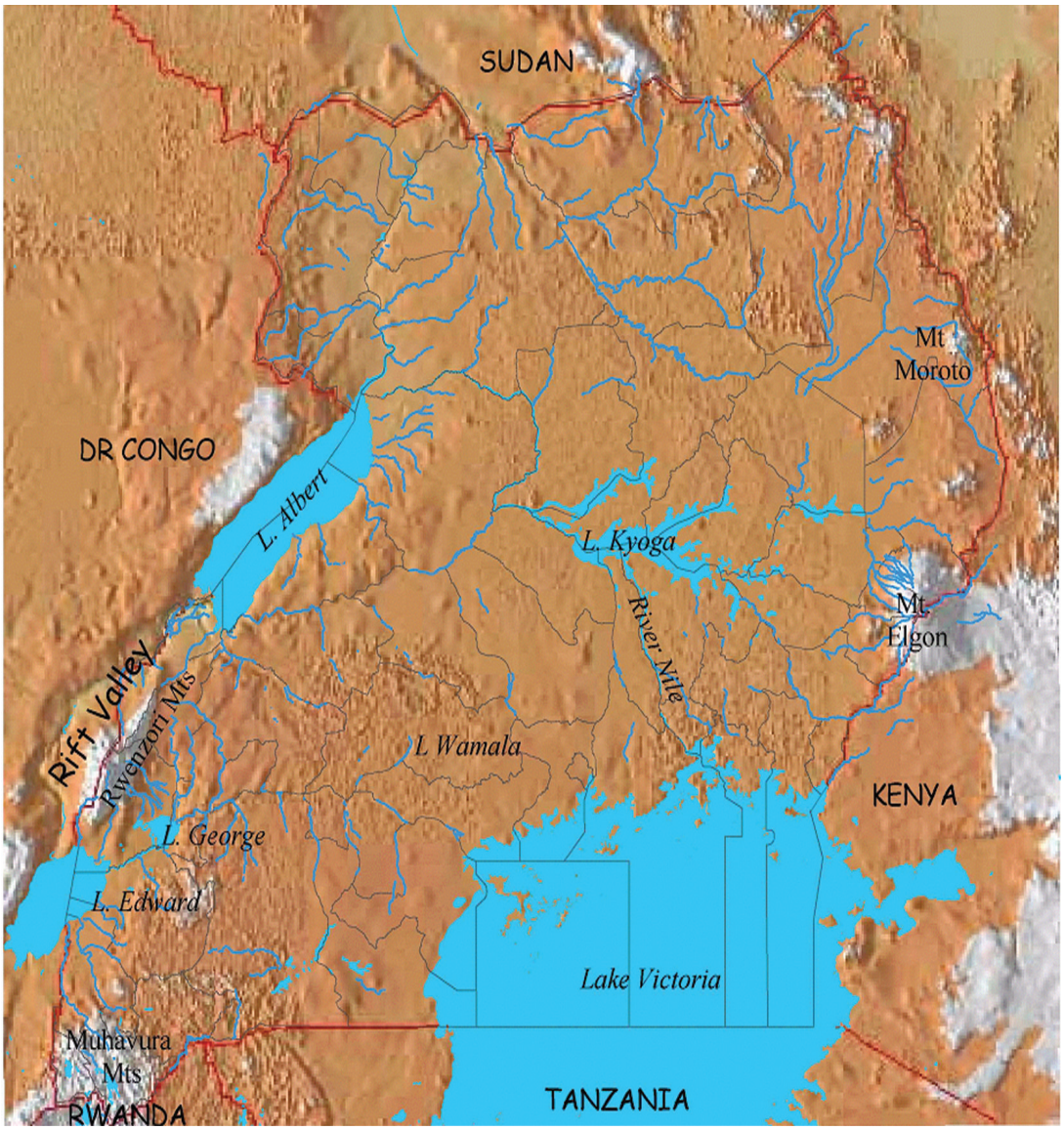
This year's theme for National Human Development Report is: **Linking Environment to Human Development: A Deliberate Choice**. The theme reflects the many opportunities Uganda's environment holds for its people and beyond. This report therefore analyses how the environment contributes to human development.

Several factors account for Uganda's beauty, including its location astride the Equator between 4^0 N and 1^0 S and stretching from 29.5-35^0 W (Figure 1.1). It borders Kenya in the east, Tanzania and Rwanda in the south, the Democratic Republic of Congo in the west and Sudan in the north. With the first two neighbouring countries, Uganda is part of the East Africa Community (EAC), revived on April 29, 1997. Uganda covers a surface area of about 241,500 km^2 of which 15.3% is open water, 3.0% permanent wetlands and 9.4 seasonal wetlands (NEMA, 1996).

Despite being on the Equator, the country's tropical climate is considerably moderate because of its elevation, ranging between 600m and 5100m above sea level and local relief. The landscape is mainly plateau. Towards the south are flat-topped table-like hills and broad intervening valleys, many containing wetlands. Bordering with the Democratic Republic of Congo are snow-capped Mountains of the Moon, the Rwenzori Mountains that form an important watershed in that area. The rivers originating from the mountains replenish the waters of Lakes George, Albert and Edward in the western Rift Valley. Other features associated with the rift valley are the volcanic mountains of Muhavura (4,130m), Gahinga (3,470m) and Sabinyo (3,630m) found in the southwest of the country.

In eastern Uganda, Mt. Elgon rises to 4,320m above sea level and forms another important cross-border watershed. Its rivers flow into Lake Victoria, the world's second largest inland freshwater lake and into Lake Kyoga. Lake Victoria is part of the Nile Basin. It contributes its international waters to Sudan and Egypt through River Nile.

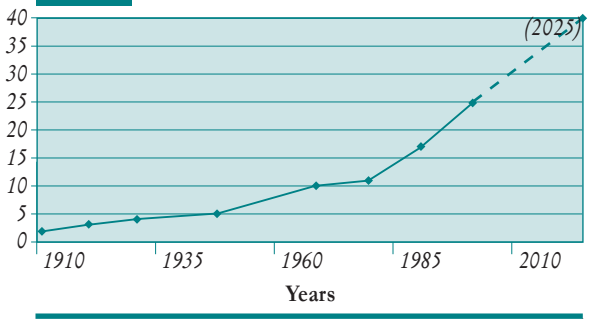
Fig 1.1 **Map of Uganda**



1.2 Population

Uganda's population has been doubling almost every 20 years. It increased from 5 million in 1948 to 6.5 million in 1959; 9.5 million in 1969; 12.6 million in 1980; 16.7 million in 1991 and recently, 24.7 million in 2002 (Figure 1.2). It is also projected to double in 24 years thereby reaching about 40 million by the year 2025.

Fig. 1.2 **Population Trend 1911-2025**



Source: *UBOS (2005)*

The distribution of population by region and gender are given in Tables 1.1 and 1.2, respectively. Uganda's annual population growth rate of 3.4% is higher than the average for Sub-Saharan Africa of 2.1% (UNDP, 2004).

Table 1.1 ***Population per region*** *(2002)*

Region	1991	2002
Central	*4,843,594*	*6,575,425*
Eastern	*4,128,469*	*6,204,915*
Northern	*3, 151,955*	*5,363,669*
Western	*4,547,687*	*6,298,075*
Total	**16,671,705**	**24,442,084**

Source: *UBOS (2005)*

Table 1.2 ***Population by sex*** *(2002)*

Region	Male	Female	Total
Central	*3,230,637*	*3,344,788*	*6,575,425*
Eastern	*3,012,851*	*3,192,064*	*6,204,915*
Northern	*2,627,367*	*2,736,302*	*5,363,669*
Western	*3,058,948*	*3,239,127*	*6,298,075*
Total	**11,929,803**	**12,512,281**	**24,442,084**

Source: *UBOS 2005*

With the majority of the population being rural (88%), the understanding of the link between people and their natural resources and the policy implications are of high relevance under this year's theme.

Uganda's population too, is of diverse welfare, ethnicity and cultural liberty. There are 56 recognised ethnic groups. The Bantu account for 67% of the population, the East Nilotic account for 12%, the Western Nilotic account for 15% and the Central Sudanic account for less than 5%. Other ethnic alien minorities including Banyarwanda, Sudanese, Congolese, Kenyans, Arabs, Europeans and Asians account for 1%.

Uganda has a young population; people below 15 account for as high as 49.3 % of the total population. Only 4.5% is above 60 years. A large young population in an environment of high levels of fertility creates a population momentum. This situation has a substantial impact on the socio-economic development of an individual, the family, the country at large, and on the natural resource base.

1.3 Administrative set-up

Uganda is divided into 56 districts [but 11 more have been proposed in 2005]. The system of local government revolves around the district as a unit; below which are lower local governments and administrative unit councils. Local Government Councils have people directly elected to represent electoral areas; while persons with disabilities, the youth and women councillors form one third of the Council.

The Local Government Councils are corporate

bodies having both legislative and executive powers. They have powers to make bylaws and enforce them, including environmental ordinances and bylaws. On the other hand, administrative unit councils serve as political units to advise on planning and implementation of services.

The Local Governments Act 1997 devolves functions, powers, and services to all levels of local government. The aim is to enhance good governance and democratic participation and control of decision-making.

Local Governments have powers to make policy and regulate delivery of services. They may also formulate development plans based on the locally determined priorities; receive, raise, manage and allocate revenues through approval and execution of own budgets.

Fig 1.3 **Districts of Uganda**

On the other hand, the Central Government is responsible for the formulation of national policies and national standards; and monitoring the implementation of national policies and services to ensure compliance with standards and regulations. Line ministries carry out technical supervision, technical advice, monitoring of Local Governments and liaise with international agencies.

1.4 Economic progress

Uganda achieved strong economic growth and macroeconomic stability in the 1980s, largely the result of an ambitious programme of macroeconomic adjustment and structural reforms. Overall, the economy expanded at 6.0% per annum on average, 1.0 percentage point lower than the set target of 7% (Figure 1.4).

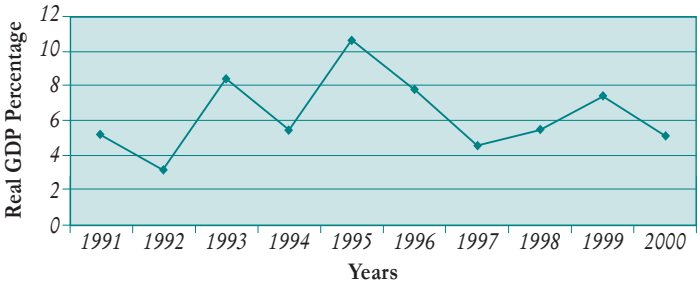
The strong growth helped to reduce the proportion of Ugandans living in absolute poverty from 56% in 1992 to 35% in 2000 but with a slight rise to 38% in 2004.

Despite the reduction in the headcount poverty, Uganda remains one of the poorest countries in the world. Moreover, the distribution of welfare gains has varied across regions, sectors and social/economic groups. For example, 63% of the population in Northern Uganda lives below the poverty line.

While economic growth is good, the Human Development Report 1996 showed that it does not automatically lead to Sustainable Human Development (SHD) and the elimination of poverty. For example, countries that do well when ranked by per capita income often slip down the ladder when ranked by the human development index (HDI). Further, the Human Development Report 1998 classified Uganda among 73 countries whose ranking on HDIs were lower than GDP per capita, suggesting that they had failed to translate economic growth into better lives for their people.

Despite regional variation, the improvement in poverty reduction was achieved in a planned manner. In 1997, the Government launched the Poverty Eradication Action Plan (PEAP) as its most comprehensive national development framework.

Fig. 1.4 **Real GDP Growth Rate, 1991 - 2000**



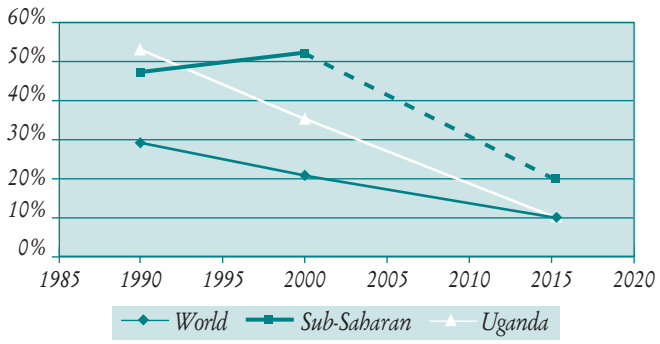
Source: *MFPED – Various Issues of the Background to the Budget*

The 1997 PEAP had four goals or pillars: economic growth and structural transformation, good governance and security, increasing the incomes of the poor and improving their welfare.

PEAP is revised every three years. In this year's revision, the PEAP mainstreamed the Millennium Development Goals (MDGs) as benchmarks for monitoring. The MDGs were adopted by the United Nations Millennium Declaration Summit in New York in 2000 and further expanded during the World Summit on Sustainable Development in Johannesburg in 2002.

Compared to the rest of sub-Saharan Africa, Uganda has performed better since 1990 in reducing the percentage of its people under poverty. If it maintains that trend, it could meet its MDG target on poverty reduction faster than Sub-Saharan Africa as a whole (Figure 1.5).

Fig. 1.5 **Proportion of people living on less then $1 a day**



Source: *UNDP (2003)*

Furthermore, Uganda's poverty eradication target is more ambitious than the Millennium Development Goal for poverty reduction (MDG 1). It aims at reducing to less than 10% the number of people living in poverty by 2017, whereas the MDG targets reducing the poverty headcount from 56% (1990 estimate) to 28% by 2015. In this context, attaining the MDG on poverty seems to be achievable. Other indicators of the economy are shown in *Table 1.3*.

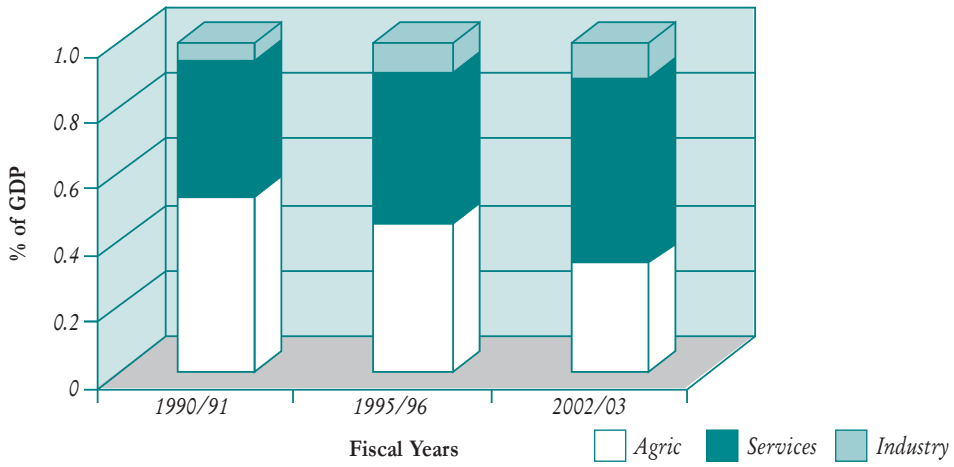
Table 1.3: ***Key Development Indicators 2003***

Indicator	Value
Population size (millions)	*24.7*
Population growth rate	*3.4%*
Life expectancy at birth (years)	*45.7*
GDP growth rate	*4.9%*
Debt (billion $)	*3.8*
Poverty headcount ratio (2004)	*38*
HIV/AIDS prevalence rate	*6%*
Access to safe water	*52%*
Net primary school enrolment	*79%*
Girl/Boy primary ratio	*96%*
Under five mortality ratio (per 1000)	*152*
Maternal mortality ratio (per 1000)	*505*

Source: *MFPED (2003)*

Along with economic growth, came substantial structural shifts in the economy. Agriculture, which accounted for 68% of GDP in 1985 now accounts for only 31.8%. Meaning the contributions of industry and services have steadily risen (*Figure 1.6*).

Fig. 1.6 **Structure of GDP**



Source: *MFPED; Various issues on The Background to the Budget*

1.5 Future outlook and policy implications

The 2004 revised PEAP now comprises five 'pillars' of economic management; production, competitiveness and incomes; security, conflict-resolution and disaster management; governance; and human development. The key priorities under each pillar are given in *Box 1.1.*

Two important aspects need mention. First, pillar 2 recognises the importance of preservation of the natural resource base, particularly soils and forests, and improvement of infrastructure, including energy. Secondly, human deve-lopment is now one of the PEAP pillars, thus paving way for a more focused approach to human development. The policy implication is that government and its development partners must start to plan how to support and coordinate that pillar on human development. There is need for a systematic approach in linking human development to other PEAP pillars, and their sub-components, including that on environment and natural resources. This report therefore, serves as baseline to monitor future linkages between environment and human development.

Box 1.1

Priorities under the Pillars of Poverty Eradication Action Plan 2004

Economic management
- *The maintenance of macroeconomic stability*
- *Fiscal consolidation*
- *Boosting private investment*

Production, competitiveness and incomes
- *Modernisation of agriculture*
- *Preservation of the natural resource base, particularly soils and forests*
- *Infrastructure including roads, electricity and railways; better maintenance, cost-reduction and private sector participation will be key to achieving improvements in the context of fiscal consolidation*
- *Enhancing private sector skills and business development*

Security, conflict-resolution and disaster-management
- *Ending rebel insurgency, by peaceful means if possible*
- *Ending cattle-rustling*
- *Dealing with internal displacement and abduction, which are major sources of distress in contemporary Uganda*

Governance
- *Human rights and democratisation*
- *The development of a better legal system*
- *Transparency, accountability and the elimination of corruption*

Human development
- *Primary and secondary education: with a clear focus on quality and the ultimate objective of learning, with better targeting of public expenditure on secondary education for those who could not otherwise afford it*
- *Improving health outcomes, through the involvement of various sectors*
- *Increasing people's ability to plan the size of their families*
- *Community empowerment, including adult literacy*

Source: *MFPED (2004)*

2 Linking environment and human development

2.1 Human beings at the centre of environment

When the world leaders converged in Rio de Janeiro for the United Nations Conference on Environment and Development (UNCED) in 1992, it was after the realisation that the linkage between environment and economic development had been neglected at the risk of threatening human survival. They observed thus:

> *"Humanity stands at a defining moment in history. We are confronted with a per-petuation of disparities between and within nations, a worsening of poverty, hunger, ill health and literacy, and the continuing deterioration of the ecosystems on which we depend for our well-being."(UN, 1992).*

To restore the relationship between the environment and development, they set themselves to following 27 principles under Agenda 21, a programme of action for development worldwide. The first principle puts human beings at the centre of environment and states:

> *"Human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature." [UN, 1992. p9]*

Uganda reflected the above principle in one of its objectives of the *Environment Management Policy for Uganda, 1994* thus:

> *"To manage population growth, settlements, distribution and health in such a way as to match people and resources in an economically productive, socially acc-eptable and environmental sound manner."(MNR, 1994).*

In short, the world through Agenda 21 and Uganda through the above policy acknowledged the close relationship between environment and development as well as the need to improve health in order to achieve sustainable development. Poverty eradication and economic development is not possible without good health. Likewise, the health of the population cannot be sustained without responsive health systems, a healthy environment and an intact life-supporting system. In short, sustainable development as a new development paradigm has as its antecedents in the "*Limits to Growth*" literature of the early

1970s and in IUCN's advocacy in 1980[1]. At the time, came the realisation that economic growth could not be sustained unless it was founded on sound environmental management.

However, it was the World Commission on Environment and Development (WCED, 1987), often called the Brundtland Commission after its chair, that placed it firmly on the international political agenda.

2.2 Understanding sustainable development and human development

According to the Brundtland Commission, sustainable development is *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs".*

Since 1987, there has been many interpretations of and prescriptions for sustainable development. This report has however, adopted the nine operational objectives of sustainable development as given by WCED (1987). They are in *Box 2.1.*(Footnotes)

Box 2.1

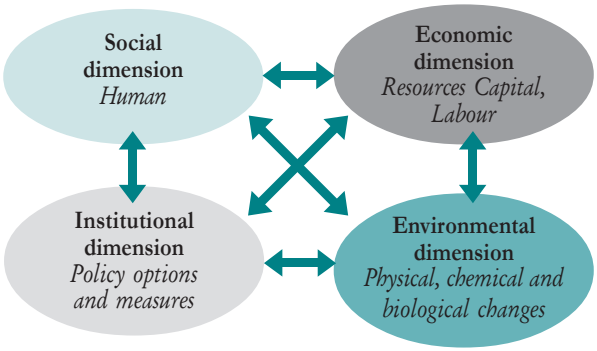
Operational objectives of sustainable development

- *Reviving growth*
- *Changing the quality of growth*
- *Meeting essential needs for jobs, food, energy, water, and sanitation*
- *Ensuring a sustainable level of population*
- *Conserving and enhancing the resource base*
- *Reorienting technology and managing risk*
- *Merging environmental and economics in decision making*
- *Reorienting international economic relations*
- *Making development more participatory*

Source: *WCED (1987:49)*

Figure 2.1 too presents the dimensions of sustainable development in an interactive and dynamic manner. The implication is that the impacts of those interactions must be continuously monitored and the negative ones addressed on time to avoid irreversible damage. The other implication is that balancing the various development objectives, or even making well informed trade-offs are central to the decision making processes.

Fig. 2.1 **The dimensions of sustainable development**



Owing to the close linkage and dynamism between environment and human development, UNDP too has modified the concept of Human Development (HD) from that initial definition the first Global Human Development Report (GDHR) as '*a process of enlarging people's choices*' (UNDP, 1990). At that time, UNDP listed the three essentials as: people leading a long and healthy life, acquisition of knowledge and access to resources needed for a decent standard of living. It asserted '*that if these essential choices are not available, many other opportunities remain inaccessible*' (UNDP, 1990).

[1] *IUCN (1980) World Conservation Strategy: Living Resource Conservation for Sustainable Development (Gland, Switzerland, IUCN, United Nations Environment Programme and World Wildlife Fund, 1980)*

In 1994, UNDP, in the GHDR introduced the concept of Sustainable Human Development (SHD). According to the Report, SHD means that we have a moral obligation to do at least as well for our successor generations as our predecessors did for us. It also means that current consumption cannot be financed for long by incurring economic debts that others must repay. In addition, countries need to make sufficient investment in the education and health of today's population to avoid creating a social debt for future generations.

Finally, it means that the world must use natural resources in ways that do not create ecological debts by overexploiting the carrying and productive capacity of the earth.

The report concluded thus:

> *"Human development and sustainability are thus essential components of the same ethic of universalism of life claims. There is no tension between the two concepts for they are a part of the same overall design" (UNDP: 1994).*

2.3 Linking environment to human development

In order to bring ourselves back to build a synergistic and symbiotic relationship between environment and human development, we must adopt a conceptual framework. It is given in *Figure 2.2*. The framework strongly builds on other frameworks, namely those by DFID (2002), UNDP/World Bank/EU/DFID (2002) and UNEP (2002).

The framework is founded on the Brundtland Report, and takes sustainable development as both an outcome ("development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED: 1987) and a process ("a process of change in which the utilisation of resources, the direction of investment, the orientation of technological development and institutional change are in harmony and enhance both current and future potential human needs and aspirations").

As a process, sustainable development uses three basic capital inputs: human, physical and natural capital. The three forms of capital make up the total stock of a nation. According to estimates, the natural capital in Uganda makes up 15% of total capital stock, while human and physical capital contribute 48% and 37%, respectively [Kunte A; Hamilton K, Dixon J, Clemens M.1998].

Social capital is related to human wellbeing, but on a societal rather than individual level. It consists of the social networks that support an efficient cohesive society, and facilitate social and intellectual interactions among its members. Examples of social capital include neighbourhood associations, and civil organisations. In the framework, social and financial capital are shown as some of the transformation factors.

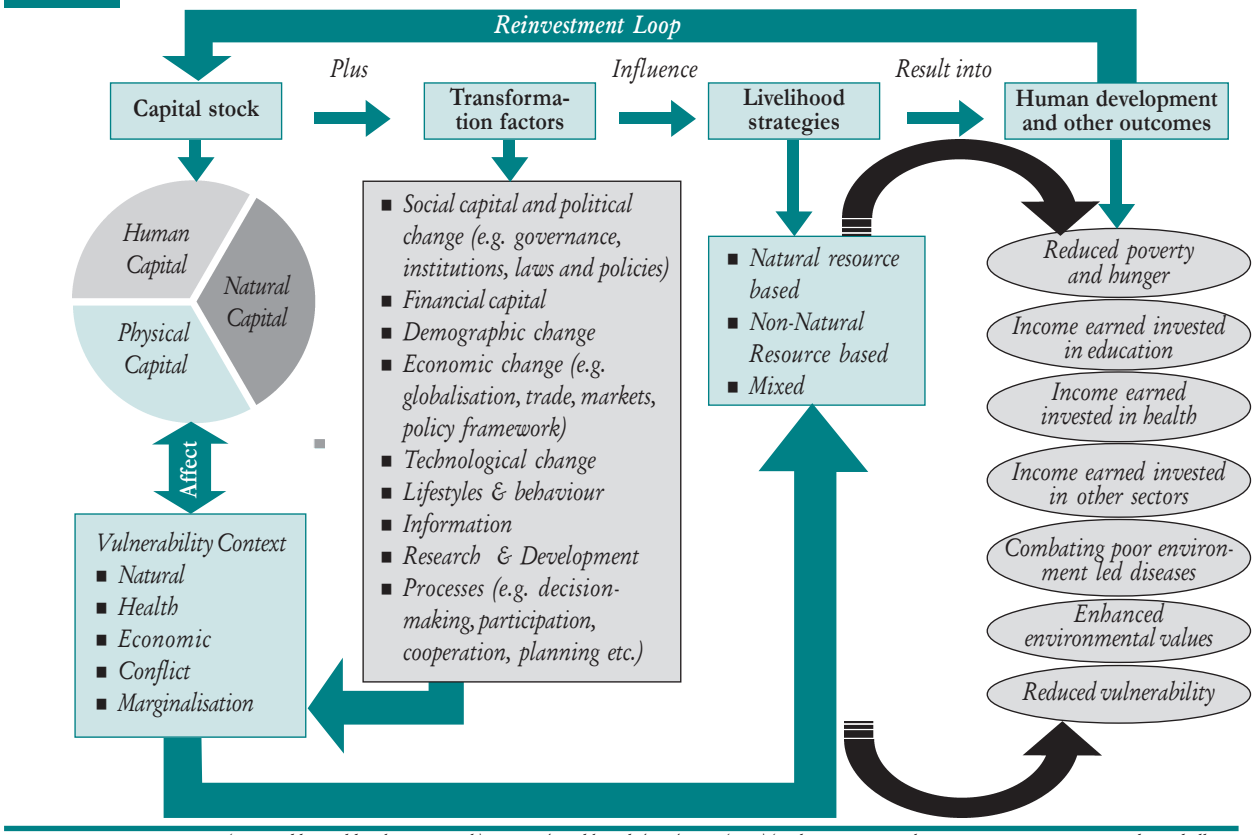
The framework recognises a reciprocal and cyclical relationship between environment and human development. The natural capital (or environment) is transformed into human development outcomes using social and financial capital, technology, information, research, etc. That transformation is also

influenced by external factors like globalisation and processes of regional and international cooperation.

The natural capital entitlements people have as either individuals or collectively as a community, the risk they face from vulnerability factors, and the transformation factors at their disposal influence their choices of survival strategies. They may solely depend on the natural capital or non-natural capital or both. The human development outcomes from those strategies are many and include reduced poverty and hunger, improved health and education as a result of investing natural-resource based incomes, reduced burden from environmental diseases, reduced vulnerability and enhanced environmental values.

As *Figure 2.2* shows, the quantity and quality of human development and other outcomes at the end of each year become the opening stock in the subsequent year. This is shown as the ***reinvestment loop***. From sustainable development perspective, the cardinal rule is that the present generation must leave the environment in equal or better position than they found it for the future generation and avoid leaving ecological debt. Finally, the conceptual framework in *Figure 2.2* addresses the main components of the human development paradigm (see *Box 2.2).*

Fig. 2.2 **Conceptual Framework linking environment and human development**



Adopted from: *DFID (Sustainable Livelihoods Framework), UNDP/World Bank/EU/DFID (2002) (Linking Poverty and Environment Management: Policy, Challenges and Opportunities), UNEP (2002) (Poverty and Ecosystems: Conceptual Framework), Kazoora C. (2003), Linking sustainable livelihoods and ecosystem management.*

Box 2.2

Six main components of the human development paradigm

- **Productivity.** *People must be enabled to increase their productivity and to participate fully in the process of income generation and remuneration employment. Economic growth is therefore, a subset of human development models.*
- **Equity.** *People must have access to equal opportunities. All barriers to economic and political opportunities must be eliminated so that people participate in and benefit from these opportunities.*
- **Sustainability.** *Access to opportunities must be ensured not only for the present generation but also for future generations as well. All forms of capital-physical, human, environmental should be replenished.*
- **Empowerment.** *Development must be by people, not only for them. People must participate fully in decisions and processes that shape their lives.*
- **Cooperation.** *With a sense of belonging that is important for personal fulfilment, well-being and a sense of purpose and meaning, human development is concerned with the ways in which people work together and interact.*
- **Security.** *People need to be free from threats, such as disease or repression and from sudden disruption in their lives.*

Source: *UNDP (1995) HDR & UNDP Governance Policy Paper*

2.4 What the 'Voices of the Poor' reveal

The close linkage between environment and human development in Uganda has also been voiced by the poor. Since 1999, Uganda has been trying to deepen its understanding of poverty through the Uganda Participatory Poverty Assessment Process (UPPAP). The process captures the 'Voices of the Poor' on their understanding of causes and indicators of poverty. Among the key findings from UPPAP 2 of 2002, the main causes of poverty were from both the human development and environment perspectives. It was found that overall, *poor health and diseases,* especially HIV/AIDS, continue to be the most important cause of poverty in 2002, just as they were four years ago.

Second in importance is *limited access to land or land shortage,* a cause of poverty that did not feature highly under UPPAP 1 in 2000. People linked land shortages to another leading cause of poverty identified in UPPAP 1 and 2 as large families (population change).

Even in individual districts where UPPAP 2 was conducted, environment and human development causes of poverty featured strongly. This is illustrated by findings from 4 out of 10 districts from the four regions in *Table 2.1.* Vulnerability due to climate change is a great cause of poverty, and so are diseases, ignorance and limited education and skills.

Table 2.1 ***Environment and Human Development causes of poverty, Uganda.***

District & Region	Environmental causes	Human development causes
Rakai (Central)	■ *Vermin from forests destroys crops* ■ *Natural disaster (floods and drought) leading to increased expenditure on drugs, and scarcity of pasture*	■ *Poor health* ■ *Diseases like HIV/AIDS*
Bugiri (Eastern)	■ *No land* ■ *Soil exhaustion* ■ *Pests & vermin*	■ *Ignorance on opportunities* ■ *Diseases*
Moroto (Northern)	■ *Drought causes crop failure leading to lack of food* ■ *Climatic shock (too much rain leading to crop wash) and subsequent food shortage* ■ *Shortage of water and pasture leads to death of livestock* ■ *Landlessness*	■ *Lack of skills and unemployment* ■ *Ill health and diseases*
Bundibugyo (Western)	■ *Natural disasters such as floods, landslides causing destruction of life of crops* ■ *Harsh weather conditions*	■ *Ignorance and lack of information* ■ *Limited education* ■ *Marginalisation of vulnerable categories*

Source: *MFPED (2002)*

Finally, the districts under both UPPAP 1 and UPPAP 2 listed virtually all intervening factors shown in the Framework (*Figure 2.1*) as additional causes of poverty. These include: *lack of markets and credit facilities, large families and lack of cooperation.* They also listed excessive alcohol consumption which is linked to lifestyle and behaviour. Insurgency was a key cause of poverty for northern districts. All the above factors and their implications for environmental quality and human development are analysed throughout the subsequent chapters.

2.5 Case Study Results

In its effort to mainstream environment into the PEAP, the government also commissioned case studies in Moroto and Bushenyi (rural) and Kampala (urban) to establish the linkage between poverty and environment. The causes and effects of poverty, environmental change and resource degradation are complex and interlinked. In that complex relationship poverty was mentioned both as a cause and effect of environmental degradation.

The first finding was that the livelihoods of the people were invariably linked to the direct exploitation of natural resources. The well being of poor people was a direct outcome of not only the availability of natural resources (land, water, forests, etc), but also bio-physical conditions in their communities and the environment (sanitation, health facilities, drainage, shelter/housing, waste disposal etc).

The second finding was that the location of communities in relation to natural resources was likely to be a source of vulnerability. Those close

to forests and parks were vulnerable to vermin, with negative consequences for crop yields (*Box 2.3*). Others in mountainous areas were prone to landslides.

Thirdly, natural resources became sources of coping mechanisms where alternatives are not forthcoming. In health for example, both the perceived ineffectiveness of modern treatment and high cost led to increased reliance on traditional forms of treatment, especially the use of herbs. Furthermore, the medicinal herbs are readily accessible. The big concern, however, is that in addition to intensive natural resource use many people die because the information, science and technology in perfecting the use of medicinal plants are not well developed. Finally, the case studies revealed that compared to men, women have less chances to own and control the use of natural resources.

2.6 Human development is good for environment

The findings and revelations described in sections 2.4 and 2.5 above point to the conclusion that investing in human development is important for the protection of the environment. Skilled and knowledgeable people are in a better position to respond to the incentives and opportunities and to take up non-agricultural employment (*UNDP 1991*).

Further, according to the State of Environment Report for Uganda 1994, large disparities in contraceptive use were found among women with different educational backgrounds: 34% of married women with a higher level of education use contraceptives compared with 2% of those with no education (*Figure 2.3*). For a country still low in technological progress, the need to control population in order to match it with the resource base is most critical. Family planning is one of the interventions at our disposal.

Box 2.3

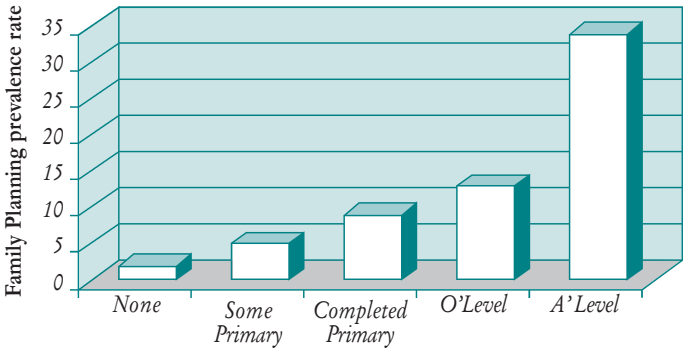
Vulnerability to Vermin

During the Uganda Participatory Poverty Assessment Process (UPPAP), the Bbeta Community in Kalangala District had the following to say about vermin.

"Monkeys have caused poverty in this area. We cannot grow enough food and also save some for selling. There are certain things we don't grow in this area: maize, beans, and peas. All these would grow well here but they cannot survive monkeys. Monkeys here eat or destroy virtually everything, bananas when they are beginning to fruit and even coffee beans all of which you find down"

Source: *Bbeta Community meeting 1998: Kalangala Report.*

Use of family planning methods by education level (married women 15-49)



Also one of the recent findings in poverty monitoring in Uganda is that human capital is critical in poverty reduction. In 1992, the completion of primary, 'O' level and 'A' Level education by the household head reduced the probability of the household falling below the poverty line by 12%, 22% and 31%, respectively.

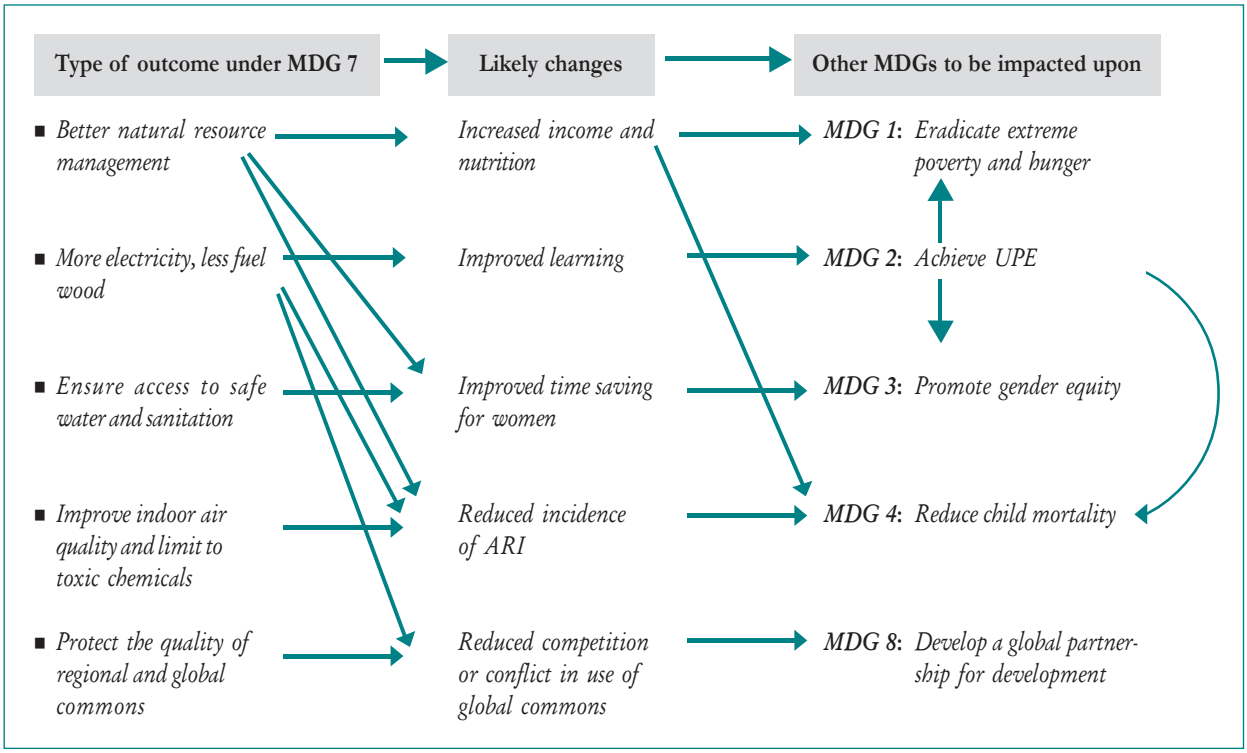
This finding suggests that primary education, especially if complemented by effective investment in post-primary education, can increase the possibility of meeting the government's goal of reducing the incidence of household poverty to 10% by 2017.

In 2000, however, the completion of primary education ceased to be statistically significant, and 'A' level education had to be dropped because no household head within the available sample had completed it. Notably, however, the completion of 'O' level education by the household head reduced the probability of the household falling below the poverty line by 15%.

It seems also that Uganda's population growth rate at 3.4% is wiping out the benefits from improved social spending. This once again underlines the need to intensify interventions for controlling population growth, and subsequently easing environmental stress.

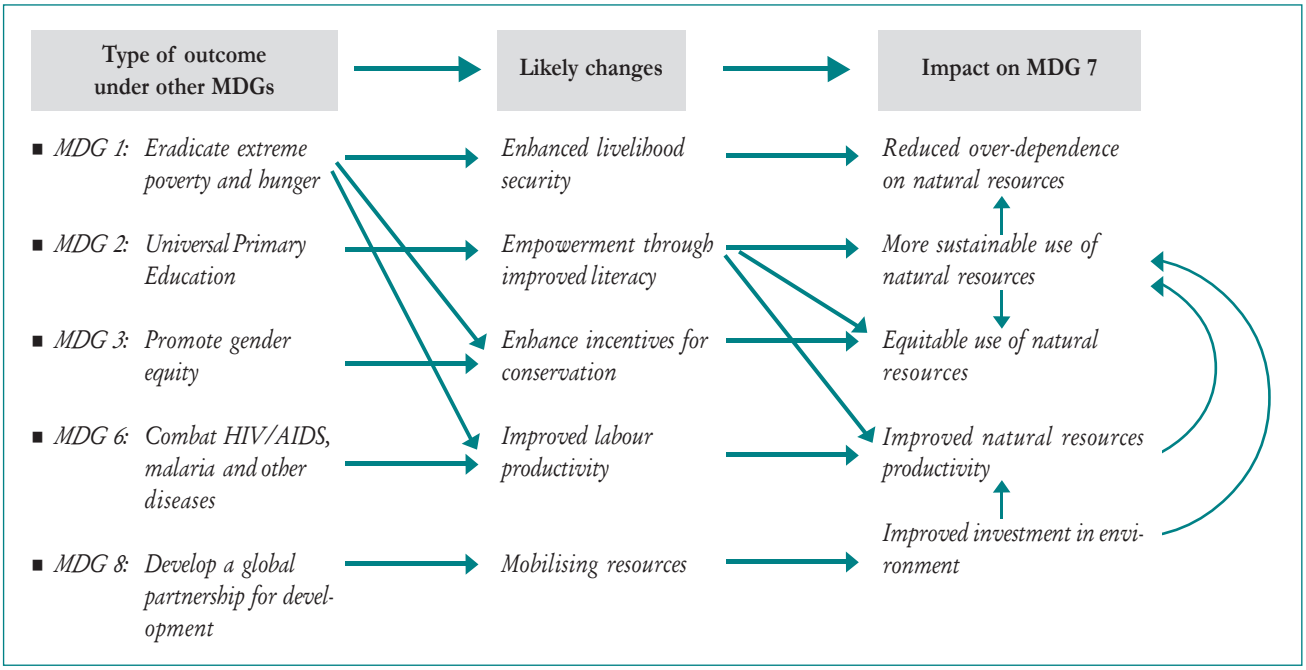
2.7 Linking MDG on environment to other MDGs

Uganda has enriched its PEAP by refocusing the national agenda, especially providing targets and indicators for monitoring progress. An analysis of MDG 7, ensuring environmental sustainability, concludes that policies to deliver on environment will help to deliver on other MDGs (see below).



2.8 Linking some other MDGs to MDG 7 on environment

Similarly, policies to deliver on human development and other MDGs will also benefit the environment (see below).



2.9 Policy Implications

Human beings are at the centre of concern of sustainable development. Interpreted differently, human development is the end or objective of sustainable development. Human development can also be constrained if the management of natural capital, on which some people directly depend or derive income, is not sustainable. The Millennium Declaration strongly echoes this:

> *"We must spare no effort to free all of humanity and above all our children and grandchildren, from the threat of living on a planet irremediably spoilt by human activities, and whose resources would no longer be sufficient for their needs"*
> *Paragraph 21, Millennium Declaration*

Investing in human development is also good for environment in many ways. A knowledgeable population is likely to respond to

emerging livelihood opportunities, much as it is likely to adopt technologies, control population growth, and take on non-farm enterprises.

It has also been demonstrated that environmental concerns are central to the MDGs, both in the specifics of goal 7 – **ensuring environmental sustainability** – and in its linkage to the other MDGs. In five key areas – livelihoods, health, energy, vulnerability, and participation and empowerment – environmental management can help achieve human development outcomes and other MDGs.

Likewise, achieving five aspects of HDI and other MDGs – poverty reduction, education, gender equity, health and cooperation – can help achieve MDG 7 on environment. Moreover, without attention to the environment, the benefits of achieving the other goals may be short-lived as there are synergies and linkages across all MDGs. This implies that by conscious programming across various sector plans, Uganda could contribute to the attainment of several MDGs.

A related policy implication from the above analysis is that since environment is central to the MDGs, there is justification to raise sufficient resources for investing in it. As a first strategy, environmental management must become part of all aspects of development.

Secondly, additional funding needs to be raised for new or expanded investments e.g. for water and sanitation. Thirdly, the government should provide policy framework to enable institutions and people to forgo certain opportunities.

For example, in complying with the requirement to reduce ozone-depleting substances in the spirit of the Kyoto Protocol, institutions and people will incur costlier production processes and for which they will need support. Uganda needs to provide incentives to enable institutions and people manage the transition towards environmentally friendly technologies.

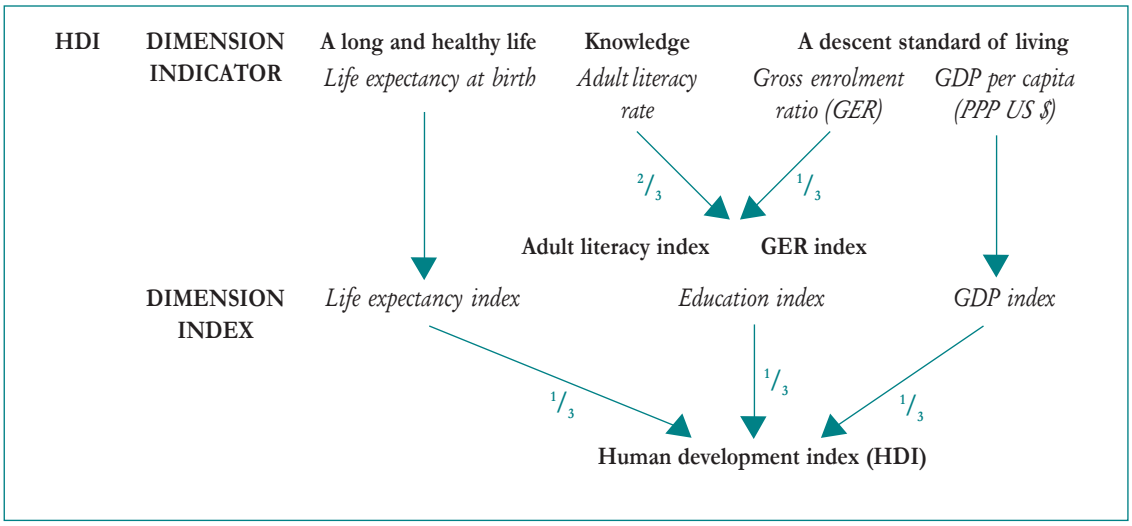
3 Human development performance

3.1 Human Development Index

3.1.1 Introduction

Human development involves the process of widening people's choices and the platform for making such choices, especially through expanded human capabilities (UNDP 2002). That way people can develop their full potential in order to lead productive and creative lives in accordance with their needs and interests (UNDP 2001).

Human development is measured by the human development index (HDI), which is a composite index embracing longevity (measured by life expectancy), knowledge (measured by education attainment) as a composite indicator combining adult literacy and gross enrolment in the ratio of two thirds and one third, respectively, as well as income per capita (measured in terms of purchasing power parity). Life expectancy index, education index and GDP index are all weighted by $^1/_3$ to derive HDI. This is summarised below:

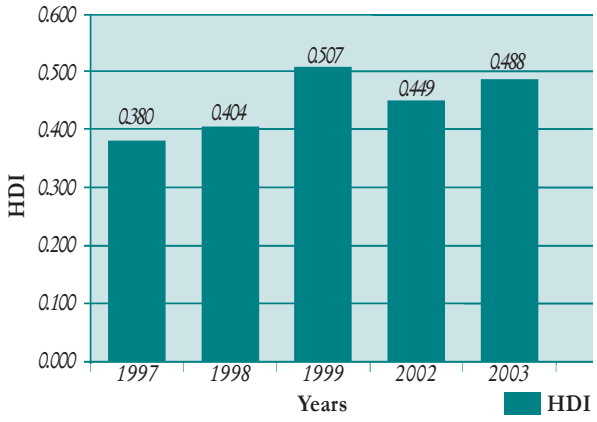


The HDI indicates the extent of empowerment needed to achieve human development. The index ranges from 0 to 1, and reflects better levels of human development when it is closer to one, and otherwise if it is closer to zero.

3.1.2 The National Human Development Indices

In 2003, Uganda's HDI was 0.4888; an improvement from 0.449 in 2002 (*Figure 3.1*). First, there has been improvement in people's education. More than two thirds (68%) of the population aged 10 years and above in 2002 were literate, that is, could write or read with understanding in any language. This was an increase from the 54% observed in 1991. However, wide sex disparities still exist in the literacy rates with 76% of the males being literate compared to 61% of the females (*Figure 3.2)*. Despite the high levels of literacy in absolute terms, more than 5 million Ugandans aged 10 years and above were illiterate. Northern Uganda's literacy levels are lower than the rest of the country (*Figure 3.3.*).

Fig 3.1 Human Development Indicies for different years

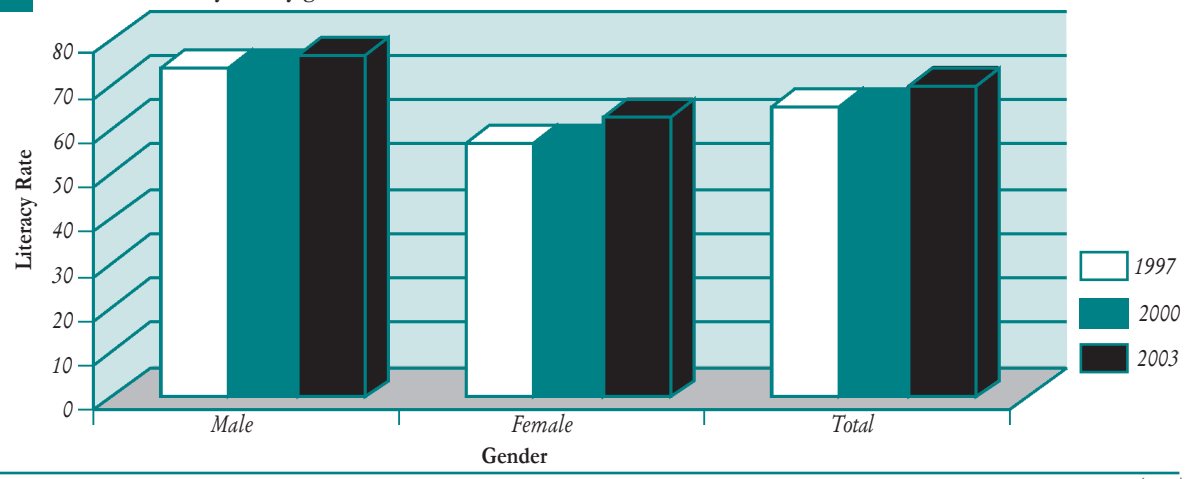


Source: *Computed from UBOS data*

The higher literacy rates are mainly due to improvements in enrolments and the functional adult literacy programme. Further, in 1997, Uganda introduced Universal Primary Education (UPE). Its introduction saw primary school enrolment figures increase from 3.4 million in 1996 to 7.3 million in 2002.

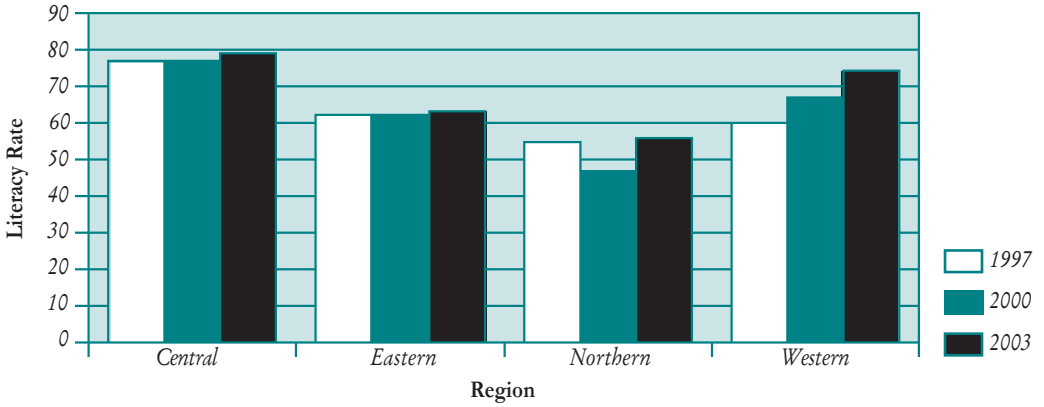
The government's aim was to achieve a 98% enrolment rate for this group by 2003. Current estimates put the enrolment rate at 79%. Although the 2003 target has not been met, current trends suggest that realising the MDG

Fig 3.2 Trends in literacy rate by gender



Source: *UNHS (2003)*

Fig. 3.3 **Literacy rate by region**



Source: *UNHS (2003)*

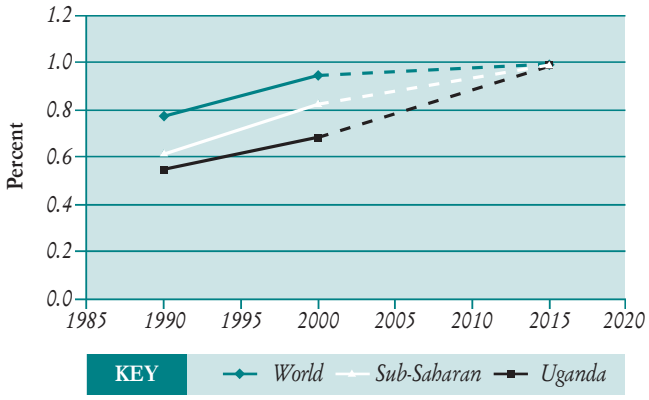
target on universal primary education seems feasible (see *Figure 3.4*).

Secondly, according to the 2004 Global Human Development Report, life expectancy for Uganda is estimated to have improved from 43 years in 2000 to 45.7 years in 2004. Improvements in the delivery of health services and the success in the fight against HIV/AIDS also explain the increase.

The joint efforts of Government, development partners, and the civil society to fight HIV/AIDS have resulted into a significant reduction in prevalence from 18.5% in 1992 to 6.2% in 2004. This outstanding accomplishment is largely attributed to political commitment and civil society support.

Despite the impressive gains in the fight against HIV/AIDS, other health indicators, namely infant and maternal mortality, have not improved. According to the 2000/2001 Uganda Demographic and Health Survey (UDHS), infant and maternal mortality indicators deteriorated between 1995 and 2001. As a response, government has prepared an Infant and

Fig 3.4 **Enrolment trends**



Source: *MGD/HDR (2004)*

Maternal Mortality Strategy. The strategy recognises that improvements in health outcomes are a collective responsibility of many players. Its focus is on improving the quality of health care and treatment of malaria, sanitation, community mobilisation and family planning.

The income indicator however, does not portray a rosy picture. Findings from the national household survey 2002/2003 show an overall increase in income poverty. The eastern region registered the highest increase in poverty (from 35% in 1999/2000 to 46 percent in 2002/2003),

which is a result of many factors including intensified cattle rustling in Karamoja and the spill-over effects of LRA insurgency from northern Uganda to the neighbouring eastern districts in the Teso sub region.

The distribution of income measured by the Gini coefficient became more unequal over time, increasing from 0.395 in 1999/2000 to 0.428 in 2002/2003. The increase in inequality and the poor performance of the agricultural sector partly explain the increase in income poverty. However, based on the results of the global HDR, Uganda's HDI has improved between 1990 and 2004 unlike the indices for neighbouring Kenya and Tanzania which have dropped (*Figure 3.5*).

Fig. 3.5 **Comparison of HDI for East Africa**

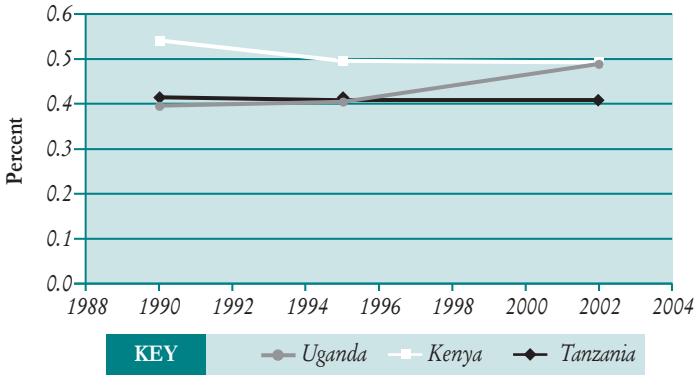
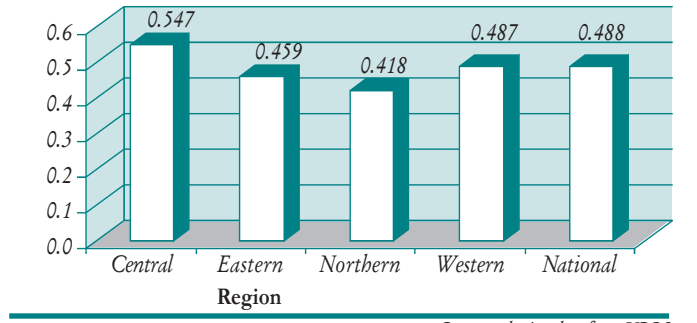


Fig 3.6 **Regional Human Development Indices, 2003**



Source: *Computed using data from UBOS*

3.1.3 Regional Human Development Indices

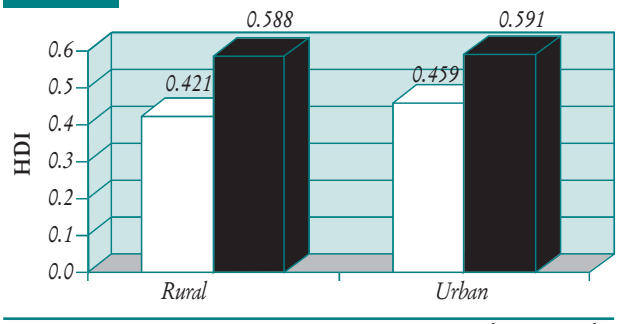
The variations in HDI by region are indicated in *Figure 3.6*. Overall, the Central Region's HDI is higher than other regions and is above the national HDI. This region has much better education infrastructure and opportunities for income.

The northern region is lagging in all the indexed variables mainly because of the insurgency in the region, which hinders profitable economic activities and the displacement of the population. The displacements hinder the attainment of social service goals, such as children going to school or the sick seeking medical attention. However, adult literacy levels for the northern region increased from 46 percent in 1999/2000 to 58 percent in 2002/2003. Other regions also registered small increases in the percentage of literate adults because of the functional adult literacy programme under the Ministry of Gender, Labour and Social Development (MGLSD).

3.1.4 Human Development Indices by Rural-urban Divide

The HDI for urban areas is higher than that of rural areas (*Figure 3.7*). Overall, the rural HDI shows some improvements from 0.421 in 2002 to 0.588 in 2003. On the other hand, urban areas also recorded a slight improvement in human development index from 0.459 in 2002 to 0.591 in 2003. These improvements are mainly because of the increase in adult literacy levels, from 62% percent in 1999/2000 to 67% in 2002/2003 in rural areas, and from 86% in 1999/2000 to 87% in 2002/2003 for urban areas.

Fig. 3.7 Rural-Urban divide



Source: *Computed using UBOS data*

In terms of rural incomes, findings from the national household survey 2002/2003 indicate that household consumption expenditure in rural areas increased from Shs 109,400 in 1999/2000 to Shs 113,300 in 2002/2003 in real terms, while it remained constant in urban areas. The increase in household consumption expenditure, however, was not sufficient to reduce poverty. This is partly due to the poor performance of the crop farming sub-sector where poverty increased from 39 percent to 50 percent between the two surveys.

It is thus imperative that interventions to improve livelihoods should focus on rural areas and, specifically, agriculture on which most people depend. In addition, measures to increase rural incomes, improvement of health service delivery and opportunities for increasing one's knowledge base should put emphasis on rural areas.

Interventions to improve livelihoods should therefore focus on rural areas and, specifically, agriculture on which most people depend.

3.1.5 Human development at district level

Table 3.1: HDI Ranking by District 2004

District	HDI
Kotido	0.231
Nakapiripirit	0.240
Moroto	0.271
Yumbe	0.387
Katakwi	0.390
Adjumani	0.396
Moyo	0.396
Nebbi	0.399
Bundubugyo	0.417
Kumi	0.423
Mayuge	0.425
Gulu	0.428
Bugiri	0.432
Kitgum	0.433
Tororo	0.434
Pallisa	0.438
Kyenjojo	0.438
Arua	0.441
Kamwenge	0.442
Lira	0.443
Soroti	0.447
Kisoro	0.451
Kaberamaido	0.456
Busia	0.458
Apac	0.466
Kamuli	0.468
Nakasongola	0.469
Masindi	0.472
Kanungu	0.478
Iganga	0.480
Sironko	0.481
Kiboga	0.482
Kayunga	0.482
Kabarole	0.486
Uganda	0.488
Rakai	0.489
Mbarara	0.489
Sembabule	0.496
Mubende	0.496
Kibaale	0.496
Kasese	0.497
Hoima	0.498
Kabale	0.502
Ntugamo	0.506
Bushenyi	0.510
Mbale	0.514
Mukono	0.515
Rukungiri	0.519
Luwero	0.520
Mpigi	0.520
Kalangala	0.529
Masaka	0.532
Jinja	0.533
Kapchorwa	0.543
Wakiso	0.601
Kampala	0.615

Districts of Kotido, Nakapiripirit and Moroto continue to lag behind in all indicators of human development. These areas have very low literacy levels and have poor access to water both for human and livestock consumption.

Cattle rustling has complicated the security situation in Karamoja region and the neighbouring districts of Katakwi, Lira, Kitgum, Kumi and Kapchorwa. Overall most of the districts in the northern region have HDI of less than 0.400. The 19 years of the LRA conflict in the area largely explains the low levels of human progress.

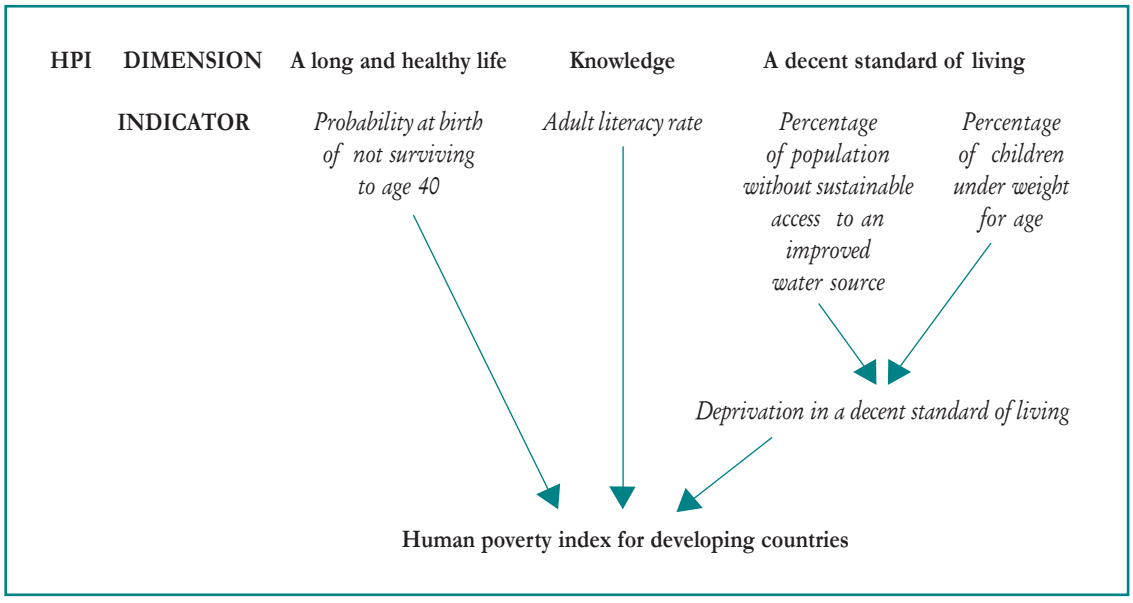
In the Central Region, the districts of Kampala and Wakiso lead the rest in terms of human progress, while Nakasongola District trails the rest in Central Region. In the Eastern Region, Jinja and Kapchorwa districts emerge as leaders in the region while Katakwi district recorded the lowest levels of human progress.

Bundibugyo in the Western Region continues to record the lowest level of human progress based on the ranking of districts.

Table 3.1 summarises the overall ranking of districts. Adult literacy levels are higher (77 percent) in Central than in other regions. Districts that are close to the capital city access and utilise the quality services (education and health care).

3.2 Human Poverty Index

Human Poverty Index (HPI) is a measure of deprivation in three basic dimensions captured in the HDI – a long and healthy life, knowledge and a decent standard of living. This is summarised below. The closer the index is to 0, the better the progress, indicating absence of human poverty, while the closer it is to 100, the more deprived the country is.



The Uganda Participatory Poverty Assessment Process (UPPAP) 1 and 2 state that poverty in Uganda is not just lack of income. Poverty is inability to satisfy a range of basic human needs, and stems from powerlessness, social exclusion, ignorance, lack of knowledge, and shortage of material resources. The different dimensions reinforce each other.

Regions have the highest percentage of malnourished children (UDHS 2000/2001). Poor health conditions in the north coupled with insurgency have retarded progress in the provision of health services. As a result, the health indicators and overall nutrition levels of children in the region have remained poor. Lack of adequate food (with the required nutrients) or acute food shortages and the limited means to acquire enough food are also some of the causes of underweight among children under five, and account for malnourishment of children.

Table 3.2: ***Uganda Human Poverty Index 2003***

REGION	Not expected to survive to age 40%	Illiteracy Rate %	Population without access to safewater %	Children moderately underweight %	Econ. Prov Average of cols (4&5)	Regional HPI	
						2001	2003
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Rural	**44.2**	**41**	**42.4**	**23.6**	**33.0**	**40.3**	**39.9**
Urban	**35.3**	**13**	**13**	**12.4**	**12.7**	**25.0**	**25.2**
Central	*38.2*	*23*	*37.4*	*19.9*	*28.7*	*31.5*	*30.4*
Eastern	*39.9*	*41*	*32.1*	*22.5*	*27.3*	*37.1*	*36.1*
Northern	*47.1*	*54*	*29.7*	*25.0*	*27.4*	*46.1*	*41.7*
Western	*46.8*	*35*	*48.7*	*23.7*	*36.2*	*39.0*	*38.5*
Uganda	**42.9**	**32.3**	**37.4**	**22.8**	**30.1**	**37.5**	**36.0**

Source: *UBOS, 2004*

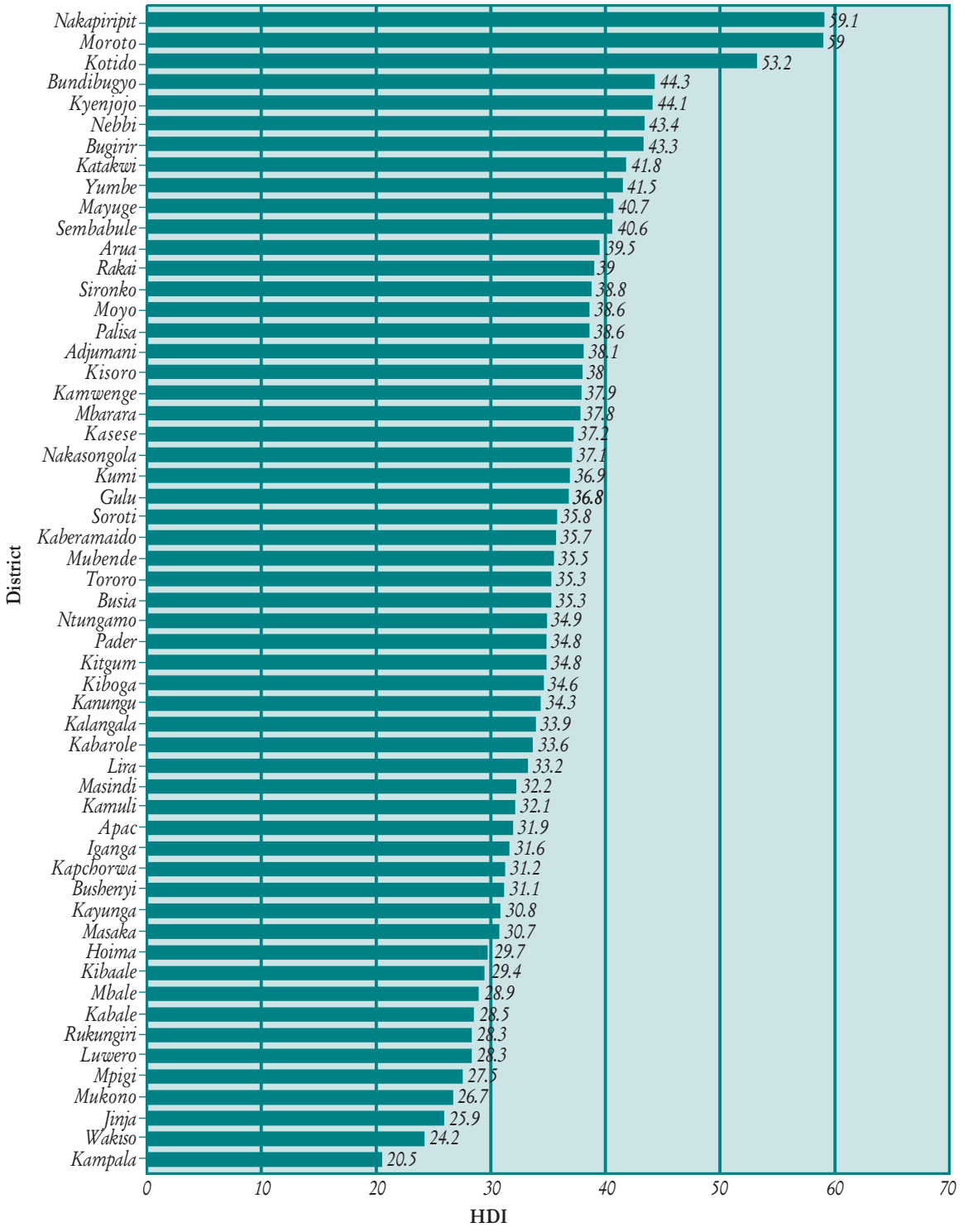
Table 3.2 shows that the overall HPI for Uganda changed from 37.5 in 2001 to 36.0 in 2003. The slight improvement is due to the following factors; decline in the proportion of illiterate population and access to safe water, which improved to 63 percent of the population in 2003 from 57 percent in 2000. Access to safe water increased in rural areas more than in urban areas.

The nutritional status of children is fundamental to the survival of a country's population. Feeding practices and infections directly influence the nutritional status of children. Malnutrition reflects stunting, wasting or a combination of the two. This affects 23 percent of the children under five in Uganda. The Northern and Western

3.2.1 District Human Poverty Index

Ranking of districts in *Figure 3.8* indicate that Moroto, Kotido and Nakapiripirit are also afflicted with human poverty. More than one in every two is human poor in these districts. Although the other districts are not as human poor as those discussed above, Bundibugyo in the west, Katakwi and Mayuge in the east and Sembabule in central also show high levels of human poverty in the respective regions.

Fig 3.8 **Human Poverty Index, at District Level 2003**



3.3 Gender and Human Development

Over the last two decades, the UNDP has been developing frameworks and tools to further the cause of gender equality and human development (Niemanis, J and A. Tortisyn 2003). In the 1970s, the Women in Development (WID) approach was adopted. As a result, women were increasingly regarded as key economic agents, contributing to the development of households, communities and countries. Later, the category "men" were recognised as an important sex in the analysis of social relations. Hence the Gender and Development (GAD) approach was developed. In short, there are economic, political, social and cultural attributes that are associated with gender. Men and women in society have different access to and control over resources and participation in decision making. Therefore, gender equality which is defined as equal enjoyment by women and men of socially valued goods, rights, opportunities and resources, can be achieved.

3.3.1 Gender Empowerment Measure (GEM)

The GEM focuses on opportunities rather than capabilities, and captures inequality in three key areas:

- Political participation and decision making power as measured by women's and men's percentage shares of parliamentary seats
- Economic participation and decision making as measured by two indicators - women's and men's percentage shares of positions as legislators, senior officials, managers and women's and men's percentage shares of professional and technical positions
- Power over economic resources, as measured by women's and men's estimated earned income in PPP ($)

For each of the three dimensions, an Equally Distributed Equivalent Percentage (EDEP) is computed as a population-weighted average, and the GEM is obtained as a simple average of the three EDEP indices.

Table 3.3 ***Gender Empowerment Measure 2003***

Serial No.	Equally Distributed Equivalent Percentage (EDEP)	2001 GEM Index	2003 GEM Index
1	*Parliamentary representation*	*0.5981*	*0.736*
2	*Legislators, senior managers and managers*	*0.4281*	*0.843*
3	*Professionals and technical workers*	*0.8268*	*0.907*
4	*Economic participation*	*0.6274*	*0.875*
5	*Income*	*0.0267*	*0.0348*
6	*Gender Empowerment Measure (GEM)*	*0.4174*	*0.549*

Table 3.3 shows that the GEM for Uganda is estimated to have improved from 0.417 in 2001 to 0.549 in 2003, mainly due to the increase in the number of women in Parliament (from 18.6 percent in 2000 to 24.6 percent in 2003) and the improvement in the percentage of women in senior as well as in professional positions (currently at about 30 percent of the professionals and legislators, and managers). Despite this, the opportunities for women are still few compared to men. The survey data shows that women's share of positions as professional and technical workers is indeed small (estimated at 35 percent). The challenge is to narrow the current inequality gap.

Separate data on earned income for women and men was not available. So the report uses the same income as in the previous year to derive the income index.

3.3.2 Gender, Environment and Poverty

The proportion of the population living below the poverty line declined from 56% in 1992 to 44% in 1997, and further to 34% in 2000 (Uganda Poverty Status Report 2003). However, poverty again increased in 2003 to 38%.

Gender relations within the household and communities are a key determinant of poverty trends as they either enhance or undermine the returns to assets owned by the poor. Returns to major productive resources should accrue equally to men and women in order to maximise the impact of poverty eradication efforts.

There is need to create competitiveness through skill development for women and men to earn incomes and reduce poverty. Poverty has various dimensions, whereby people are deprived of adequate nutrition, good health and education. Socially, they may be denied access to land. People may also lack a political voice and face discrimination and insecurity; which may impoverish them and make them a vulnerable group.

Poverty is predominantly rural and the northern region is the poorest due to the long period of civil strife and conflict. Therefore, absolute poverty has increased, leading to encro-achment on natural resources and marginal ecosystems.

Gender interests vary in space and time, depending on how gender identities are historically and socially constructed and reconstructed. Environmental interests and gender interests could stand in profound opposition. Therefore, gender mainstreaming as a strategy is critical and necessary in representing concerns of women and men as different in relation to the use of environmental resources.

The overall goal of the National Gender Policy therefore is to mainstream gender concerns in order to improve the social, legal, civic, political, economic and cultural conditions of the people in Uganda in general, and women in particular. (*MGLSD, National Gender Policy 1997).*

This policy defines structures and key target areas for ensuring that gender concerns are addressed in all planning activities as well as in implementation, monitoring and evaluation of programme activities. The policy underlines the crosscutting nature of gender, and seeks to integrate it into development efforts at national, sectoral, district and local levels. It also seeks to provide and strengthen the legal basis for existing gender-oriented sectoral policies.

3.4 Challenges of Human Development

The performance of Uganda in human development and environmental management must be analysed in the context of the past and current challenges. While Uganda generally recognises the importance of human capital for sustained economic and social development,

it has not yet fully exploited the use of that capital. So it remains classified as a poor nation.

There are several human development challenges Uganda faces in pursuit of poverty reduction and long term sustainability. They are described briefly as follows:

- **Controlling high population growth rate.** With its estimated 3.4% average population growth rate per annum, Uganda has one of the world's highest growth rates. By comparison, the average annual population growth rate for Sub-Saharan Africa is about 2.1% (UNDP, 2004). The high rate and high dependency ratio put undue pressure on the government to increase its social sector spending. It also exerts pressure on the environment and reduces the per capita benefits from economic growth. To maintain balance between the environment and human development, population growth has to be controlled.

- **Mitigating the impact of HIV/AIDS**. At the current prevalence of 6%, HIV/AIDS denies the country of some of its active population. According to Uganda Human Development Report 2002, with over 1.7 million orphans, Uganda becomes a country with one of the highest rates of orphanhood in the world (UNDP, 2003). The dependency burden is high. In education, by inflicting heavy tolls on the students, parents and teachers, HIV/AIDS is affecting the great pillars of human development. It is equally affecting agricultural productivity. Yet, agriculture is the mainstay of Uganda's economy. Annual loss to GDP is estimated at 0.9% as a result of HIV/AIDS (UNDP, 2002).Women in Uganda are at a disproportionately higher risk of HIV infection than men due to biological, socio-cultural and economic factors (Republic of Uganda and UAC, 2001) In summary therefore, HIV/AIDS continues to affect the quality of life. Some household responses like sale of land and livestock to raise money for treating the sick greatly undermine future investments.

- **Rehabilitating Internally Displaced Persons (IDPs).** Many people in Northern Uganda have lived in IDP camps for close to 20 years. The internal conflict in that region has greatly worsened the poverty situation for a long time. Delivery of social services like education and health were affected; so were economic activities like agriculture, trade and commerce. Despite recent positive developments in the peace discussions between the Government and the Lord's Resistance Army (LRA), the humanitarian situation for the 1.4 million IDPs in northern Uganda deserves urgent and coordinated effort. In an attempt to address the above problem, the government adopted an IDP Policy in February 2004.

- **Unemployment.** Lack of employment was listed as a cause of poverty by 85% and 28% of communities in urban and rural areas, respectively (MFPED, 2002). Open unemployment is mainly urban, particularly among the most highly educated and more so, amongst women. Kampala is the most affected city (Table 3.4).

Table 3.4: Open unemployment, % of labour force 2002

	Male	Female	Total
Total	*2.5*	*3.9*	*3.2*
Urban	*7.5*	*16.3*	*12.0*
Rural	*1.6*	*1.8*	*1.7*
Region			
Kampala	*10.0*	*22.5*	*16.5*
Central excluding Kampala	*2.5*	*5.2*	*3.9*
East	*2.1*	*2.4*	*2.3*
West	*2.2*	*1.9*	*2.1*
North	*0.9*	*1.1*	*1.0*
Educational Level			
No schooling	*2.5*	*1.5*	*1.8*
Primary	*1.6*	*3.1*	*2.3*
Secondary	*4.5*	*11.2*	*7.2*
Above secondary	*3.6*	*7.4*	*5.0*

Source: *MFPED, 2002*

Underemployment (working on economic activities less than 40 hours a week) is widespread, affecting 65% of adults, of whom 75% are women and 25% are men. Visible underemployment (working on economic activities less than 40 hours a week despite being available for work) is the best way of capturing the dimensions of under-utilised labour. It is higher among men than women, and higher in rural areas than urban areas.

Unemployment also means that society is not able to realise the full benefits of its investment in education. The benefit-cost analysis to the economy of the resultant brain drain has not been duly studied. This is crucial and urgent because according to the World Bank Development Report, "cross-border migration, combined with the brain drain from developing countries to industrialised countries will be one of the major forces shaping the landscape of the 21st century" (WB, 2000). Most importantly, there is need to build on remittances of Ugandans working abroad, (over $700 million annually), nearly, twice as high as the Foreign Direct Investment (Daouda Toure, 2004).

- **Low revenue.** The government's priorities on human development, environment and other sectors require substantial funding. Though tax revenues have increased from less than 7% of GDP in 1991 to about 12% in 2002, public expenditure has remained relatively high, at 24.6% of GDP. Thus, the fiscal deficit has continued to widen, reaching 12.4% of GDP in 2002 as a result of failing to match increasing government expenditure with domestic revenue.

The expansion in government expenditure was mainly funded by an increase in donor aid flow, especially to the priority social services, such as UPE and Primary Health Care. Since the government has an objective to reduce the fiscal deficit, its challenge is to increase revenue generation to finance human development and environmental management. Secondly, it must create a favourable environment to attract private sector investment in education, health, environment and natural resources, etc.

- **Restoring public accountability through fighting corruption.** Although Uganda has enacted laws and established institutions to fight corruption, its position on the Corruption Perception Index (CPI) suggests that the country still faces enormous task to fight this vice (see Table 3.5). However, because CPI is based on people's perceptions, it has its limitations as a measure of corruption.

Table 3.5 shows the position of Uganda on the Corruption Perceptions Index. The index describes corruption as the abuse of public office for private gain, and measures the degree to which corruption is perceived to exist among a country's public officials and politicians. It is a composite index, drawing on surveys from independent institutions. The score ranges from 10 (squeaky clean) to zero (highly corrupt). A score of 5.0 is the number Transparency International considers the borderline figure distinguishing countries that do and do not have a serious corruption problem. By Corruption Perceptions Index, Uganda still needs to improve its efforts to fight corruption.

Table 3.5: Trends of Uganda's Corruption Perception Index

Year	CPI	Rank	Number of countries
2000	2.3	80	90
2001	1.9	88	91
2002	2.1	93	102
2003	2.2	113	130
2004	2.6	102	145

Source: *Transparency International Rankings*

4 Environmental goods and services

4. 1 Overview

The previous chapter emphasised that interventions to improve livelihoods should focus on rural areas and specifically agriculture, on which rural people depend. This is tacit recognition of the important role environmental and natural resources goods and services play in improving sustainable human development throughout the country, with particular emphasis on rural areas.

There are several opportunities for reporting on the state of Uganda's environment. Every two years, NEMA is legally required to produce the 'State of Environment Report for Uganda'. Similarly, the districts are also required to produce 'District State of Environment Reports' annually, although they have not been able to do so with the required regularity. The PEAP, revised every three years also reports on some aspects of the state of environment. Pillar 2 of the current PEAP (2004 version) on "Production, Competitiveness and Incomes" calls for the preservation of the natural resource base, particularly soils and forests.

Finally, every 2-3 years, the country is required to report on the progress made in achieving the Millennium Development Goals. In particular, MDG 7 is devoted to ensuring environmental sustainability (*Box 4.1*).

This chapter borrows from the existing processes of reporting on the state of Uganda's environment, but only in the context of sustainable human development

Box 4.1

Ensuring environmental sustainability (Goal 7)

Goals and Targets	Indicators
Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	*1. Proportion of land area covered by forest* *2. Land area protected to maintain biological diversity* *3. GDP per unit of energy use (as proxy for energy efficiency)* *4. Carbon dioxide emissions (per capita) [Plus two figures of global atmospheric pollution: ozone depletion and the accumulation of global warming gases]*
Halve, by 2015, the proportion of people without sustainable access to safe drinking water.	*Proportion of population with sustainable access to an improved water source*
By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers.	*1. Proportion of people with access to improved sanitation* *2. Proportion of people with access to secure tenure [Urban/rural desegregations of several of the above indicators may be relevant for monitoring improvement in the lives of slum dwellers]*

Source: *MDG/HDR(2004)*

This chapter analyses the country's environmental resources – beginning with the atmosphere and climatic conditions, on to terrestrial and then aquatic ecosystems and biodiversity. It also assesses the emerging problem of pollution.

One conclusion is that although Uganda was well endowed with environmental resources initially, the extent and quality of the country's natural capital is on the decline (*Box 4.2*). The main causes are demographic forces and some policy failures. This chapter, therefore, focuses on quantity, quality, access, and opportunities presented by the existing stock of environmental goods and services.

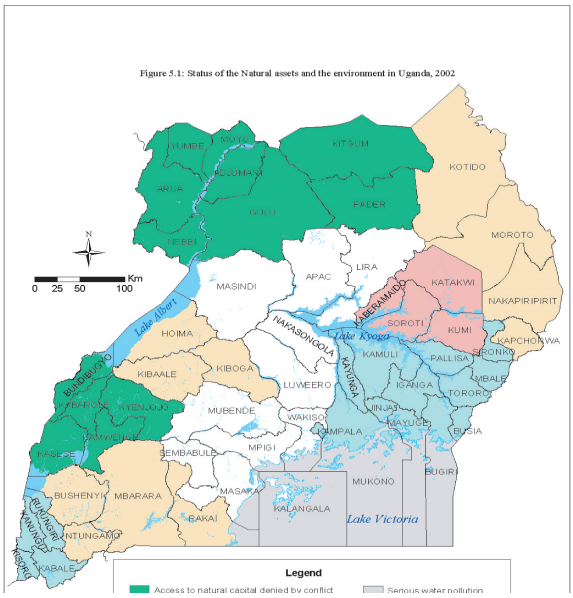
Box 4.2

Declining environmental quality

During the Participatory Poverty Environment Assessment (PPEA), people stressed that declining soil fertility, deforestation, pasture degradation, and decreasing fish stocks are impacting heavily on their livelihoods by constraining their ability to increase their incomes and making them more vulnerable. Women in particular were concerned about these changes. They found that they were now walking longer distances to more isolated places to collect resources such as wood, grass and wild fruits. This was increasing their work burden and exposing them to new risks.

While Uganda enjoyed rapid economic growth during the last 10 years, this growth has put significant stress on the country's natural resource base as manifested by increasing environmental degradation (MoFPED, 2003). There is loss of agricultural productivity; loss of forest cover particularly outside protected areas; water pollution caused by discharge from industries and domestic waste; and a declining resource stock because of over-harvesting and encroachment on wildlife areas and wetlands (MoFPED, 2003; NEMA, 2003). Consequently, the quality of the environment on which most poor people depend is declining, which in turn limits livelihood opportunities, forcing people to over-rely on fewer resources (MoFPED, 2003).

Fig 4.1 **Status of the Natural assets and the environment in Uganda, 2002**



Source: *MoFPED 2003*

Figure 4.1 shows that regional inequalities exist in the quality, access and utilisation of natural resources across the country (DFID, 2002). A significant number of households in parts of northern Uganda are confined in internally displaced people's (IDP) camps, unable to access and make use of natural assets; while severe natural resource degradation occurs in south-western, central and eastern Uganda on account of population pressure. Areas bordering Lake Victoria are contributing to

nutrient enrichment and water pollution problems because of watershed degradation. Introduced species of Nile Perch are also decimating the indigenous fish populations of the lake (MoFPED, 2003).

All these regional inequalities pose serious challenges to interventions aimed at raising household incomes of the poor and undermine human development (MoFPED, 2003).

The main causes of environmental degradation include: poor farming methods; unequal gender relations; demographic pressures leading to land scarcity; limited non-farm income generating opportunities; lack of efficient energy sources; and armed conflicts (MoFPED, 2003; NEMA, 2003).

Communities have adopted various coping mechanisms to manage environmental degradation. At the institutional level, new approaches have also been recommended to promote better methods of environmental resources management. In addition, policies have been formulated at the national level to implement various legal provisions to combat the mismanagement and misuse of Uganda's environmental resources.

The successes of these initiatives vary and the indications are that more needs to be done if environmental goods and services are to contribute more towards human development.

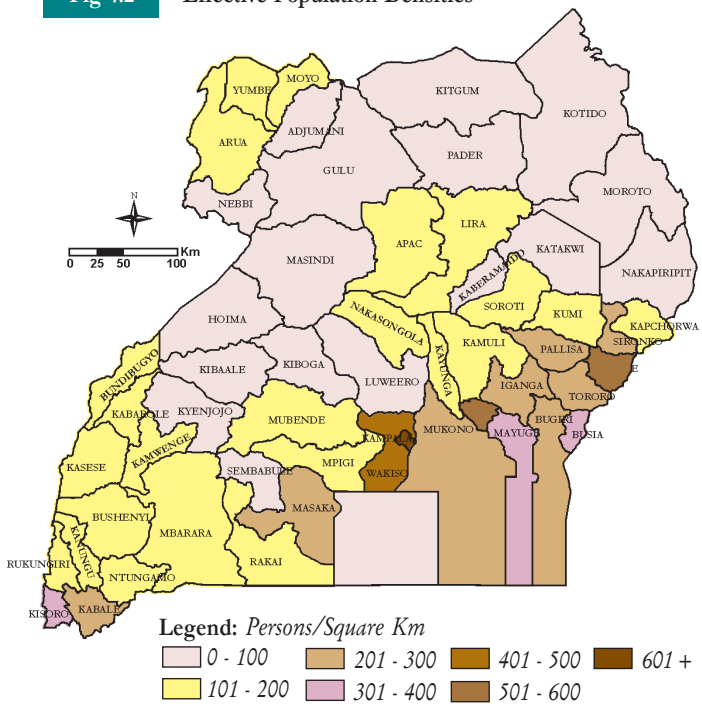
Poverty in particular has to be combated at all costs, because it is one of the causes of environmental degradation. Secondly, the poor are at the same time almost exclusively the victims of environmental degradation. They have limited options to cope with environmental degradation or improve their levels of human development.

A key factor in environmental degradation is the rural character of Uganda's population. National population density data often do not tell the whole story. For example, in 2002, whereas population densities for Mayuge and Bugiri districts were reported as 96 and 72 persons per square kilometre, respectively, most of the two districts are covered by open water bodies and, therefore, not available for cultivation. Excluding the areas covered by water bodies, *effective population densities* on land become 302 and 264, respectively. The latter figures are therefore better indicators of land pressure. The story is the same for other districts with extensive water bodies and protected areas that are not accessible to the communities.

Figure 4.2 is a map showing effective population density distribution in Uganda. The population density in 14 out of the 56 districts is above 201 persons per square kilometre. The population in these districts represents 34.7% of the national total. They partly explain why the central forest reserves in these districts have been severely encroached. There is extreme pressure on agricultural land in Busia, Kisoro and Mayuge districts, each with population densities between 301-400 persons/km^2. Increasing agricultural production in these districts calls for intensification because it is not feasible to expand areas under cultivation due to land scarcity. Where population density is 201-300 persons/km^2, some limited area

expansion may be possible but the outlook is also for intensification. Some 41 districts have population density under 200 persons/km^2. In these districts, there is room for bringing more land under cultivation or grazing.

Fig 4.2 **Effective Population Densities**



4.2 Climate and Atmosphere

Climate, perhaps Uganda's most valuable environmental resource, is also at the same time the most neglected. Climate is neglected partly because until recently, it was predictable and the capacity of the atmosphere to assimilate degrading effects was well beyond the magnitude of polluting substances introduced into the atmosphere.

A second cause of neglect is that climate is a global common and at the same time transboundary. Thirdly, it is regarded as an act of God.

Agriculture, Uganda's main engine of economic growth, is mostly rain-fed. Agriculture is profoundly influenced by and dependent on climate. Uganda's subsistence farmers who constitute the majority of the poor are dependant on climate, which directly influences their ability to raise incomes and improve upon their quality of life. Consequently, this has a bearing on Uganda's ability to attain the Millennium Development Goals, especially the one related to poverty reduction, the Government's ambitious goal of 10% mass poverty by 2017 notwithstanding. For the majority of Ugandans, human development is intricately linked to climate because of dependency on agriculture.

Climate change and climate variability are the two main issues of concern to Uganda. Climate change[2] is caused by the release of greenhouse gases. Fortunately, the country's extensive flush green vegetation is able to absorb all the greenhouse gases it generates plus those from other countries, since these gases know no national boundaries.

Climate change and environmental degradation have led to food shortages and increased pressure on available land and water resources in the Horn of Africa (Mkutu, 2004), including the Karamoja region. Sub-Saharan Africa (SSA) including Uganda is the most vulnerable to climate change because widespread poverty limits the region's capabilities to adapt to continually changing climate (TAC, 1999).

[2] *Climate change refers to the long-term change of one or more climatic elements from a previously accepted long-term mean value, which must be statistically proven as significant.*

Climate variability[3] is presently one of the most pressing environmental problems in Uganda (NEMA, 1997). Persistent droughts as a result of prolonged dry seasons, and flooding due to flash storms and hailstorms, including shifts in seasons are of great concern because they impact directly on agricultural production and, hence, human development.

The last few decades have seen an increase in the frequency and intensity of these extreme weather events, with adverse socio-economic consequences including loss of human welfare as illustrated in *Box 4.3*.

Box 4.3

Wrath of *El Nino* in Uganda

525 people died and an additional 11,000 and more hospitalised and treated for cholera, which was triggered by the El Nino, induced floods and landslides.

1,000 people were reported to have died in floods-related accidents.

Damage to trunk and rural roads infrastructure was estimated at about $400 million.

Infiltration of water resources and the flooding (submerging of some pumping stations).

Source: *NEMA (2003)*

Of particular concern is the monthly variation of rainfall that has made it impossible for farmers to predict when to plant annual crops. As a result, the failure of these crops is now a common occurrence triggering famines and reliance on relief food aid. This is undermining the country's food security situation and human development.

[3] *Climate variability is the sharp, short-term variations of meteorological elements as compared to the long-term mean value of the elements*

To make matters worse, the communities have largely abandoned traditional crop storage in granaries at household level as a food security measure. The government's grain silos are also empty! Bylaws requiring each household to have a minimum acreage devoted to the growing of femine-reserve crops, such as drought-resistant cassava, are not enforced. The northern and eastern regions are particularly vulnerable since they depend mostly on one rainy season per year and grow annual crops, unlike their central and western counterparts who depend on perennial crops.

The poor consider themselves highly vulnerable to sudden climate-related shocks and changes in physical conditions (*Box 4.4*). Except for a few areas, rainfall in Uganda is relatively good. It is the uncertain start, duration and cessation of the rainy season which are of concern.

Box 4.4

Highly Vulnerable to sudden shocks and changes in physical conditions

During the Second Participatory Poverty Assessment, the poor explained that due to their heavy dependence on environmental resources, their livelihoods are highly vulnerable to sudden shocks and changes in physical conditions. In 9 out of the 12 districts assessed, people reported that unpredictable weather patterns and climatic conditions, characterised by usually heavy and erratic/unreliable rains, lead to crop and infrastructure damage causing food insecurity. Strong winds and hailstorms, which destroy crops or disrupt fishing activities, were noted to be causes of poverty by people in 5 districts. In 10 of the 12 districts, it was reported that flooding damages crops and physical infrastructure, and contaminates domestic water sources, increasing vulnerability to diseases such as cholera. Drought was also said to be common in 11 of the 12 districts studied, causing declining crop yields and food shortages. In this case, households cope by reducing the number of meals eaten per day, which in turn affects the health of women and children. Water problems associated with drought were mentioned in four districts by mainly cattle keepers, forcing them to move their livestock, leading to degradation of watering points (MoFPED, 2002).

Source: *MoFPED (2002)*

Unfortunately, there are yet no significant investments being made to improve the country's ability to monitor and forecast climate change and climate variability. There are for example no early warning systems. Furthermore, the capability of the ministry for disaster preparedness and management in the Office of the Prime Minister (OPM) to prepare for and handle disasters arising from adverse climatic changes is also limited. It should be relatively easy to advocate for a higher level of resource allocation for the Department of Meteorology and the ministry responsible for disaster preparedness and management in accordance with the principle that "prevention is better (cheaper) than cure".

4.3 Lands and Soils

Table 4.1 shows that, of the total area of Uganda, 84,694 km^2 is farmland. In turn 84,010 km^2 of this farmland area is under subsistence agriculture while a mere 684 km^2 are commercial farms, illustrating the importance of land in supporting rural livelihoods. Land is thus the major constituent of household assets, an important component of the measure of human development.

Table 4.1: Area and distribution of land-use/cover at national level

Stratum	Area (ha)
Plantations hardwoods	*18,682*
Plantations Softwoods	*16,384*
Tropical high forests (normal)	*650,150*
Tropical high forests (degraded)	*274,058*
Woodlands	*3,974,102*
Bush lands	*1,422,395*
Grasslands	*5,115,266*
Wetlands	*484,037*
Subsistence Farmlands	*8,400,999*
Commercial Farmlands	*68,446*
Built up areas	*36,571*
Water	*3,690,254*
Impediments such as rocks, etc.	*3,713*
Total	**24,155,058**

Source: *NEMA (2003); NBS (2002)*

Article 237 of the Constitution of the Republic of Uganda provides that land belongs to the citizens of the country under four tenurial arrangements, namely: customary, freehold, *mailo* and leasehold (RoU, 1995). These tenurial regimes are further provided for in the Land Act, 1998. The different land tenures and their features are presented in *Table 4.2.*

Table 4.2: Land Tenure Categories, Key Features and Geographical Incidence

Tenure/Issues	Key Features	Geographical incidence
Customary	*"Traditional" land tenure, varying in different areas. More individualised in south and west, more communal in north and east. Can be issued a customary certificate of ownership and this is an incentive to the customary tenant to invest in proper land management practices which are long -term.*	*Countrywide*
Leasehold	*49 or 99-year leases, with development conditions. The conditions can be used to promote conservation or increase agricultural productivity. Ground rent and premium payable. Leasehold title issued.*	*Countrywide, especially in urban areas*
Freehold	*Registered ownership in perpetuity, with full powers of ownership including development and disposing the land at will. Can encourage land fragmentation, which is not conducive to proper soil management and conservation and this undermines production. Freehold title issued.*	*Predominantly in southern and western Uganda*
Mailo	*Limited form of freehold, which recognises tenants' rights. This ownership refers to the holding of registered land in perpetuity. Squatters have subjected some tracts of land to degradation for a long time. Mailo title issued. This should motivate tenants to invest in land improvement technology and increase agricultural productivity.*	*Central region of Uganda*
Occupancy	*Right to occupy land under specific conditions based on occupation prior to 1983.*	*Countrywide on any registered land*
Renting	*Use rights to land for a defined period subject to payment of rent.*	*Varies countrywide*
Borrowing	*Use rights to land for a defined period subject to payment of part of harvest.*	*Varies countrywide*

Source: *MWLE (2001)*

Land degradation, principally caused by soil erosion itself a result of different ownership types, utilisation and management systems, is on the increase. Slade and Weitz (1991) estimated that soil erosion accounted for 4-10% of the Gross National Income (GNI) and represented as much as 85% of the total annual cost of environmental degradation. Yaron, Moyini and others (2003) suggested that the economic cost of soil erosion was about 11% of GDP (gross domestic product) which meant that the total annual cost of environmental degradation in 2002 was about 13% of GDP. Drawing on more recent (2002) IFPRI soil nutrient loss studies and the 2002 Census Data the authors calculated the value of soil nutrient loss to be about $625 million per annum!

Capitalised at a time preference rate of 12% (the social cost of capital for public projects), the cost of soil erosion translates into a debt of $5,200 million/year.

Unfortunately, this debt is invisible and unrecorded in official system of national accounts. But the burden is equivalent to *per capita* soil erosion debt of about $210. Who is to pay this debt? Is it present or future generations?

When the loss of soil nutrients is taken into account, it becomes obvious that Uganda's annual net savings is negative. This means current practices and the country's development are not sustainable. The formation of physical and human capital is too slow to offset the loss of natural capital. Practical steps need to be taken, therefore, to reduce soil degradation if it is not to undermine human development, and the strategy for doing so needs to be clearly defined in the Plan for Modernisation of Agriculture (PMA), the framework for transforming subsistence agriculture into commercial farming.

In general, where population density is high, so is the proportion of land affected by erosion. However, even in some of the districts with low population densities such as Kotido, the severity of soil erosion is high due to the fragile nature of the rangeland ecosystem exacerbated by over-grazing. The rangelands are typically found in what is referred to as the *'cattle corridor'* that covers 16 of the 56 districts (or about 37% of Uganda). This area holds close to 28% of Uganda's rural population, with average density of 65 persons per square kilometre.

Land is a key resource of production and the main capital available to the majority of the people (MoFPED, 2003). Land supports agriculture on which the country depends. Access to land is thus the basis for rural livelihoods (MoFPED, 2003) and human development.

During the Second Uganda Participatory Poverty Assessment Project (UPPAP 2), it became evident that access to land was increasingly becoming a problem for poor people (MoFPED, 2003). Findings from the assessment showed that households were not accumulating land; rather, this asset was diminishing (MoFPED, 2003). Households owning most land in 2002 found themselves owning the same acreage as in 1993 having recovered from a dip in 1996. The middle and poorest households on the other hand saw their landownership decreasing significantly

(MoFPED, 2003). The challenge, therefore, is to identify opportunities in which poorer households can take advantage of alternative sources of income while making the best use of the little land they are left with (MoFPED, 2003).

The root causes of land scarcity are: large families, particularly polygamous ones; distress sales by poor people; insurgency in the north; inadequate land use planning; commercial farming; and rural-urban migration (MoFPED, 2003).

Government policy regarding land is to provide security of tenure for all, particularly the poor and create an enabling environment for participation of all stakeholders in effective planning, management and use of Uganda's land resources (MoFPED, 2003). But several challenges remain. Unequal gender relations for example constrain the ability of the poor to raise their incomes and undermine efforts to stimulate new export-oriented production (Eilor and Giovarelli, 2003; MoFPED, 2003).

Another challenge is that the legal changes under the Land Act aimed at strengthening land rights of married women, dependent children and orphans (by requiring consent to transactions on family land) have little effect on the ground. There is thus need to 'revisit with caution' the issue of co-ownership of family land (MoFPED, 2003).

4.4 Forests and woodlands

Forests and woodlands constitute one of the important elements of the Ugandan landscape. They are at the same time vital to people's livelihoods, particularly the rural poor, and hence human development. Forests provide a wide range of products and ecological services on which the poor depend for basic subsistence and agricultural production. Through its strong forward, backward and horizontal linkages, forestry can also contribute significantly to employment and economic growth and further improve upon human development.

Around 1890, forests and woodlands covered about 108,000km^2 (MUIENR, 2000) of Uganda; and as of 2002, this coverage had shrunk to approximately 49,000 km^2 (MWLE, 2002). Seventy percent of the remaining forests and woodland area, are on private or customary land *(Table 4.3).* The other 30% represents what is called the *Permanent Forest Estate (PFE),* which by law is land held in trust by Government for the citizens.

Table 4.3: Approximate areas of forest and woodland under different categories of ownership and management

Forest type	Government Land (ha)		Private Land (ha)	Total* (ha)
	Central and Local Forest Reserves	*National Parks and Wildlife Reserves*	*Private and Customary Land*	
Tropical High Forest	*320,354*	*267,000*	*351,000*	*924,000*
Woodlands	*411,578*	*462,000*	*3,102,000*	*3,975,000*
Plantations	*20,041*	*2,000*	*11,000*	*33,000*
Total Forest	*737,000*	*731,000*	*3,464,000*	**4,932,000**
Other cover types	*414,000*	*1,167,000*	*13,901,000*	*15,482,000*
Total land	*1,151,000*	*1,898,000*	*17,365,000*	*20,414,000*

** Total land area excludes area covered by water.*

Source: *MWLE (2002)*

The distribution of forests varies greatly by region. Northern Uganda is dominated by woodlands for example, while most of the tropical high forest ecosystems are found in western Uganda (*Table 4.4).* According to IFPRI (2003), while it is well known that tropical high forests are rich in plant economic resources, rural peoples' access to these forests is often constrained by conservation concerns.

Moist savannas (woodlands and bushlands) have relatively low conservation value, cover large areas of the country, and are more accessible to local people than tropical high forests (IFPRI, 2003). The potential for nature-based economic activities therefore appears to be higher in Uganda's moist savannah areas (IFPRI, 2003).

forest management regimes; private sector led labour-intensive industrial forest plantations should be promoted; commercial markets for feasible ecological services (e.g. carbon sequestration) should be developed; and forest products and services should be priced at their true economic rent values to discourage rent seeking and resource wastage (Moyini, 2004).

Poor people's access to forest resources must be improved; enhancing opportunities for joint or collaborative forest management between the National Forestry Authority (NFA) and the surrounding communities. Interventions should ensure equitable sharing of benefits from forest revenues between the NFA and communities; establishment of woodlots for firewood, etc; promoting trade in non-timber forest products;

Table 4.4: ***Forest Distribution by Region (ha)***

Strata	Central	Eastern	Northern	Western	Total
Hard woods	*4,370*	*4,856*	*2,628*	*6,827*	*18,682*
Conifers Plantations	*2,746*	*2,140*	*3,238*	*8,259*	*16,384*
THF (normal)	*136,874*	*29,987*	*1,458*	*481,830*	*650,150*
THF (depleted)	*134,177*	*48,868*	*5*	*91,007*	*274,058*
Woodlands	*715,449*	*224,685*	*2,194,463*	*839,505*	*3,974,102*
Total	**993,616**	**310,536**	**2,201,792**	**1,427,428**	**4,933,376**

Source: *MWLE (2002)*

Forests by their nature are rural, where the majority of Uganda's poor live. Forest management operations, harvesting and processing are labour-intensive with strong linkages to other sectors of the national economy. Given these attributes, forests therefore offer an important resource for poverty reduction and the improvement of human development. However, to realise pro-poor growth opportunities, some interventions need to be put in place. Trade in forest products should be promoted on the basis of sustainable and promoting soil and water conservation and agro forestry.

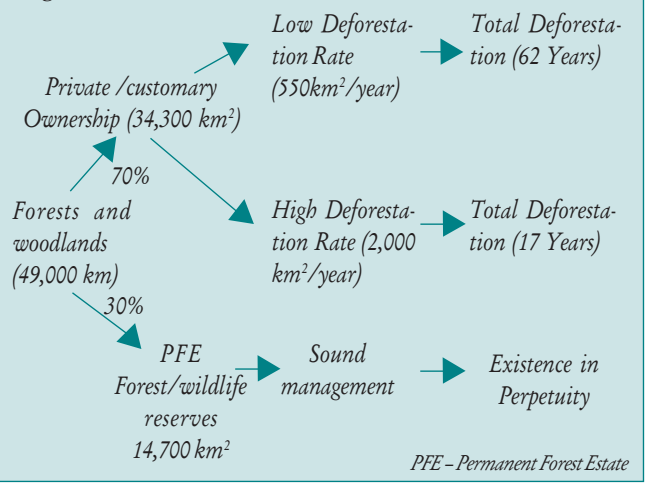
In the absence of compensatory planting of trees, current trends show Uganda is losing its forest cover through deforestation. Estimates of annual deforestation rates vary, from 550 km^2 per year (FAO, 2000) to 700 km^2 - 2,000 km^2 / year (FD, 2000; MoFPED, 1994). The primary cause of deforestation is conversion to agricultural land. Since 70% of forest and woodland areas are private or customarily

owned, the decision to convert into agriculture is easily made since people perceive the latter to generate higher returns than forestry.

On the other hand, so long as Ugandan agriculture remains low-input and low-yield, more and more land will be brought into production to meet future demands. At a low rate of deforestation, all privately or customarily-owned forests and woodlands could be converted within 62 years; while with a higher rate of deforestation the conversion time period would be much shorter, 17 years (*Box 4.5*), if afforestation and reforestation are not promoted.

Box 4.5

Uganda Deforestation Scenarios



PFE – Permanent Forest Estate

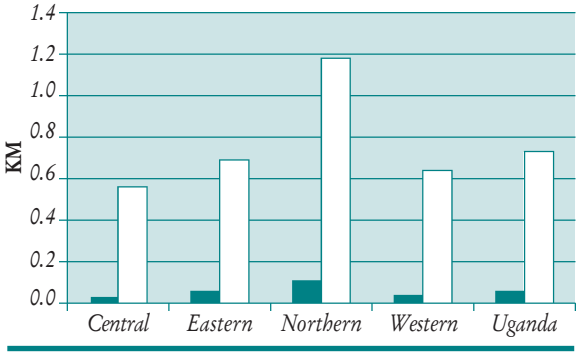
Deforestation is not only caused by increased demand for agricultural land. Policy failures have also contributed to the shrinking of the forest cover. For example, peri-urban forest plantations around towns have been degazetted in favour of urban development with no provision for green belts. Some peri-urban forest plantations have been cleared to deny rebels hiding places.

Other factors contributing to deforestation are: lack of alternative energy sources which leads to over-harvesting of trees for firewood; high population growth and large families; absence of effective systems for enforcement of forest and other environmental laws; and increased demands for construction materials and charcoal (MoFPED, 2003).

Deforestation has in turn led to increased poverty through higher fuel wood (firewood and charcoal) costs, both in terms of money and time spent in collection (MoFPED, 2003) thus exacerbating human development condition. Distance travelled particularly by women and children to collect firewood has increased dramatically between 1992 and 2002 from 0.06 km to 0.9 km, being much further in rural areas and particularly in northern Uganda (MoFPED, 2003; UBOS, 2002).

The increasing distance travelled impacts negatively on household productivity since the time spent on collecting firewood could have been used for other economic activities (*Figure 4.3*). There is therefore need to improve energy usage in rural households to sustain resources and to reduce indoor air pollution.

Fig 4.3. **Average distance travelled by households in Uganda to collect firewood**

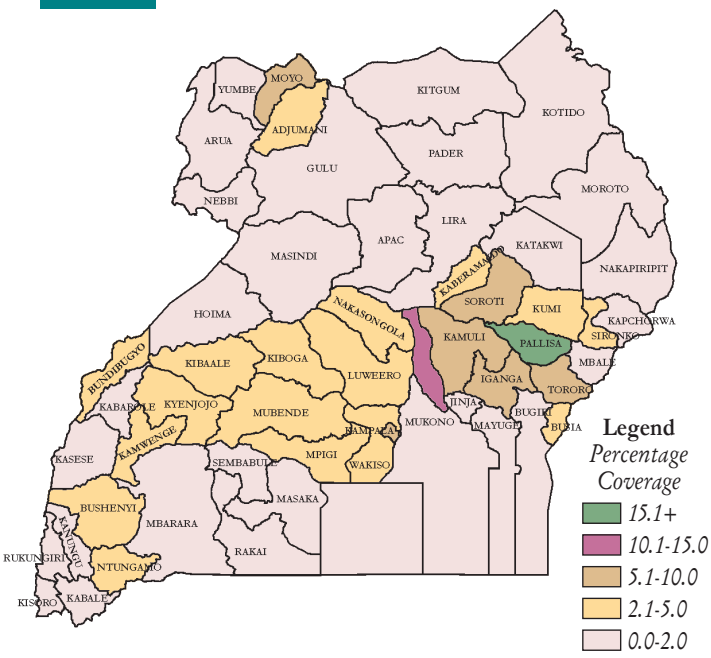


Source: *MOFPED (2003)*

4.5 Wetlands

Wetlands are 'granaries for water' according to President Yoweri Museveni. Wetlands cover approximately 13% of Uganda (NEMA, 2001). Wetlands include impeded drainage areas accounting for 69% of all wetlands; swamps (30%) and swamp forests (1%). Virtually every district has a wetland area. Districts with extensive wetlands accounting for 5-20% of their respective areas include Pallisa, Kayunga, Tororo, Iganga, Kamuli, Soroti, Kampala and Moyo *(Figure 4.4)*.

Fig 4.4 Wetland areas of Uganda



Wetlands provide direct income opportunities for rural people; and indirect benefits in form of environmental goods and services that improve the quality of living conditions of the rural population through water storage, purification and flood control (MoFPED, 2003). When harnessed right, all these benefits go towards improvements in human development. In terms of poverty reduction, the direct and to a lesser extent indirect values are most important (MoFPED, 2003). In rural areas, households engaged in papyrus harvesting are estimated to be deriving as much as $200 a year each from their wetland activities (Emerton, *et al*, 1999). Five million Ugandans are estimated to depend on wetlands for their water supply. Using conservative estimates for *per capita* water consumption, this translates into 50 million litres per day, valued at about U.S. $425 million per year (MoFPED, 2003).

Wetlands have more potential to contribute significantly to pro-poor economic growth as the majority of the rural population of Uganda live around wetlands. Wetlands can contribute to pro-poor economic growth through: the promotion of wetland products (such as handicrafts and rattan furniture) in export markets; raising the wetland gate prices for products sold by the rural poor in an effort to increase their incomes; improving upon the legal framework for wetland ownership, management and control; and promoting aquaculture in wetlands.

Unfortunately, significant areas of wetlands have been degraded, some completely reclaimed thus undermining the functions of, and access to, wetland resources. This is especially true for wetlands outside protected areas. Some of the practices which have led to wetland degradation include: drainage or 'reclamation' for agriculture, and for property and other infrastructure development; sand and clay mining; waste dumping; deforestation; and fires.

The rate of wetlands degradation was extremely low (0.05% per year) in the 1960s. This increased dramatically to 7.9% per annum in the early 1990s. However, it has since been significantly reduced to 2.9% per year (since the late 1990s).

Wetlands degradation is highest in eastern Uganda, followed by western, then central and lastly northern region (NEMA, 2003).

4.6 Water Resources

Uganda is well endowed with a network of open water bodies consisting of lakes, rivers and streams. Also, lakes Victoria, Albert and Edward are shared with neighbouring countries, while lakes Kyoga, Kwania, Bisina, Opeta, Wamala, George, Bunyonyi and other smaller ones are entirely within the national boundary. Lake Victoria, the second largest freshwater lake in the world, is shared between Uganda, Kenya and Tanzania; while most of the Ugandan rivers drain northwards into the Mediterranean Sea. Uganda's water bodies are important means of transport and hold the country's fisheries resources and biodiversity; are sources of hydropower; and offer recreation opportunities. In addition to surface water bodies, Uganda also has significant volumes of groundwater resources. Groundwater resources make up the largest source of supply for rural populations and several small towns as described under the section on water and sanitation further below.

The water quality in L. Victoria and the Victoria Nile (part of R. Nile) has deteriorated over the last two decades. Lake Victoria has been contaminated by domestic and industrial waste discharge, siltation from catchment degradation and conversion of wetlands around the lake to other uses. Also, some areas, especially the urban ones, are facing ground water pollution from on-site siltation, inappropriate waste disposal systems, and mineral waste.

4.7 Fisheries

Uganda has substantial fisheries resources comprising of capture fisheries and aquaculture with the latter currently contributing only a small fraction of the country's annual catch. The country is estimated to have the potential to sustainably produce about 330,000 metric tonnes of fish annually through capture fisheries. Artisanal fisher folks, estimated at over 136,000, dominate the fishing industry and over 700,000 people are directly involved in fisheries-related activities such as processing, trading and boatbuilding. Others are involved in industrial fish processing, fishnet making, fish equipment trade, research, extension and administration (RoU, 2004).

Annually, Ugandans consume about 13 kg of fish *per capita*, a high quality protein. Fish is the most important source of protein for the people in central, eastern and northern Uganda (particularly West Nile) and less so in the west (Atukunda, 2003). Fish is also now one of the country's major sources of income and an export commodity. Thus, fisheries are an important resource for the improvement of human development in the country.

Unfortunately, over-fishing, especially closer to the shoreline, is reported on all Ugandan lakes. Boats per lake far exceed the recommended numbers. In addition, there are excess nets per

boat and a significant number of under-sized nets used to harvest immature fish. Another threat to the fisheries resources is the use of poor fishing methods. In total, fishing effort has increased, but the catch per unit effort is at the same time on the decline. It is also reported that species diversity, an indication of ecological resilience, is on the decline.

The trends within the fishing industry towards the booming fish exports have human development implications. On the positive side, some local people have benefited from the boom in terms of increased incomes, better employment opportunities, and improved standards of living. On the negative side, many small-scale fisher folks are being 'edged out' by increased competition from commercial operations. Furthermore, because the fisher folks are poorly organised, they have no capacity to determine their returns, and the middle people get a disproportionately larger share of the economic rent accruing from fisheries. The women among the fishing community who are mainly involved in fish processing, may also be slowly rendered less employed as commercial processing gains significance.

As investments in industrial processing increase, more people are getting involved as middle agents. Fish prices have increased sevenfold between 1990 and 2002 (FIRRI, 2002). The fish boom has also led to increased competition and more fishing effort, including the use of illegal and unconventional fishing methods, subsequently degrading the resource. Catches are sporadic and fish sizes smaller. Immature fish is illegally harvested with obvious adverse impact on the fish population.

Two broad approaches would provide opportunities for economic growth and improved human development within capture fisheries. The first is to raise the productivity of existing exploited fish stocks through co-management with local communities. The second is to develop new fisheries based on under-exploited fish species. Since Uganda's fish harvesting is still largely artisanal, rural communities are likely to benefit from such approaches.

Aquaculture currently accounts for less than 1% of all fish production (Banks, 2003). Nonetheless, it is the best option to meet the estimated incremental 90,000 metric tonnes/ year of extra fish that will be required to meet the needs of a growing population as well as maintaining exports. At least 28 reservoirs and small lakes have been stocked with 3 million fish fingerlings (DFR, 2003). Fish stocking of reservoirs is a national initiative actively promoted by the Department of Fisheries Resources (DFR) with the aim of increasing livelihood options in rural areas, increasing incomes of resource users, and improving food security and nutrition. Out of the additional 90,000 mt required annually, at least 10,000 mt/ year is expected to come from small-scale or artisanal aquacultural operations; while the remaining 80,000 mt/year would be from commercial aquaculture.

An emerging problem in the demand-supply dynamics of fisheries resources is the potential danger of satisfying international demand for fish at the expense of local needs. As fish exports and the fish processing capacity have increased, prices have risen and this affects local demand. Traditionally, fish has been the

most affordable form of solid animal protein for local people. Increased fish exports and prices may thus lead to reduced local fish consumption, which could in turn contribute to malnutrition and food insecurity. A study among communities surrounding Lake Victoria has already pointed to decreased consumption of Nile Perch because of higher prices, possibly due to increased demand created by an expanding export market. The same study points out that increased export of tilapia is jeopardising local fish consumption. For example, in the central region, people buy fish skeletons, leftovers after fillet for export has been removed instead of buying whole fish, which has now become too expensive and out of reach, especially for the poor.

Much as fisheries present opportunities for more economic growth and structural transformation, there are critical challenges, including: the inadequate legal and regulatory framework for fisheries and aquaculture; high levels of post-harvest losses and multiple taxation at all levels. Women and the poor (such as boat crews) also have less access to capture fisheries due to problems with licensing and the aforementioned multiple taxation systems (MoFPED, 2003).
Some of these challenges are being tackled. For example, one unique opportunity of international significance is the granting of decentralised legal powers, through the Beach Management Units (BMUs), to local people for sustainable utilisation and management of aquatic resources (MoFPED, 2003). There is also a move to manage Lake Victoria on a regional basis through the East African Community (EAC) and its Victoria Fisheries Organisation (VFO).

4.8 Wildlife and Tourism

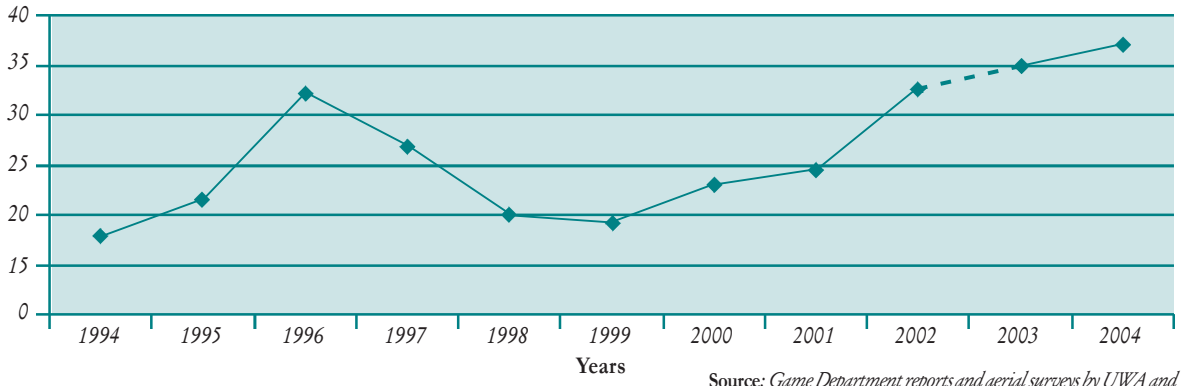
Uganda is rich in wildlife diversity both within and outside protected areas. The current spatial size of wildlife-protected areas is about 20% of the country's total surface area. The wildlife estate includes 10 national parks, 10 wildlife reserves, 14 community wildlife management areas, and 4 wildlife sanctuaries representing different levels of conservation effort.

Uganda is home to more than half of the world's population of Mountain Gorillas, which places a great responsibility on the country to conserve this world heritage. Notwithstanding issues related to adequacy, the international community is supporting some conservation efforts. A case in point is the GEF-funded Mgahinga Bwindi Impenetrable Forest Conservation Trust (MBIFCT) which provides funding for community development projects, park management and research.

Wildlife resources provide subsistence and employment through tourism, which is fast regaining its previous economic importance of being the third largest foreign exchange earner in the 1960s.

Between 1994 and 2003, tourists visiting wildlife areas increased from 31,259 to 102,567 (*Figure 4.5*).

Fig 4.5 Tourists Visiting Uganda's Wildlife Areas



Source: *Game Department reports and aerial surveys by UWA and (then) MTWA. These are species for which reliable previous estimates are available, from which to determine trends. Numbers are approximate.*

Tourism contributed about $163.1 million or 24.7% of total export earnings in 2001. In addition to this, there are more benefits derived from tourism (in terms of direct and indirect employment, foreign exchange earnings, revenue generation for government, and development opportunities for rural communities). Where people get involved as tour guides, sellers of handicrafts and workers in the accommodation sector, the multiplier effect of tourism in rural areas is significant.

The Government has demonstrated its support to revive the tourism industry, together with the empowerment of local governments and communities to manage and benefit from sustainable use of natural resources. The move to transfer what were traditionally government functions to semi-autonomous entities was to enhance their sustainability through the generation and retention of revenues, mainly from tourism-related activities. They are also intended to provide a synergistic linkage between the public and private sectors, and to facilitate the development and growth of the tourism industry. Thus, they represent an important model for public/private cooperation for private sector development.

Poverty reduction through tourism can be achieved as the industry expands its opportunities. Special emphasis has been given to community tourism as a means of addressing poverty at the grassroots. Tourism is more labour-intensive in low-labour-cost countries such as Uganda. There are direct jobs created within the tourism sector, both at the investment stage (construction, manufacturing, etc) as well as jobs for the labour required to run tourism establishments. Other jobs are created in outsourcing of certain services (to small-scale enterprises in agriculture, food processing, transport, distribution, light manufacturing industries). The linkage with the informal sector is strong (e.g. handicrafts being sold at roadsides) hence the significance of tourism in improving human development.

Women have access to jobs and it is estimated that where tourism is a mature sector women usually account for 50% of the tourism workforce. For example, 50.1% of the

accommodation sector workforce in Uganda are women. The fact that tourists move to the production point may lead to enhanced interaction between the tourists and the local community. There could be some negatives to this, but on the positive side it enables exchange of knowledge that can lead to a reduction in poverty.

The multiplier effect of tourism spending has a catalytic effect across the economy in terms of production and employment because of the links that tourism activities have with small local producers and the informal sector.

4.9 Biodiversity

Uganda is rich in biodiversity[1] (Pomeroy *et al,* 2002). Due to its unique biogeographical location, Uganda has 7 of Africa's 18 plant kingdoms, more than any other African country, and one of the highest on the continent *(Box 4.6).* There are more than 18,783 species that are known or have been recorded. They include resources that can nurture or are nurtured by humans. It is for this reason that Millennium Development Goal 7 especially MDG+ has special significance for Uganda.

Box 4.6

Biodiversity endowment

Ugandans have inherited a very rich flora and fauna, but the country is rapidly losing its biodiversity: a preliminary estimate (Arinaitwe, et al 2000) suggests an overall rate of loss of about 1% per year. Planned agricultural development, urgently needed to improve peoples' lives, will further reduce the habitats of many species, whilst a wide range of human activities continues to degrade non – farmland areas, especially (but by no means only) outside protected areas.

Source: *Pomeroy et al. (2002)*

The contribution of Uganda's biodiversity resources including genetic resources, organisms or parts thereof, populations or other biotic component of ecosystems, is about $1,000 million per year (Emerton and Muramira, 1999). Of the total amount, direct benefits were worth $411.5 million, while indirect benefits constituted the remainder at $588.5 million. However, these benefits accrue at a cost. Biodiversity economic costs were estimated at a minimum of $253 million/year; opportunity cost at $202 million per annum; and losses to other economic activities at $48.5 million/year (Emerton and Muramira, 1999). Other estimates are presented in *Box 4.7.*

Box 4.7

Suggested values of environmental goods and services

Emmerton & Muramira (1999) estimated the total economic benefits of natural resources at about $1000 million annually, and the total costs to be about $504 million (mainly production foregone). On a finer scale, Howard (1995) estimated the benefits of national parks, wildlife reserves and forest reserves to be $123 million annually, while the annual cost of conserving them was estimated at $200 million, more than half of which is attributable to the opportunity cost of land. Mason (1995) estimated that by the time the land becomes the most limiting constraint to agricultural production in Uganda as a whole, perhaps by the 2020s, the opportunity cost of conservation of Uganda's national parks and wildlife reserves will be between $450 million and 1,100 million per year (in 1995 prices), whereas the revenue flowing to Uganda from tourism is likely to be only around $200 million per year.

Source: *IFPRI (2003)*

Although Uganda is recognised as a biodiversity rich country, this biological wealth is experiencing stresses despite national efforts aimed at conservation. Biodiversity is being lost through encroachment, over-exploitation and

depletion, pollution and ecosystem degradation, poaching and illegal trade, and the introduction of alien invasive species into ecosystems. However, the principal loss of habitats and some species is mainly due to conversion of natural ecosystems into agricultural land needed to feed a growing population *(Box 4.8)* and the expansion of urban and industrial centres.

Box 4.8

Opportunity cost of conservation

The main potential cost of conserving natural resources to a nation such as Uganda, which has both a disproportionate share of conservation treasures and highly fertile and well–watered land, is the farmland foregone by setting aside land for conservation. Looking ahead 25 years to a largely rural population more than twice that of today, these empty tracts of land will appear to be a massive under–utilised resource.

It is likely that tourism will go some way towards offsetting the opportunity costs of agriculture foregone, but it is unlikely to be anywhere near valuable enough. The problem is compounded by the fact that the highest value assets for tourism are the open, relatively less fertile plains and their mega fauna, whereas the areas of greatest conservation interest are the fertile mountain forests and wetlands which, it has been said, offer tourists little but bugs, rain and difficult access. Others, however, take a kinder view and the real position at present is not as dismal as it may appear, certainly for the next 20 or so years.

Source: *Pomeroy, et al. (2002); emphasis added*

Local communities in biodiversity rich areas on the other hand bear a disproportionately higher responsibility for, and costs of, conservation. They also have the potential to impact most on biodiversity through their day-to-day economic activities. At the upper end, 40% of annual biodiversity values represent direct benefits; but local communities receive only a fraction of these direct benefits, the rest being appropriated by governments and intermediaries.

It is partly for this reason that local communities, especially those neighbouring protected areas feel 'cheated' or alienated in the face of the multiple livelihood challenges they face. This calls for a range of economic measures or instruments to rectify the situation. First, should be the establishment of clear property rights so that local communities are fully involved in the management of land and biological resources.

The second is market creation to help local people increase their economic gains and control over biodiversity. Third is the introduction of financial instruments so that communities can invest in alternatives to biodiversity.

4.10 Energy

There are many energy sources, ranging from biomass representing a consumption level of 93%, petroleum at 6% and onto electricity at 1%. The hydroelectric power potential is 3,200 MW of which only 10% is developed. The low electricity consumption can partly be explained by the fact that only 3% of the population in rural areas and 8% in urban areas have access to grid electricity, while the rest of the population relies on biomass (MEMD, 2003). Although electricity coverage is likely to expand under the Rural Electrification Programme, the ability of communities to afford it is yet another issue. Biomass is likely to remain the dominant source of energy for rural people.

There is some oil and gas exploration going on. Five basins with hydrocarbon potential have been identified, however no production has begun yet. All petroleum products consumed in the country are imported and their

consumption is sector specific: gasoline, aviation gas and diesel consumed in the transport sector; fuel oil consumed in the industrial sector; and kerosene and liquid petroleum gas (LPG) consumed by the residential and commercial sectors. A significant share of Uganda's foreign exchange earnings goes to satisfy oil imports, leaving little else to improve on human development conditions.

The national geothermal energy potential is 450MW waiting yet to be developed; while currently wind energy is used mainly for pumping water as opposed to electricity generation. Biogas technology, which provides a cheap and clean source of energy was introduced into Uganda 20 years ago, but has not been widely adopted. The start-up costs are significantly high for the majority of Ugandans and this has discouraged widespread adoption. There is a noticeable increase in the use of solar energy, but the cost of this energy source is also high. Therefore, the principal and cheaper source of energy available will continue to be biomass, up to 2015 at least (MEMD, 2003). However, the availability and access to biomass resources is itself becoming a problem in many parts of Uganda.

There is anecdotal evidence that links fuel wood types to people's nutritional behaviours, hence the contribution of fuel wood to people's livelihoods through improved nutritional values. Ddungu *et al* (1998) observed that women in Molo sub-county in Tororo District were unable to regularly prepare foods such as cooking dry beans which require sizeable amounts of energy because of fuel wood scarcity. The use of crop residues (which in turn robs the soil of nutrients), tree roots and grass for cooking was observed to be a common phenomenon in the district.

A solution involves encouraging the population to establish woodlots or practice agro forestry systems as a source of biomass energy to improve their quality of living and also relieve pressure on the country's natural forests.

Improved access to energy has direct impact on poverty and overall human development since access to electricity supply raises rural incomes by permitting the introduction of new technologies and services, which in turn expand the range of productive opportunities in rural areas (MoFPED, 2003). The quality, reliability and access to power have been identified as major impediments to sustained investment and growth during the 1998 Private Investment Survey (MoFPED, 2003). The Government's overall energy policy objective is to 'improve the quality of life in rural areas and facilitate rural non-farm income by accelerating access to rural electricity from about 1% in 2000 to 10% by 2010, through public and private participation and other forms of energy (MoFPED, 2003).

4.11 Minerals

The mineral sector in the country is largely unknown. Only 50% of the country has been mapped. However, from the little data available, indications are that the country possesses significant mineral resources. Modern mining in the country started during the 1920s, principally in the south-western part concentrating mainly on gold and tin.

Generally, the mineral sector in Uganda is still

largely under-developed, contributing a paltry 1% to GDP. On a base case scenario, the value of mineral production is expected to rise from the current $12 million to over $100 million; while on a best case scenario the value is expected to increase to over $200 million (MEMD, 2003).

The formal mining sector employs about 15,000 people. Due to the labour-intensive nature of mining the sector has the potential to offer significant non-farm employment opportunities in rural areas. Private operators currently hold a total of about 140 to 200 exploration and development licences. One of the major constraints they face is lack of capital to initiate production.

Mining could become a key engine for enhancing human development. However, for this potential to be realised, proper management procedures need to be adhered to. Otherwise the activities could generate negative environmental impacts such as pollution and other social ills *(Box 4.9).* For example, various aggregate quarries, sand clay and gravel excavation pits have been abandoned all over the country, leaving scars on the natural landscape.

Box 4.9

Mining and Environmental Decline

During UPPAP2, environmental decline resulting from mining was reported in Butungama in Bundibugyo District, and Lorukumo, in Moroto District. The local people involved in mining barely earn a living from selling the ore because it fetches very little. They have no control over the price of the ore, which is determined by the buyers. Those involved in the mining expose themselves to several dangers. Huge craters are formed from the ore removed from the ground by the mining process; these craters, in due course, become a health hazard.

Source: *MoFPED (2002)*

The Government is responding to this challenge by encouraging community development and small-scale mining, and putting in place environmental and social management safeguard policies and frameworks.

4.12 Human settlements and the urban environment

Human settlements[5] in the country are generally wasteful of land and have poor environmental conditions. Rural settlements are dispersed, linear or nucleated. Dispersed settlements are wasteful of land and make the provision of infrastructural services more difficult. Nucleated settlements are common in the more densely populated areas; while linear settlements develop along major roads.

Rural settlements tend to concentrate in areas with better natural resource endowments (fertile soils, favourable climate) such as those around Mt Elgon and the south-western highlands. Areas with unfavourable climate such as Karamoja are, on the other hand, sparsely populated.

The only and largest city in Uganda is Kampala with an estimated daytime population of slightly under 3 million people. Comparing this with Lagos (13 million plus) and Cairo (10 million plus) indicates Uganda is one of the least urbanised countries in Africa. The urban population represents 15% of the total compared to the African average of 34% (UNEP, 2002). The majority of the urban population (ca. 80%) are classified as low-income earners and lack

[5] *Human settlements are described as "an integrated combination of human activities, artifacts and a set of facilities intended to facilitate human life on earth.*

access to adequate housing and infrastructure. The urban poor are crowded in the slum areas, which happen to be the least serviced. Homelessness is common in the urban areas; and can entail total lack of shelter or temporary and often sub-standard shelter with virtually no security of tenure. As the urban population grows, there is increasing scarcity of land for housing development. This makes land very expensive and out of reach for the urban poor. Part of the solution to this problem lies in the development of low-cost housing estates. The poor also tend to be 'displaced' into flood-prone or ecologically fragile areas. Wetlands are not only settled, but they are also mined for clay to make bricks, and for sand. Physical structures in urban areas are also generally poorly planned.

The population in urban and peri-urban centres is growing very fast. By 1959, the country's urban population was a mere 250,000 people. As of 2002, this population had grown to 3.7 million (UBOS, 2002), close to 15 times. The number of urban centres is also on the increase.

For sometime now, Uganda's efforts at improving environmental management have focused on conservation - the 'green issues' - as opposed to pollution[6], representing the 'brown issues'. However the deterioration of air quality, inadequate access to safe drinking water and sanitation facilities, and poor solid waste disposal are emerging as the new environmental challenges. The deterioration of air quality and poor solid waste disposal are largely urban problems because of the high population densities and generally higher consumption levels relative to rural areas (UNEP, 2002). Indoor air pollution on the other hand is largely a rural concern. Access to safe drinking water and sanitation facilities are both urban and rural issues.

4.13 Water and Sanitation

4. 13.1 Safe Water

At the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002 one of the key commitments was halving the proportion of people without access to safe drinking water and basic sanitation by 2015 (UN, 2002).

Though Uganda is well endowed with water resources, access to safe water remains an issue, especially for the poor. The percentage of people with access to safe water supply was 47% in rural areas, 65% in small towns and 63% in large towns and the city by 1999. An increase in the number of people with access to safe water was registered. For example, between 1986-2000, and 1991-2000 a 32.2% increase in rural safe water coverage was realised (NEMA, 2003). However, surface water quality has deteriorated during the last two decades, mainly due to domestic and industrial waste discharge, and agricultural runoff that silts water sources, including pollution of water with agro-chemicals.

In urban areas inhabited by poor people, shallow pits are used for sanitation whereby, sewage usually drains into the (open) channels when they fill up (Orone *et al.,* 1996; Nuwagaba et al., 1997; Nakirunda, 2002). This contaminates water sources, especially spring water, with faecal material, which in turn increases the

[6] *Pollution is the discharge of chemicals or noise into the atmosphere, and terrestrial and aquatic ecosystems in larger quantities than are sustainable.*

costs of treatment. Spring water used untreated has been cited as a cause of the high incidence of cholera in Uganda, especially in urban areas. Cholera has been associated with high morbidity and mortality rates (NEMA, 2003).

Nationally, the main source of safe drinking water is groundwater accessed through protected springs, shallow wells, boreholes (either fitted with hand or motorised pumps), and gravity flow schemes with taps. Surface water on the other hand represents the main source of water supply for the large urban centres. Even then ground water development is gaining importance as a key source of safe drinking water for some of the small to medium urban centres since it requires minimal treatment compared to surface water sources. *Table 4.5* shows the supply of safe drinking water by the various technologies in rural and urban areas.

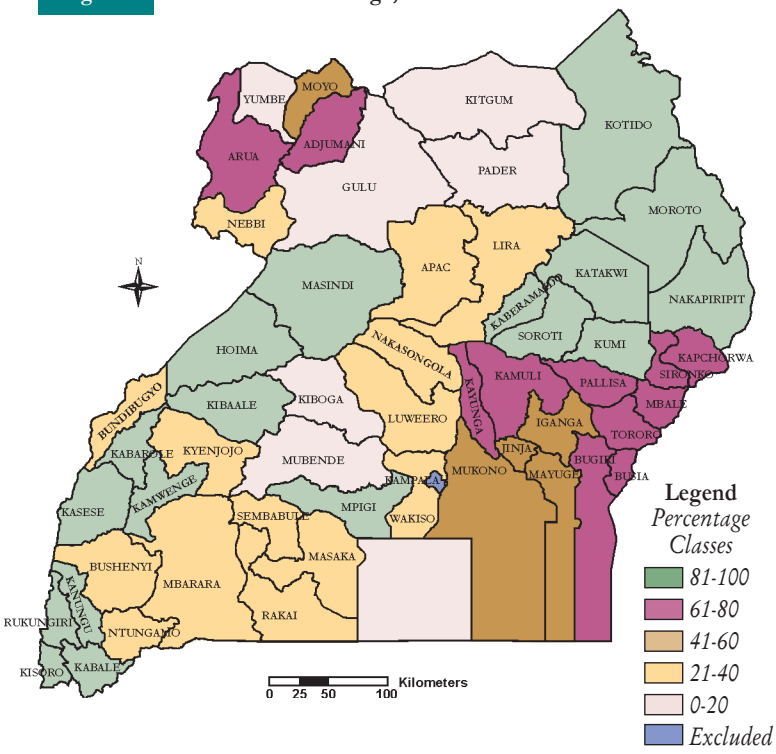
Table 4.5 ***Sources of Drinking Water-Percent distribution.***

	Urban	Rural	Total
Piped into dwelling	*5.1*	*0.1*	*0.9*
Piped into yard/plot	*7.0*	*0.1*	*1.1*
Public tap	*51.2*	*1.5*	*8.9*
Open well in yard/plot	*0.1*	*0.0*	*0.0*
Open public well	*6.8*	*28.3*	*25.1*
Protected well in yard /plot	*0.2*	*0.1*	*0.1*
Protected public well	*10.9*	*7.0*	*16.1*
Bore hole in yard/plot	*0.2*	*0.2*	*0.2*
Public bore hole	*13.6*	*26.4*	*24.5*
Spring	*1.3*	*9.4*	*8.2*
River, stream	*0.3*	*8.6*	*7.5*
Pond, lake	*0.6*	*5.3*	*4.6*
Dam	*0.2*	*1.6*	*1.4*
Rain water	*0.4*	*0.4*	*0.4*
Tanker truck	*0.1*	*0.0*	*0.0*
Bottled water	*0.7*	*0.0*	*0.0*
Gravity flow scheme	*0.0*	*0.6*	*0.5*
Other	*1.4*	*0.2*	*0.4*
Missing	*0.1*	*0.2*	*0.2*
	100.0	**100.0**	**100.0**

Source: *UBOS (2001)*

The spatial coverage of districts by safe water drinking sources is presented in *Figure 4.6* The data show that by 2001, seven districts had less than 20% rural safe water coverage. These districts represented close to 10% of the rural population. Fourteen districts with a total rural population of about 6.9 million (or 33% of rural total) had safe water coverage of 21-40%. Then there were 18 districts with about 26% of the rural population having safe water coverage of 41-60%. Only 16 rural districts out of a total of 56 had safe water coverage of more than 60% and these districts accounted for about 33% of the rural population.

Fig 4.6 **Safe Water Coverage, 2001**



The Second Uganda Participatory Poverty Assessment Project revealed that access to safe water is still a problem for many people, who use unprotected and unsafe water (MoFPED, 2003). Community members reported travelling between 1.5 km and 16 km to collect safe water (MoFPED, 2003). Considering that women and children, especially girls, are in charge of water collection, storage and management for the home, improved access to water leads to reduced workloads, and provides protection for vulnerable groups (MoFPED, 2003).

The PEAP has a target of providing safe drinking water to all Ugandans (100% coverage) by 2017. If attained, this will mean that Uganda would have achieved the MDG in respect of the target on safe drinking water provision. Equally ambitious is the target for sanitation.

4.13.2 Sanitation

It is estimated that 80% of the disease burden in Uganda is associated with poor sanitation and hygiene (MoFPED, 2003). By 2003, national household latrine coverage was low, estimated at 48% compared to the PEAP target of 60% access by 2004 (MoFPED, 2003). Furthermore, there is wide variation of coverage between districts. Piped sewerage services are accessible to only 5% of the population in large urban centres (MoFPED, 2003).

People generally feel uncomfortable when discussing sanitation because they consider it a cultural taboo. In some cases they feel it involves too much hard work. Donors too have previously given less importance to sanitation (MoFPED, 2003). Furthermore, there is no single institution responsible for sanitation programmes. The responsibility is spread over three sectors, namely: health; education; and water (MoFPED, 2003). The sectors have each given sanitation a very low priority, partly because there are few resources available to address the issue (MoFPED, 2003). Consequently, environmental sanitation conditions in the country especially in the rural and peri-urban areas remain poor (MoFPED, 2003).

4.14 Air pollution

The urban population is about 15% of the total. However, this population is growing faster than the national average. Industrialisation is also on the increase. The manufacturing sector has been growing at a rate of about 17% per year between 2000 and 2003. Hence we can expect increased levels of air pollution as the pace of industrialisation picks up.

Thirdly, other factors contributing to air pollution include the use of inappropriate technologies, the cultural habit of annual bush burning, and poor design of road infrastructure and vehicle fleet management both of which encourage traffic congestion and hence pollution. All these factors suggest that air pollution is becoming a major environmental issue and undermining achievements in human development conditions.

Indoor air pollution, largely in rural areas, is mainly caused by dependence on wood and animal residues for fuel often burnt in confined and unventilated spaces, where they give off large amounts of harmful substances, such as the carcinogenic polyaromatic hydrocarbons (PAHs).

In many urban areas, the growth of both industrial and residential areas is un-planned, un-structured and un-zoned. This has led to houses being built alongside factories and industries, increasing human risks of industrial accidents and air pollution. The result of such rapid and unplanned development are the increasing levels of air pollution, more pollution-related health problems, lost working days and economic dysfunction.

4.15 Solid waste disposal

Solid waste may have different meanings to different people. In the context in which it is used here, solid waste refers to the refuse from households, non-hazardous solid waste from commercial and industrial establishments (not sludge or semi-solid waste), refuse from institutions, and street sweepings. The collection, recycling, storage, resource recovery, and disposal of solid wastes is what is referred to as solid waste management (SWM). The solid waste generated in the urban areas in this country typically consist of: 73% organic matter; 5.4% paper, 1.7% sawdust; 1.6% plastics; 3.1% metals; 0.9% glass; 8.0% tree cuttings; and 5.5% street debris (Ngategize, Moyini and others, 2001). Unfortunately, there are no data on the composition of solid waste generated by households in rural areas. However, it probably consists of more organic matter than that of urban areas.

The annual rate of urban solid waste generation has been estimated at 0.2 metric tonnes per person (Ngategize, Moyini and others, 2001). Using average inter-censual growth rate of 3.4% per year, the 2002 Census population of 24.7 million translated into 26 million as of 2004. Based on 2004 ratio of 15% urban population, this means 3.9 million Ugandans were living in urban areas. Hence solid waste generated in urban areas as of 2004 was estimated at 780,000 metric tonnes (*Table 4.6*).

Table 4.6 Estimated composition of solid waste generated in the urban areas of Uganda, 2004

Category	% composition	Quantity (mt)
Organic matter	*73.0%*	*569,400*
Paper	*5.4%*	*42,120*
Sawdust	*1.7%*	*13,260*
Plastics	*1.6%*	*12,480*
Metals	*3.1%*	*24,180*
Glass	*0.9%*	*7,020*
Tree cuttings	*8.0%*	*62,400*
Street debris	*5.5%*	*42,900*
Other	*0.8%*	*6,240*
Total	**100.0%**	**780,000**

Estimated population: *26 million of whom urban is (15%) 3.9 million*

Annual solid waste generation rate: *0.2 metric tonnes/person/year giving total urban waste of 780,00 metric tonnes for 2004.*

While organic matter is readily degradable and paper, sawdust and tree cuttings decompose over a relatively short period, the others (plastic, metal and glass) are not degradable. Consequently, about 10% of the solid waste generated by the urban population enters and accumulates in the environment annually since it is not managed appropriately. This means over 78,000 metric tonnes of non-degradable solid waste accumulates in the environment annually. Presently there are no proper disposal systems in place in the urban centres.

Even Kampala City has no proper landfill. It has a dumpsite instead. Some of the remaining urban areas have poorly constructed or designed dumpsites. There is some limited

recycling of glass bottles and other materials. The organic matter component is used as mulch in rural areas. Private sector opportunities do exist for the production of fertilisers, production of fencing posts and railroad ties using carbonizer technology. In addition, there are opportunities for recycling plastics, polythene bags and packaging paper (Ngategize, Moyini and others, 2001).

However, although Uganda has the institutions, policies, laws, and guidelines that support the development of sustainable SWM systems, there is need for a more specific national policy to address the problem of solid waste disposal. Such policy once adopted can form a useful basis for an appropriate enforceable legal framework.

During the Earth Summit of 1992, poor solid waste management in most developing countries featured prominently as one of the greatest challenges to authorities, planners and residents. In Uganda, there is a growing concern about the same problem due to its effect on public health and the environment and hence human development.

KCC with the participation of private solid waste collection firms operating in affluent areas, collects and disposes of only 41% (i.e. 369 mt) of the solid waste per day. The remaining 59% (i.e. 531 mt) per day is left uncollected and ends up dumped in drainage and sanitary drainage channels, natural watercourses, manholes, undeveloped plots and roadsides among other unfit places (NEMA, 2004). Heaps of rotting waste can provide a fertile breeding ground for flies, mosquitoes and rodents among other objectionable vermin and vectors. Also, poor and haphazard waste dumping can result in pollution of surface and ground water bodies (NEMA, 2004).

In summary, recognising the state of declining quantity and quality of environmental goods and services, particularly the limited access and the increasing levels of pollution, the next chapter will assess how the country has performed relative to set targets and the performance of other countries. The assessment will use several internationally recognised measures, namely: adjusted net savings; ecological footprints; water poverty index and environmental sustainability index.

5 Environmental performance

5.1 Introduction

There are many important things which people value but which may be difficult to measure yet they have a lot of bearing to sustainable human development. One of the biggest challenges is how to measure environmental assets. Nonetheless, some progress has been made to develop indicators for measuring sustainability especially in the economic and environmental sphere (*Table 5.1*). This report has used a few indicators on which there is consensus over their use globally to throw light on the state of the environment in Uganda.

Several people have attempted to extend the HDI to incorporate the environmental aspects (Desai 1995, Dahme et al 1998, Sagan and Najam, 1996, De la Vega and Urrutia, 2001, Ramanathan, 1999).[7] Their proposals have met substantial criticism, because of lack of consensus on methodology. Nonetheless, they reflect the desire to build upon the globally accepted human development indices to reflect the use of environment. Good decision-making in environmental management has to combine both quantitative and qualitative measurements. Uganda has already recognised this, and has for example, commissioned qualitative studies to understand the linkage between poverty and environment as part of the PEAP revision process.

Some of the quantitative indicators used to measure sustainability are given in *Table 5.1.* Using some of the indicators in that table

Table 5.1 ***Indicators for measuring sustainability***

Category of Indicator	Examples	Championing Institution
Extended national accounts	*Green Accounts System of environmental and economic Accounts*	*United Nations*
	Adjusted Net Savings	*World Bank*
	Genuine Progress Indicator	*United Kingdom and other countries*
Biophysical accounts	*Ecological Footprint*	*World Wildlife Fund and others*
*Equally weighted indexes**	*Living Planet Index Environmental Sustainability Index*	*World Wildlife Fund World Economic Forum*
*Unequally weighted indexes**	*Environmental Pressure Indexes*	*Netherlands, EU*
	Well-being of Nations	*Prescott-Allen*
Eco-efficiency	*Resource Flows*	*World Resources Institute*
Indicator set		*U.N. Commission for sustainable Development and many countries.*

* *Equally weighted indexes are those whose components are equally weighted and then aggregated, while unequally weighted indexes give some components greater weight than others.*

Source: *World Bank (2003)*

[7] *For detailed exposure, read: Eric Neumayer (2004) Sustainability and Well-being Indicators. Institute for Development Economics Research*

Uganda's progress towards environmental sustainability is analysed in the rest of this chapter.

5.2 Adjusted net savings – a proxy for sustainability

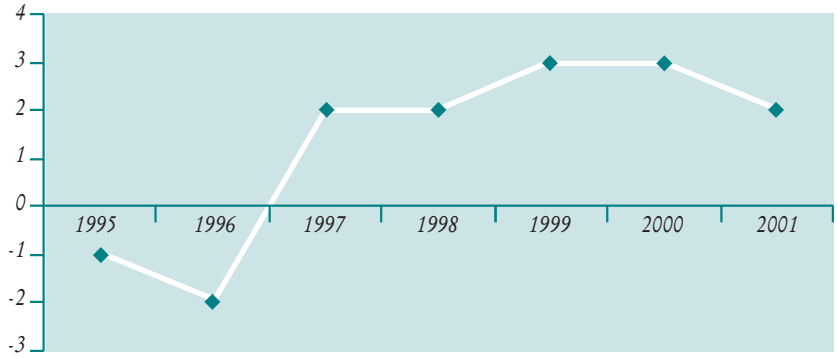
Adjusted net savings, formerly called genuine savings, is a sustainability indicator building on the concepts of green national accounts. Adjusted net savings measure the true rate of savings in an economy after taking into account investments in human capital, depletion of natural resources and damage caused by pollution.

Adjusted net savings as a proxy for sustainability departs from standard national accounting in several ways. The most obvious difference concerns resource depletion. While the rents on natural resource extraction are included implicitly in standard income measures, adjusted net savings makes this explicit by deducting the value of depletion of the underlying resource asset (although in the case of forests that are sustainably managed, there is no net depletion). Deducting pollution damages, including lost welfare in the case of human morbidity and mortality, is appropriate as long as it is assumed that society is aiming to maximise welfare. Finally, adjusted net savings estimates consider current educational spending as an increase in saving, since this spending may be considered to be an investment in human capital (rather than consumption, as in the traditional national accounts).

Uganda's adjusted net savings as percentage of Gross National Income (GNI) has not exceeded 3% in the last five years, and in some years, particularly 1995 and 1996, it was negative. Negative adjusted net savings rates imply that total wealth is in decline. Policies leading to persistent negative net savings are policies for unsustainable human development.

In addition to serving as an indicator of sustainability, adjusted net savings has several other advantages as a policy indicator. It presents resource and environmental issues within a framework that finance and development planning ministries can understand. It reinforces the need to boost domestic savings, and hence the need for sound macroeconomic policies. It highlights the

Fig. 5.1 **Trends in Uganda's adjusted net savings**



Source: *World Bank*

fiscal aspects of environment and resource management, since collecting resource royalties and charging pollution taxes are basic ways to both raise development finance and ensure efficient use of the environment.

5.3 Ecological footprint

An "ecological footprint" is a measure of the "load" or pressure imposed on the natural environment by a given population and represents the land area necessary to sustain current levels of resource consumption, waste discharge and infrastructure development by the population, (WWF, 2002). It is measured in global hectares. A global hectare is one hectare of average biological productivity. A five-hectare footprint would mean that five hectares of biologically productive space are in constant production to support the average individual of the country. However, an ecological footprint of a country has to be compared with that productive fraction of the biosphere that is biologically productive to determine whether or not the human consumption of natural resources is exceeding the earth's biological capacity.

According to the latest estimates, Uganda is having an ecological deficit (*Box 5.1*). In other words, the size of earth surface available to satisfy Uganda's consumption lifestyles is exceeding the biological capacity of the space available.

Box 5.1

Uganda ecological footprint status, 1999

Population (1999): million people	*22.9*
Ecological footprint (global hectares per capita)	*1.1*
Biocapacity (global hectares per capita)	*0.9*
Domestic ecological deficit (global hectare per capita)	*- 0.2*

Source: *Mathias Wackernagel, Chad Monfreda and Diana Deumling, (2002) Ecological Footprint of Nations, November 2002 Updates. (www.earthscape.org/r1/wam01.pdf.)*

To maintain our lifestyles of consuming environmental resources, we either have to import the missing ecological capacity or become tempted to deplete some of our natural capital stocks. However, a country's ecological footprint changes with population size, average consumption per person, and the kinds of production systems or technology in use.

By implication, to improve our ecological footprint from the deficit we need to control population size, adjust our consumption lifestyles, and invest in technology use. The limitation of the ecological footprint approach is that it does not take into account all the conditions necessary to achieve sustainable development. Nonetheless, read along other sustainability indicators, it helps the country to establish an overall status of its natural capital.

5.4 The Water Poverty Index

Water inaccessibility is one of the indicators of low human development. The Water Poverty Index (WPI) expresses an interdisciplinary measure which links household welfare with water availability, and indicates the degree to which water scarcity impacts on human populations. The WPI components and the data sets on which it is calculated are given in *Table 5.2*.

Table 5.2: ***Structure of the WPI and data used***

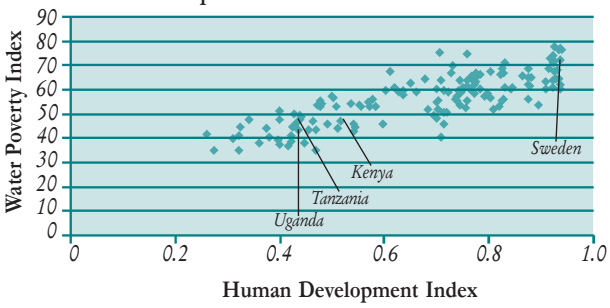
WPI Component	Data used
Resources	■ *Internal fresh water flows* ■ *External inflows* ■ *Population*
Access	■ *% of population with access to clean water* ■ *% of population with access to sanitation* ■ *Access to irrigation compared to estimated need for irrigation*
Capacity	■ *PPP per capita income* ■ *Under five mortality rates* ■ *Education enrolment rates* ■ *Gini coefficients of income distribution*
Use	■ *Domestic water use in litres per day* ■ *Share of water use by industry adjusted by the sector's share of GDP* ■ *Share of water use by agriculture adjusted by the sector's share of GDP*
Environment	■ *Water quality* ■ *Water stress (pollution)* ■ *Environmental regulation and management* ■ *Informational capacity* ■ *Biodiversity based on threatened species*

Source: *Peter Lawrence, Jeremy Meigh and Caroline Sullivan (2002) The Water Poverty Index: International Comparisons.*

The index is in the range of 0 to 100, and with each of the components taking a maximum of 20 scores. The index is used to rank countries in the water sector in a holistic manner. Out of 147 countries whose WPI was calculated in 2002, Uganda was ranked number 129. Its index was 44.0 made up of 7.3 scores for resources, 7.1 for access, 10.9 for capacity, 6.7 for use and 12.0 for environment.

Figure 5.2 shows the WPI –HDI linkage. There is increase in HDI as the WPI of a country improves. Access to water improves health, gender equity and time saving.

Fig 5.2 **Linkage of Water Poverty Index and Human Development Index**

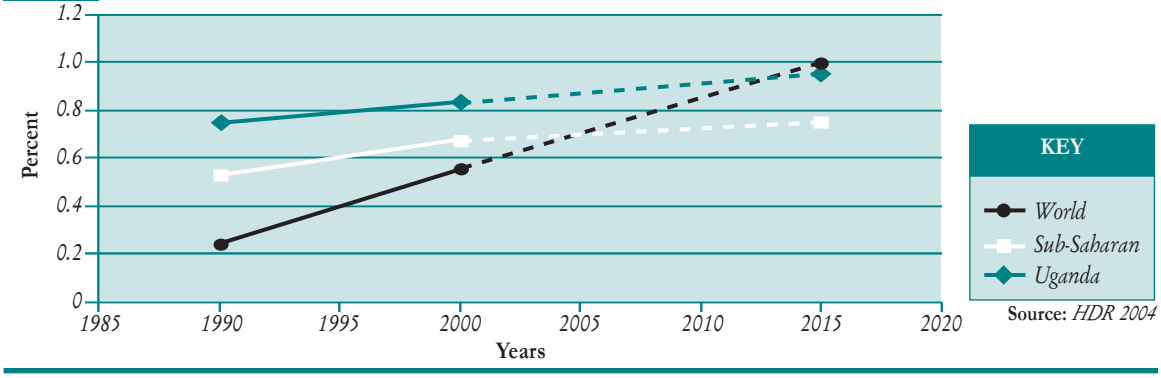


Source: *www.humandevelopment.bu.edu/dev-indicators*

Compared with the world and Sub-Saharan Africa trends, Uganda's access to safe water is lower (*Figure 5.3*). However, Uganda's target for rural access to safe water of 100% by 2017 is higher and more ambitious than the MDG target of 62%. It is a potentially reachable target under the current fair supportive environment.

In general, Uganda will need to sustain its policies of decentralised water service delivery, public-private partnerships and community mobilisation for water delivery. Above all, the

Fig 5.3 **Access to safe water**



Source: *HDR 2004*

modest funding to the sector will need to be sustained or preferably increased.

5.5 Environmental Sustainability Index

Another measure for environment is the Environmental Sustainability Index (ESI)[8] which measures overall progress towards environmental sustainability so far developed for 146 countries. The ESI permits cross-national comparisons of environmental progress in a systematic and quantitative fashion.

Environmental sustainability is measured through 21 "indicators" each of which combines two to eight variables, for a total 76 underlying data sets. The ESI tracks relative success for each country in five core components;
(i) environmental systems,
(ii) reducing environmental stresses,
(iii) reducing human vulnerability
(iv) social and institutional capacity to respond to environmental challenges and
(v) global stewardship.

The explanations of these components are given in *Table 5.3* and so are Uganda's score against each component. Thus, the collaborating institutions for making ESI defined it as the ability to produce high levels of performance on each of these dimensions in a lasting manner. They regarded these dimensions as the core "components" of environmental sustainability. The cumulative picture created by these five components represents a good gauge of a country's likely environmental quality a generation or two into the future.

Table 5.3 **Components of Environmental Sustainability**

Component	Logic	Maximum Score attained	Uganda's score
Environmental systems	*A country is environmentally sustainable to the extent that its vital environmental systems are maintained at healthy levels, and to the extent to which levels are improving rather than deteriorating.*	*90.4*	*49.3*
Reducing environmental stresses	*A country is environmentally sustainable if the levels of anthropogenic stress are low enough to engender no demonstrable harm to its environmental systems.*	*70.4*	*47.1*
Reducing human vulnerability	*A country is environmentally sustainable to the extent that people and social systems are not vulnerable in (in the way of basic needs such as health and nutrition) to environmental disturbances; becoming less vulnerable is a sign that society is on a track to greater sustainability.*	*81.5*	*31.5*
Social and institutional capacity	*A country is environmentally sustainable to the extent that it has in place institutions and underlying social patterns of skills, attitudes, and networks that foster effective responses to environmental challenges.*	*91.7*	*47.1*
Global stewardship	*A country is environmentally sustainable if it cooperates with other countries to manage common environmental problems, and if it reduces negative transboundary environmental impacts on other countries to levels that cause no serious harm.*	*87.3*	*81.9*
Overall score			*51.3*
Overall ranking			*57/146*

Source: *www.yale.edu/esi/esi.2005-main report*

[8] *The ESI is the result of collaboration among the World Economic Forum's Global Leaders for Tomorrow Environmental Task Force, The Yale Centre of Environmental Law and Policy, and the Columbia University Centre for International Earth Science Information Network. The ESI in this report is for 2005.*

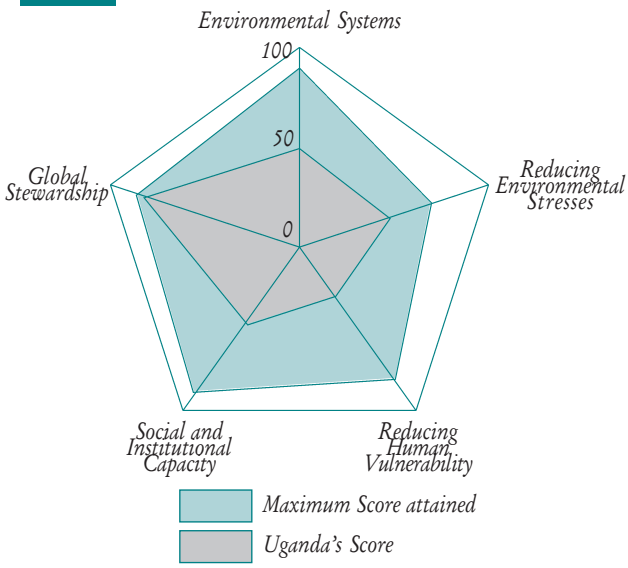
The higher a country's ESI score, the better positioned it is to maintain favourable environmental conditions in the future. The ESI represents an equally weighted average of the 21 indicator scores.

ESI score quantifies the likelihood that a country will be able to preserve valuable environmental resources effectively over several decades. Put in another way, it evaluates a country's potential to avoid major environmental deterioration. ESI suggests that sustainability has multiple dimensions, and that challenges differ by country. An individual country's performance is therefore, best understood by looking not only at its overall ESI score or ranking but by examining its results with respect to the 21 key indicators used in its construction. While that may be the case, ESI-based analysis across countries suggests that some of the critical determinants of environmental performance are: low population density, economic vitality and quality of governance. Some of these variables have long been identified as theoretically important. In relation to peer countries, three areas where Uganda needs to give special attention are reducing population stress, improving science and technology, and reducing ecosystem stress.

Uganda's ESI score is 51.3 giving it a ranking of 57 out of 146 for countries for which ESI was constructed in 2004. The five highest ranking countries and their respective ESI's scores are: Finland (75.1) Norway (73.4) Uruguay (71.8) Sweden (71.7) and Iceland (70.8). Apparently, these are countries with substantial natural resource endowments and low population density. Among the current 40 NEPAD member countries, Uganda takes position 9, relatively performing well in the context of Africa.

Figure 5.4 presents Uganda's performance against each of the ESI's components. The same figure shows Uganda's position in relation to other countries. Uganda's exceptionally high score on global stewardship is explained by the fact that it has several representatives to the IUCN, a factor that puts it in a position to engage in global debates. Overall, as the figure shows, no country is on a truly sustainable path. Every country has some issues on which its performance is below average.

Fig 5.4 ***Uganda's ESI in relation to the rest of the world***



Source: *2005 ESI Main Report: An Initiative of the Global Leaders of Tomorrow Environment Task Force, World Economic Forum*

Critics against the indicator argue that although it is called "environmental", it's largely determined by social factors such as "institutional capacity", "international cooperation" and "human health" (Mathias Wacker-Nagel, 2001).

They argued that human health aspects are essential for the well-being of a society, but they should not be confused with environmental sustainability. As mentioned before, the challenges of developing environmental sustainability indicators are continuing, and for this reason, one indicator must be read along several other indicators to gauge a country's environmental progress.

5.6 Policy implications

By using a few indicators, an assessment of Uganda's environment has revealed that Uganda is consuming its environmental resources in a rather unsustainable manner. This is further reflected in low adjusted net savings as percentage of GNI. The country is also performing poorly in reducing human vulnerability to environmental stresses. All these problems negatively affect the pace of human development.

To overcome the above challenges, the government is called upon to control population size, adopt policies to influence good consumption lifestyles, to invest in technology use, and to improve environmental governance. Equally, it has to build the capacities of institutions that are mandated for different aspects of environmental management.

6 The society – environment nexus

6.1 Introduction

The previous two chapters looked at the state of environment in Uganda and its performance and concluded that Uganda's natural capital is on the decline. The causes are two-way. Environmental constraints shape the Ugandan society and likewise, the society and its institutions create the preconditions for environmental sustainability. Hence the notion of the society – environment nexus. This chapter reviews three development themes and their bearing on sustainable human dev-elopment. They are environmental health, energy, and environmental awareness.

6.2 Environmental health

Environmental factors are a significant determinant of health. Health outcomes that are a result of environmental conditions are classified under the category of 'environmental health'. According to World Bank (2000);

> *"Environmental health refers to those aspects of human health including quality of life that are determined by physical, biological, social and psychological factors in the environment".*

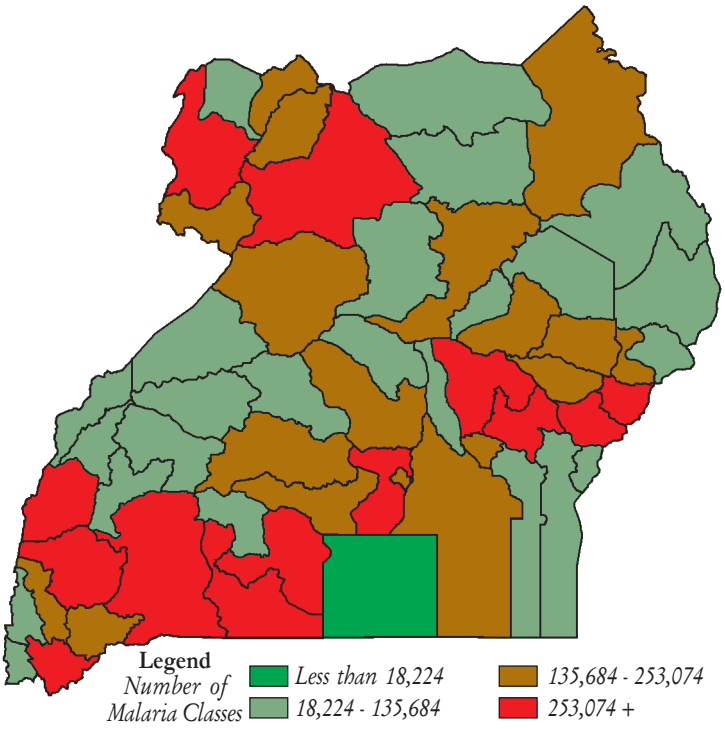
The same publication classifies environmental health risks into two broad categories, namely traditional hazards related to poverty and lack of development (e.g. lack of safe water, inadequate sanitation and waste disposal, indoor air pollution, and vector-borne diseases) and modern hazards (e.g. urban air pollution, exposure to agro-industrial chemicals and waste due to development). Thus, the environment in which we live greatly affects our health, and subsequently human development. This is also well illustrated by causes of morbidity in *Table 6.1*. Many of them are environmental in nature. The level of morbidity is one indicator that is used to analyse the health status of population. From the Table, malaria has been accounting for more than 50% of all persons who fell sick (*Figure 6.1*). Respiratory infections ranked as second commonest cause of illness.

Table 6.1 ***causes of morbidity in Uganda in percentage***

	Years	
Disease	**1999/2000**	**2002/2003**
Malaria	*56*	*56*
Respiratory infections	*12*	*14*
Infections	*6*	*4*
Intestinal infectious	*5*	*4*
Diarrhoea diseases	*3*	*3*
Skin diseases	*18*	*19*
Other illnesses		
Total	**100**	**100**

Source: *National Household Surveys. UBOS (2002/2003)*

Fig 6.1 **Distribution of Yearly Malaria Cases per District 2003**



Source of Data: *Malaria Control Programme Ministry of Health*

Environmental conditions that may increase a child's susceptibility to pneumonia include exposure to smoke, crowding and chilling. [Proceedings of the First International Consultation on the Control of ARIs (ICCARI) 1992]. Combustion of wood fuels in homes emits gases like sulphur dioxide, nitrogen oxides, polyaromatic and hydroaromatic hydrocarbons and carbon monoxide; all of which have deleterious effects on human health [Ministry of Natural Resources, 1994].

The prevalence of ARI is favoured by mal-nutrition and low birth weights, insufficient coverage of immunisation, low level of parental education, lack of early health care, poverty and unhygienic sanitary conditions (Pio and Antonio *et al* 1989; Ministry of Health, 1992).

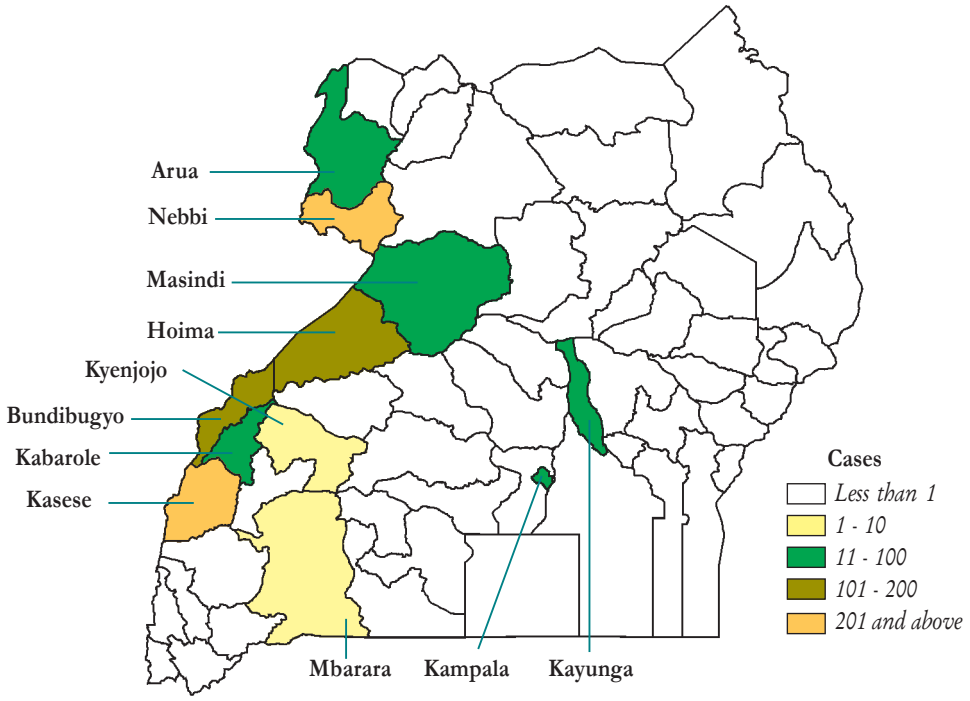
ARI is the principle cause of absenteeism in school, accounting for more than a third of school time. In the rural areas, children below 5 years get 1-3 episodes annually, each episode lasting a mean of 7-9 days [Ministry of Health, 1992].

Onchocerciasis is another environment related disease. It is a vector-borne disease that affects about 2 million Ugandans. It is endemic in 21 districts that mainly border the Sudan and DR Congo. Another disease, Schistomiasis, especially the intestinal type, is a public health problem in Uganda and is found in 38 of the 56 districts.

The 1991 national case search showed Uganda had the second highest prevalence of Dracunculiasis in the world with 126,367 cases in 2,677 endemic villages (from 16 of the country's then 39 districts). The endemic districts held about 33% of the national population.

Sleeping sickness is endemic in major foci in Uganda, one in South Eastern Uganda and the other in Northern and North Western Uganda. Cholera is a type of diarrhoea caused by ingesting large numbers of bacteria. It develops within a few hours and the body loses much water and salts. It is mainly transmitted via hands; food contaminated with faeces as well as poorly disposed or littered faecal material. *Figure 6.2* shows the Cholera situation in Uganda for the period 1997 to 2004.

Fig 6.2 Map showing districts most affected by Cholera outbreaks, 1997-2004



Source: *Ministry of Health*

Traffic and transport form another source of environmental risk in society. Traffic–related burden includes not only injury and death, but also the consequences of pollution with lead and the effects on urban air quality. The number of vehicles on the roads have tripled over the last decade. The number of people killed has also been growing (*Figure 6.3*).

Fig 6.3 Relation between number of vehicles and persons killed

Source: *Uganda Police*

Uganda has adopted several measures in response to environmentally related causes of death and ill health. The use of insecticide treated nets (ITNs) is one of the most cost-effective methods of malaria prevention in endemic areas. Ministry of Health has set a target to have all children under 5 years and pregnant women sleep under ITNs. In 2003, 467,081 nets were sold/distributed, an increase of almost 187,000 nets or 67% compared to 2002 figures, a more than doubling of the 2001 totals (Republic of Uganda, 2004). Presently, the government is trying to establish the feasibility of fighting malaria using DDT. DDT is also thought to be dangerous to the environment. Hence, a proper balance has to be made (*see Box 6.1*).

Government is controlling Ochocerciasis using mass treatment with Ivermectin and vector control in selected focal areas. All the affected communities have been accessed (100% coverage) and 100% of all eligible clients were taking the drug (therapeutic coverage) in 2003/04. The method of drug distribution is based on the Community Directed Ivermectin Distribution model (CDTI), a community driven drug distribution programme. The programme has recently extended to new areas, e.g. Soroti, Kumi and Kaberamaido districts. The programme is still funded mainly by African Programme for Onchocerciasis Control (APOC).

A national plan for the control of Schistosomiasis and soil transmitted worms was developed and resources mobilised through the Gates Foundation funded Schistomiasis Control Initiative. This enabled the successful completion of the pilot phase during which

Box 6.1

Making trade offs when promotion of millennium development goals (MDGS) conflict

The debate in Uganda on the use of dichloro-diphenyltrichloroethane (DDT) to control malaria presents a clear example of MDGs conflicting. The 6th MDG is to combat malaria, which DDT would do. However, its use would conflict with MDG 7, to "ensure environmental sustainability." As a result of this, arguments supporting each goal have been put across to influence the decision making process.

DDT is said to adversely affect the environment because when released into the atmosphere, it travels for miles, returns to the earth and builds up in the body fat of wildlife. Harmful effects among wildlife have also been linked to DDT, for example, thinning of eggshells in birds, abnormal sexual development in male rats and alligator eggs exposed to DDT; possessing both male and female reproductive characteristics.

However, although these effects undermine MDG 7, they have been referred to as "minimal". According to the Ministry of Health, there is no convincing evidence of the adverse effects of DDT exposure as a result of indoor residual spraying (IRS). It is also argued that evidence has shown that the reported environmental effects were a result of DDT overuse in agriculture and not the small amount sprayed in houses.

In addition, it is argued that other preventive measures which are proven to have an impact on malaria such as vector control using insecticide treated nets and IRS with other chemicals are too expensive for a third word country.

The debate on whether to use or not use DDT is influenced by international opinions. For example, the fact that the Stockholm Convention on Persistent Organic Pollutants considered DDT use acceptable. An 'open letter' written by a representative of the Malaria Foundation and signed by over 370 scientists and doctors rejecting the call for a ban on DDT has also been influential.

This debate, which is still ongoing, reflects the true and practical situation of conflicting interests. It also underscores the importance of scientific, research and public participation in order to make an acceptable trade off.

500,000 individuals in 18 districts were treated. In October 2003, in collaboration with the measles campaign, 9 million school age children were de-wormed. Plans have been completed for the second phase when 1,000,000 new people will be treated and 500,000 from the pilot phase re-treated in 2004.

Since 1992, the guinea worm has been eliminated from 15 of the 16 previously endemic districts. The remaining district, Kotido, is situated in Karamoja region and is experiencing prolonged insecurity. It reported 13 cases in 2003, all in one village.

Concerted efforts (with support of DFID and the European Commission for the South Eastern focus and of MSF France for the North Western focus had brought sleeping sickness under control. However, a relaxation of control efforts has resulted in the re-emergence of active transmission that has now reached epidemic proportions in both areas and even spread to new areas, e.g. Soroti, Kumi and Kaberamaido districts.

Government plans to achieve its elimination by 2020 as part of the Pan African Tsetse and Trypanosomiasis Eradication Campaign (PTTEC).

Road traffic accidents are largely preventable. The government has instituted a combination of measures in the recent past to address this type of environmental risk. Through engineering measures, the roads, particularly in Kampala have been redesigned to improve traffic flow. Secondly, the government has directed the installation of seat belts in all public service vehicles, and the wearing of helmets by cyclists. Thirdly, it has directed the installation of speed governors to control speed.

As part of its future development path, the Government has formulated a Health Sector Strategic Plan II, 2005/06-2009/2010. The plan has a framework for the delivery of what is known as the Minimum Health Care Package, under which environmental health related diseases are to be prevented, and others eliminated under one of the four outcomes. Core planned interventions are (i) hygiene promotion and sanitation at household and village level, (ii) water quality surveillance, (iii) food safety and hygiene, (iv) vector control, and (v) capacity building for environmental health staff.

6.3 Energy

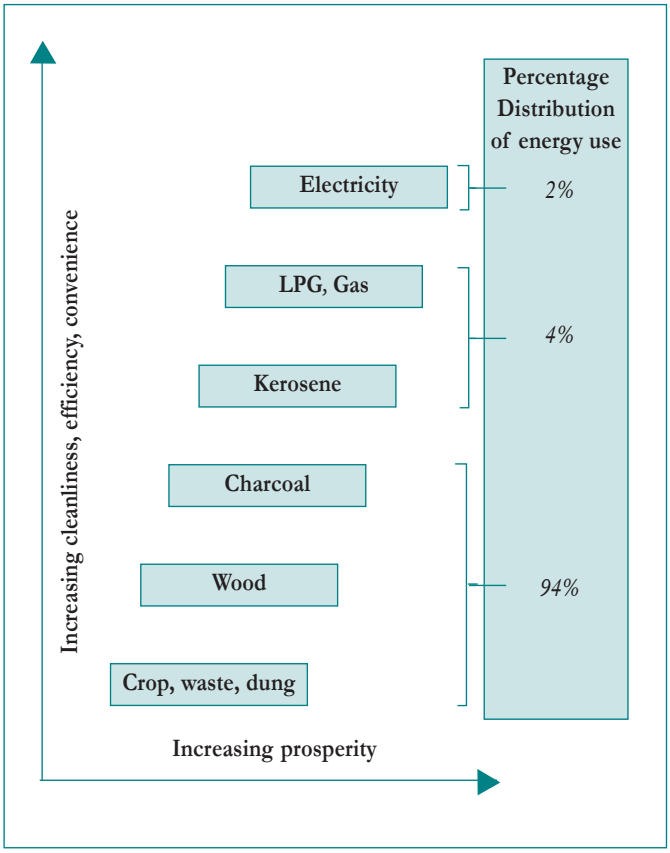
Whereas the importance of energy in development clearly emerged at the Rio Conference, there was no integrated action programme in the field of energy agreed upon by countries. The essential linkages between energy and socio-economic development were not approached in an integrated fashion.

As a result, the recommendations concerning energy and development remained dispersed after the Summit [James Gustave Speth][9]. Global consensus was reached only with regard to the important energy related issue of climate change. Further, when the MDGs were declared in 2002 there was no specific MDG on energy. While that is the case, there is emerging evidence to suggest that energy must be taken as a priority for sustainable human development.

[9] *www. undp.org/seed/energy/contents.html*

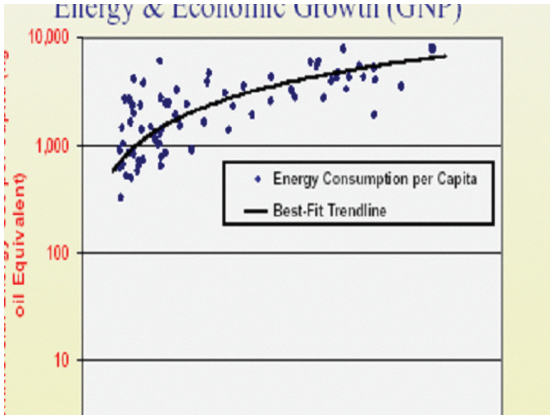
According to the energy policy for Uganda 2002, the energy sector is directly linked to the other sectors of the economy, providing their lifeblood. However, presently the majority of people in Uganda are still constrained in accessing modern energy sources, with the consequence that as high as 94% use energy from biomass. This has increased the risk of exposure to indoor air pollution, and the risk of falling sick from ARI (*Figure 6.4*). With development, there is generally a transition up the so called 'energy ladder' to fuels which are progressively more efficient, cleaner, convenient and environmentally friendly. Uganda is very low on that ladder.

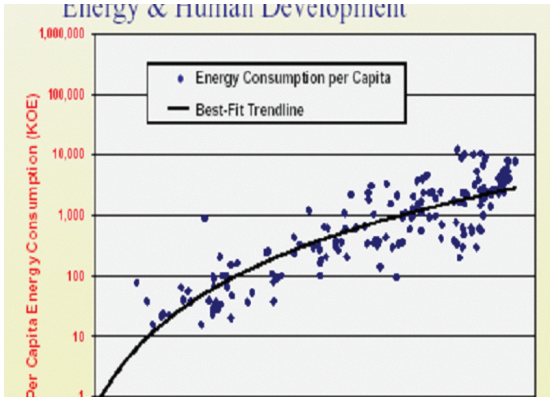
Fig 6.4 **Energy ladder and location of Uganda's population**



On one hand, *Figure 6.5* shows a relationship between energy and economic growth. On the other, *Figure 6.6* demonstrates that there is also a steep increase in HDI as *per capita* energy consumption increases. A modest increase in *per capita* energy consumption by the poor can lead to a tremendous improvement in the quality of life.

Fig. 6.5 - 6.6 **The Energy-Poverty Linkages**





Source: *www.netl.doc.gov/publications*

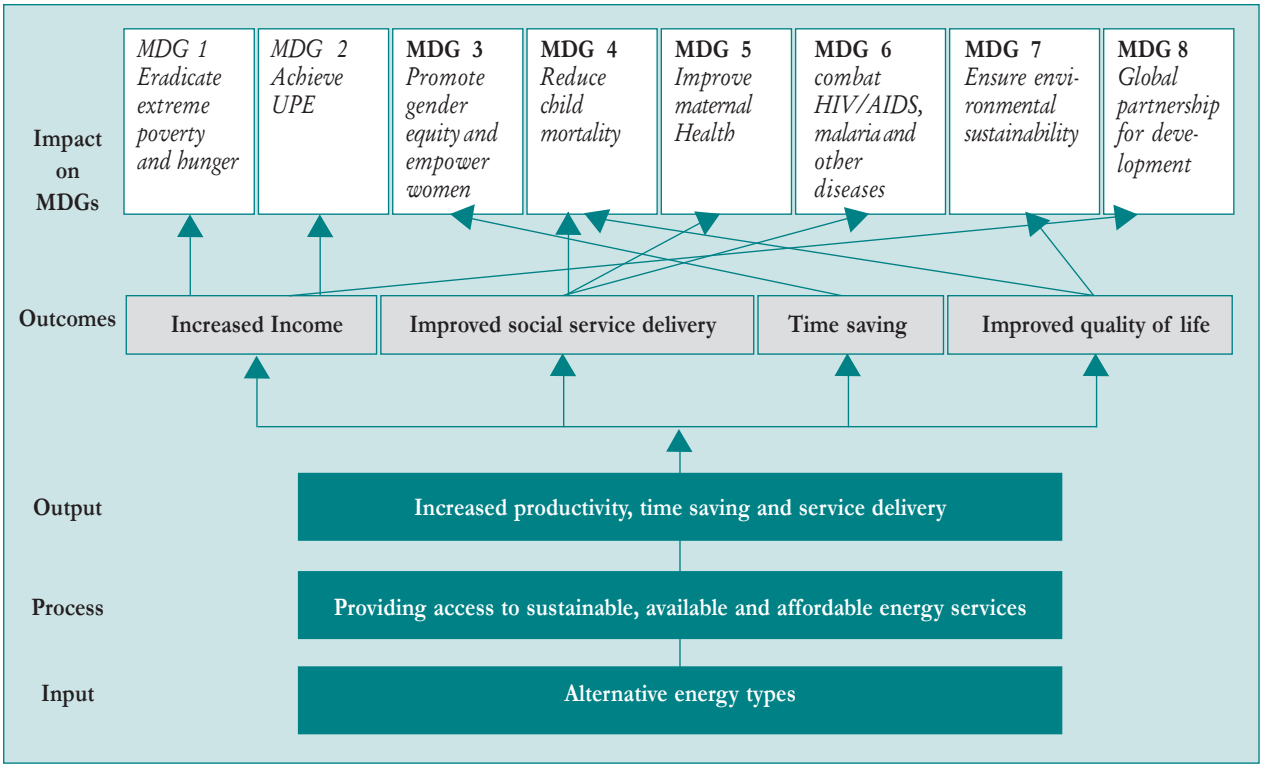
Further, although there is no explicit MDG on energy, energy is essential for achieving all the goals set by the world leaders. The importance of energy in meeting the goal of halving poverty by 2015 was reflected in a key decision at the ninth session of the Commission on Sustainable Development.

> *"To implement the goal accepted by the international community to halve the proportion of people living on less than one dollar per day by 2015, access to affordable energy is a prerequisite."*

Secondly the UN Millennium Project, which is an independent advisory body commissioned by UN Secretary General Kofi Annan to recommend strategies on how to achieve the MDGs, is coming to the conclusion that no energy, no MDGs. Overall, *Figure 6.7* shows the linkage of energy to MDGs.

Uganda is responding in several ways to address the issues of energy. It formulated an energy policy in 2002 and there is a rural electrification strategy and plan 2001-2010. It is also implementing an Energy for Rural Transformation (ERT) programme to provide (a) rural households with the direct and indirect benefits of increased access to electricity and (b) to rural enterprises, the benefits of increased productivity and income arising from electricity access.

Fig 6.7 **Linkage of Energy to MDGs**



However, increased load shedding suggests that Uganda has yet to invest more in energy, short of which many of the MDG targets may not be met.

6.4 Environmental awareness

Proponents of human development advocate for people's participation in decision-making. For them to do so, they need to be empowered through information. Public awareness of the condition of the environment, and of the social and economic impacts of environmental degradation, has probably been the most important driving force for environmental improvement.

Recognising that the population was neither well informed about the opportunities in environmental management nor the risks of environmental abuse, the government provided in the Constitution the need for environmental awareness. There are several examples to illustrate that lack of awareness on environmental issues is detrimental to human development.

In 2000, fishermen in Lake Victoria used poison to catch fish. This resulted in several deaths and government was forced to educate the fishermen and the public for the practice to stop. It also affected fish exports as the European Union banned fish from Uganda and other East African states that share Lake Victoria.

Secondly, many people fail to understand the likely negative health impacts of their actions or those of their neighbours with the consequence that ultimately the whole society suffers (*Box 6.2*).

Box 6.2

Empowerment on environmental rights still needed to avoid slum-related diseases

Population in urban areas is growing and acerbating pressure on social services. In Jambula LCI of Kawempe Division in Kampala, the communities ranked unplanned houses high on the list of main environmental problems in 2000 during participatory poverty assessment process. They cited only 2 houses with plans. They also cited a house with 34 tenants without latrines. Public latrines in the area are locked at night, leading people to use polythene bags which later they throw into the drainage channels with potential risk of diseases. The residents construct houses at night to avoid the urban authorities from stopping them. Those who see them neither exert public pressure on them to stop nor report them to authorities. Such indifference is a reflection of lack of understanding of the likely negative impacts of these actions and lack of empowerment among the urban residents. By implication, urban local authorities need to invest in empowering urban residents to demand their rights to a clean and healthy environment. Short of that, urban planning standards will continue to be abused, and people will also continue to exert negative impacts on their neighbours.

Source: *Maureen Nakirunda (2003).*

On the reverse, there are also examples that people who are conscious of the environmental impacts on their health have taken drastic measures. An example is the reaction in 1997 of the residents of Hima Cement Factory on grounds of air pollution. For every 100,000 tonnes of cement produced, 7,000 tonnes was being emitted as dust. The residents forced the factory to modify its technology; it reduced dust, and increased sales. (Kazoora & Ogwang, 1997). Secondly, recognising the risk from passive smoking, NGOs have spearheaded the campaign for regulation on smoking.

7 Past and current investment in environment

7.1 Investment in sectoral policy and legal framework

Broadly, the areas Agenda 21 called upon governments to invest in have been shown in the framework in *Figure 2.1* as transformation factors. They include financial resources, technology, science and research, trade, information, and institutional strengthening, etc.

Between 1991 and 1994, Uganda undertook the National Environment Action Plan (NEAP) process which, among others, took stock of its laws and policies in relation to the challenges for a sustainable future. Since then, several policies and laws have been formulated. Ordinances, bylaws, regulations and standards have been made as represented in *Figure 7.1*. However, the fundamental question we have to ask ourselves is: to what extent do policies, laws, regulations, standards, etc, support or promote human development and what lessons can we draw for the future?

Fig 7.1 Environmental Legislation and Regulations in Uganda since the Earth Summit, 1992

A key feature of the environmental laws and bylaws is their increasing focus on socio-economic development, in addition to environmental management. In that way, they link environment to social aspects of human development. By way of examples, the overall objective of the National Environment Management Policy 1994 is "sustainable social and economic development which maintains or enhances environmental quality and resource productivity on a long-term basis that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" [MNR, 1994].

One of the purposes of the National Forestry and Tree Planting Act 2003 is "to promote the improvement of livelihoods through strategies and actions that contribute to poverty eradication".

These trends are a reflection of increasing awareness on poverty as an underlying cause and consequence of environmental and natural resource degradation, specifically in Uganda.

Until recently, environmental laws have generally not addressed human development issues. This is partly because there has been no culture of mainstreaming human development issues into environmental laws. Where this may have occurred, it was by default rather than planned.

Whatever the case, the country should take advantage of the few opportunities in terms of legal provisions in support of sustainable human development. Presently, the biggest constraint is that environmental laws, policies and other instruments are not popularised among the people meant to benefit from them (*Box 7.1).* Hence, there is need to invest more in environmental awareness.

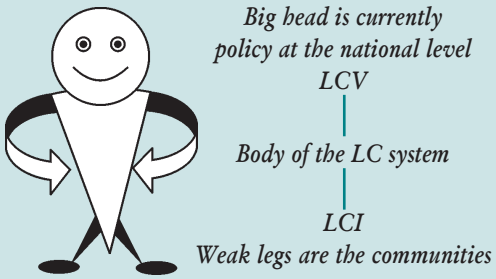
Box 7.1

Perceptions of the poor about government policies

In 1999, MFPED under a unique partnership with CSOs and donors carried out the first-ever UPPAP in 24 rural and 12 urban communities in 9 districts of Uganda. The objective of the exercise was to bring the voices and perspectives of the poor into central and local governments' policy formulation, planning and implementation. In one of the groups in Kampala, an urban area where there is even more access to information, and where people are more literate than in rural areas, people drew the analogy of government policy shown below. It describes government policy as a person with big head, and a body that diminishes in size towards the small, weak legs.

The presentation means that at the national level, policies are important, but in the communities they do not have legs to stand on. Government policies may be well intentioned but they are not well understood by local people in terms of why they are formulated, what they are meant to achieve and their intended benefits. Local people stated that policies often fail at the implementation stage in the communities. Because of these factors, policies are often viewed negatively by local people; the government is out to bite the toothless and as having a negative effect on the livelihood of the poor.

The lesson from this case study is that if local people fear policies and are not aware that they are for their benefit, then implementation is seriously jeopardised.



Source: *MFPED [2000] Learning from the Poor, page 50-51*

7.2 Environmental rights as human rights

The second important landmark of Uganda's environmental laws and regulations is recognition of human rights. The laws of Uganda have mainstreamed environment as a human right. Section 39 of the Constitution of Uganda states: 'Every Ugandan has a right to a clean and healthy environment'. Section 4 (1) of the National Environment Act lists the same right. There is no doubt that environmental protection is a means to several human rights. Actions leading to environmental degradation constitute an infringement of the human rights to life, health and livelihood.

Likewise, the legal protection of human rights is an effective means of achieving the ends of conservation and environmental protection. For example, the right to education helps to raise environmental awareness and equip disadvantaged groups with the skills required to combat ecological damage. Uganda's acceptance of environmental rights is in harmony with the African Charter on Human and People's Rights, which expressly recognises the right to live in a healthy or satisfactory environment.

There is a growing domestic case law indicating the potential role that environmental rights may play in achieving human development objectives (See *Box 7.2*).

The case above illustrates that Uganda has great opportunity to build on these good practices to re-affirm the link between human rights and environmental protection as an essential tool in the eradication of poverty and the achievement of sustainable human development. At the same time, investment has to be made to empower the citizens to demand for their environmental rights from those

Box 7.2

The Environmental Action Network Ltd *Versus* The Attorney General and National Environment Management Authority (NEMA)

In the above case, the applicant called The Environmental Action Network Ltd, is a public interest litigation group. It applied on its own behalf and on behalf of the non-smoking members of the public in 2001, under Article 50 (2) of the Constitution, to protect their rights to a clean and healthy environment, their right to life and for the general good of public health in Uganda.

However, the respondents (Attorney General and NEMA) brought preliminary objections, on grounds, among others, that the plaintiff had not established the effect of public smoking.

The judge, Justice J.H. Ntabgoba ruled that the witness (Philip Karugaba) had given a lot of details about the dangerous effects of passive smoking. Mr. Karugaba had cited the United States Surgeon General's Report, the United States Environmental Protection Agency (EPA) Report, and the National Health and Medical Research Council Report. Those dangers included lung cancer, respiratory infections and asthma, all which can cause death.

Further, Mr. P. Karugaba had deponed that "non-smoking Ugandans have a constitutional right to life under Article 22, and constitutional rights to a clean and healthy environment under Article 39 of the Constitution of the Republic of Uganda". He also referred to the United Nations Convention on the Rights of the Child, to which Uganda is a signatory and which states that "Children have rights to adequate standard of living under Article 27".

In his ruling, the Judge overruled the respondents, and ordered for urgent fixing for hearing of the case.

Source: *HC: Misc. Applic. No. 39 of 2001*

agencies, institutions and individuals likely to violate them. This is urgent in view of the fact that monitoring of environmental compliance by government institutions is still weak.

7.3 Promoting equity and participation

Another important contribution to human development by environmental laws, projects and programmes is the investment in empowerment of the people to participate in environmental management. The Uganda Wildlife Act has provisions for collaborative management. The same is true for the National Forestry Policy 2001 and the National Forestry and Tree Planting Act. Hitherto, natural resource management was concentrated in the government institutions. Decentralisation of natural resource management has broadened people's choices to livelihoods in Tororo and Mbale; communities there have signed collaborative forest management agreements with the National Forestry Authority. Multiple use agreements are also a common feature between Uganda Wildlife Authority and communities around Bwindi and Mgahinga National Parks. Some communities have invested their earnings from the management of natural resources into education and health facilities (see *Box 7.3*). All these examples demonstrate that with conscious effort equity in accessing resource use can be achieved.

7.4 Empowering the poor through their institutions

Environmental decisions concerning setting standards and interpreting risks associated with certain actions should be taken at the lowest

Box 7.3

Returns from community-based tourism fund human development initiatives

In 1992, six community members, assisted by an American Peace Corps Volunteer, founded Kabarole Foundation for Rural Development (KAFRED), at the boundary with Kibale National Park. KAFRED's overall objectives are conservation of natural and cultural resources, promotion of conservation education and development of income generating activities like eco-tourism. KAFRED runs an eco-tourism enterprise in the Magombe swamp today referred to as Bigodi Wetland Sanctuary.

As a result, several achievements have been registered, notably conservation of the wetland as a habitat to 8 species of primates and 130 bird species, 3 species of fish and 10 of amphibians.

The wetland is now a hotspot for birding. Through this local initiative, the global community too is able to partake of the values of wetland conservation. KAFRED also raises revenue, now averaging about Shs 36 million annually (equivalent of $21,000) from hosting about 1,800 tourists annually. Using proceeds from tourism, KAFRED has sponsored the construction and management of a secondary school since 1993, a community health centre and a sanitation project. The school has 150 pupils. Because of tourism revenue, KAFRED subsidises the school fees by paying 50% for each pupil. There are also other multiplier benefits like improved agricultural production and formation of other enterprises like Enyange Dance and Drama Group, Bigodi Women Group, and Bigodi Peanut Group.

KAFRED's best practices in community-based tourism have globally been recognised under 2003 World Tourism Organisation (WTO) case study: "Sustainable Development of Eco-tourism; a compilation of good practices in SMEs. KAFRED were also the "Equator Initiative Award 2004" finalist.

Source: *Personal communication with Mr. Tinka John, patron KAFRED*

possible levels of public authority closest to the population concerned.

In this regard, Uganda has LC1 courts at village and parish levels under the Local Governments Act. The Act empowers local councils to handle cases expeditiously, fairly and cost effectively. Some of the cases handled so far deal with environmental problems (*Table 7.1).* Without addressing some of the problems e.g. garbage, lack of sanitation facilities, people would be exposed to risk of disease. From a policy point of view, there is rationale and urgency to invest in empowerment tools suitable for the poor so that they can sufficiently deal with environmental problems on site.

7.5 Promoting cooperation for environmental management

Cooperation is one of the tenets of sustainable human development. That is, human development is concerned with the ways people work together and interact for their betterment. Cooperation is important in environmental management because it reduces conflict. There are several projects and programmes promoting cooperation. The Nile Basin Initiative is a transitional mechanism that brings together the riparian states as equal members to promote economic development and fight poverty. UNDP supported the River Basin Cooperative Framework to pave way for the equitable and legitimate use of the Basin's resources. Uganda is benefiting under one of the programmes called Nile Equatorial Lakes Subsidiary Action Programme (NELSAP).

The priority areas covered are water use in agriculture, sustainable management and conservation of Lakes Albert and Edward and linked water, watershed management, water hyacinth and water weed control and hydropower development.

Table 7.1 ***Good practices of using LC1 Courts in environmental justice***

LCI Court	Location	Type of environmental crimes already handled
Nakasero II Parish	*Summit Village*	*(i) Forced Uganda Blood Transfusion Service from burning waste blood in the open* *(ii) Halted imposters who were illegally cutting trees under the guise that they had permission from KCC. Instead, the imposters were selling timber*
Kagugube Parish 1	*Kitamanyagamba Village*	*(i) Improper garbage disposal, especially at night* *(ii) Stopping students in hostels from making too much noise to other residents* *(iii) Arrested drunkards who ease themselves anywhere*
Kamwokya II Parish	*Green Valley Zone Village*	*(i) Encourage the landlords to build both toilets and bathrooms for their tenants* *(ii) Forcing those who irresponsibly dump garbage to clean it up*
Nakasero 11 Parish Central Division	*Flats Village*	*(i) Tapping electricity illegally* *(ii) Eviction of tenants without warning* *(iii) Non-cooperators in keeping common space clean*

Further, through the Lake Victoria Environmental Management Programme, Uganda is cooperating with Kenya and Tanzania in the management of Lake Victoria and its catchment. The three East African countries have also cooperated to reduce biodiversity loss under a cross border sites project funded by UNDP and GEF. Uganda is also cooperating with Kenya for the management of Elgon watershed under the Mt. Elgon Regional Ecosystem Conservation Programme, through the East African

Community with funding from UNDP/GEF.

At national level, Kasese, Bushenyi, Rukungiri and Kamwenge districts have formed Lake George Basin Management Organisation, with support from DFID to manage Lake George and its environment. The same model of cooperation was extended to Lake Kyoga.

Table 7.2 ***Cleaner Production Benefits in Uganda***

Company	Benefits
Industries Ltd	■ *Water consumption reduced by 10%* ■ *Materials reduction worth US$564* ■ *Electricity consumption reduced by 20%* ■ *Furnance oil consumption reduced by* ■ *Reduction of breakdowns by 30%*
Ngege Ltd.	■ *Energy consumption reduced by 62.5%* ■ *Water consumption reduced by 30.5%* ■ *Overall yield increase from 38% to 41%* ■ *BOD reduction from 341 to 90mg/l* ■ *COD reduction from 874 to 140mg/l* ■ *Oil and grease reduction in waste from 1400 to 58 mgl*
Uganda Fish Packers	■ *Water consumption reduction from 14 to 12.05m³ per metric tonne of raw material*
Kakira Sugar Works Ltd. Agricultural sector)	■ *6% of fuel economy by reduction of emission levels* ■ *Reduction of Nitrogen fertilizer used (from 140-120 kg/ha)*
Kakira Sugar Works Ltd.(Sugar Factory)	■ *Water consumption reduced by 43%* ■ *Land required for construction of waste stabilization ponds reduced from 53 to 18 acres (2.1.2 to 7.2 ha)* ■ *BOD reduction from 1000 ñ 600mg/l* ■ *Improved work conditions (temperature, noise, light)*
Kakira Sugar Works Ltd. (Sweets Factory)	■ *50% reduction in power consumption* ■ *Reduction of materials wastage on assembly line from 25% to 7%*

Source: *UCPC, 2002*

7.6 Promoting win-win solutions

Another development in Uganda has been to bring on board the private sector in environmental management, under the Cleaner Production Mechanism (CPM). Cleaner Production (CP) is generally a new concept to the Ugandan business community introduced under the auspices of the Kyoto Protocol.

The approach deals with those challenges that industries face today. It enables businesses to maximise economic gains while at the same time minimising negative environmental impacts. Cleaner Production is being promoted by the Uganda Cleaner Production Centre (UCPC). The centre was established in 2001 by United Nations Industrial Development Organisation (UNIDO) and is funded by the Austrian Government.

It is emerging that a committed management of any enterprise can tremendously improve productivity, profitability, competitiveness, environmental compliance and working conditions of employees with reduced financial inputs. This is mainly because application of Cleaner Production requires changes in attitude of decision makers in an enterprise. As part of its application of Cleaner Production, the UCPC introduced the Eco-Benefits Programme in companies to help them keep their operational costs down. The benefits from the Cleaner Production are shown in *Table 7.2*. There are three gains: benefits to the environment (e.g. reduced BOD), benefits to the organisations (reduced costs) and benefits to the health of workers (improved work conditions). These are win-win solutions.

7.7 Enforcing environmental impact assessment

One main reason why there is a breakthrough in sound environmental planning and management so far is because, it is now a requirement under the National Environment Act. Cap 153 for new projects to carry out environmental impact assessments (EIAs), and for enterprises to carry out environmental audits.

The Environmental Impact Assessment Regulations 1998 provide details of how EIAs should be carried out, including assessing how activities impact on health.

7.8 Policy implications

Even though in drafting the environmental laws, policies or designing programmes issues of human development have not been consciously incorporated, there is evidence that the existing legal framework is nonetheless a good starting point. This is because aspects of human rights, human health, equity and livelihoods are included. However, this would now require a conscious approach, supported with relevant tools and methodologies to ensure that the country takes advantage of the synergies between environmental programmes and human development.

In turn, this calls for building the capacities of environmentally mandated institutions to start mainstreaming human development issues.

8 Policy implications and the way forward

8.1 Introduction

This chapter summarises the policy implications from the preceding analysis of the link between environment and human development. It also derives the key messages, to guide future interventions, aimed at consciously tapping and/or consolidating synergies between environment and human development.

In its revised PEAP (2004), the government has included a pillar on human development. Government and its development partners must plan how to support and coordinate the pillar on human development. Besides, it calls for a systematic approach in linking human development to other PEAP pillars on economic management; production, competitiveness and incomes; security, conflict resolution, disaster management, and governance. This Report, whose theme is: ***Linking Environment to Human Development: A Deliberate Choice'*** serves as a baseline to monitor future linkages between environment and human development.

8.2 Rationale for linking environment to human development

Agenda 21 of UNCED summarised the rationale for linking environment to human development thus:

> *"Human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature," (UN, 1992)*

In Uganda, there is evidence that the linkage between the two concepts is both practically and theoretically still relevant. First of all, under the UPAAP 1 and 2, the main causes of poverty were both from the human development and environment perspectives. Poor health and diseases continue to be the most important causes of poverty. Also significant is limited access to land and land shortage.

Secondly, the location of communities in relation to natural resources or environmental problems was likely to be a source of vulnerability. Vermin from forest reserves destroy people's crops and attack human beings. Exposure to indoor smoke exposes children and their mothers to the risk of catching Acute Respiratory Infections (ARI), a second cause of deaths nationwide.

Thirdly, investing in human development is also good for the protection of the environment. Skilled and knowledgeable people are in a

better position to respond to the incentives and opportunities and to take up non-agricultural employment.

Educated women are more likely to adopt family planning interventions than those who are not. Children whose mothers are educated record lower ARI prevalence (8-14%) as compared to children whose mothers have no education at all or with primary education (17-19%).

In conclusion therefore, government should urge and support environmental agencies to develop methodologies, tools and capacities to consciously integrate human development in environmental management.

8.3 Maximising synergies among the MDGs

It has also been demonstrated that ensuring environmental sustainability is central to the attainment of other MDGs. In five key areas – livelihoods, health, energy, vulnerability, and participation and empowerment – enviro-nmental management can help achieve human development outcomes and other MDGs. Likewise, it has been shown that achieving five outcomes for HDI and other MDGs – poverty reduction, education, gender equity, health and cooperation- can help achieve the MDG 7 on environment.

In other words, investment in environment offers a unique and cost-effective opportunity of achieving the MGDs and SHD. Moreover, without attention to the environment, the benefits of achieving the other goals may be short-lived. It thus makes sense to streamline investment in a manner aimed at achieving the MDG goals together because of the many synergies among them. It is therefore recommended that UNDP should support government and other agencies to develop capacities for integrated planning anchored on the MDGs.

A related policy implication from the above analysis is that since environmental sustainability is central to attaining the MDGs, there is justification to raise sufficient resources for investing in environment.

As a first strategy, environmental management must be mainstreamed in all spheres of development. Secondly, additional finances need to be raised to fund new or expanded investments e.g. for water and sanitation. Thirdly, the government should provide policy framework to enable institutions and people to forgo certain opportunities. For example, in complying with the requirement to reduce ozone depleting substances in the spirit of the Kyoto Protocol, institutions and people will incur costlier production processes for which they will need support. This should also include raising resources from the private sector.

8.4 Ensuring equitable development

There is no doubt conomic reforms imple-mented by the government since the mid 1980s have translated into an average growth rate of 6.0% per annum. In turn, the proportion of Ugandans living in absolute poverty has reduced from 56% in 1992 to 38% in 2004, but for sustained growth, a target growth rate of 7% needs to be achieved. Further, while economic growth is good, it does not automatically lead to sustainable human development across the

country. With 63% of the population in Northern Uganda living below the poverty line, the immediate challenge is to raise resources and coordinate efforts for the integration of 1.6 million internally displaced persons in Northern Uganda. As they become integrated, guidance on sustainable use of the natural resources will be critical.

Uganda's HDI for 2003 was 0.4888, up from 0.449 in 2002. Literacy rates have risen from 65% in 1997 to 70% in 2003. By gender, literacy rates for male are much higher than the females. Thus efforts in support of girl child education need to be intensified.

8.5 Restoring resource productivity

Using a few selected indicators, Uganda's performance on environment sustainability is low. Adjusted net savings as a percentage of GNI has not exceeded 3% in the last five years, and in some years, 1995 and 1996, it was negative. Negative adjusted net savings rates imply that total wealth of the nation is in decline. Secondly, Uganda has a negative ecological footprint. This is to say, the size of earth surface available to satisfy consumption lifestyle is exceeding the biological capacity of the space available.

Uganda's Water Poverty Index (WPI) is only 44.0 implying that more has to be done to provide access to water. Out of 147 countries whose WPI was calculated in 2002, Uganda was ranked 129. Compared with the world and Sub-Saharan Africa trends, Uganda's access to water is lower.

Further, using Environment Sustainability Index (ESI), which measures overall progress towards environmental sustainability, Uganda's performance is still low, with ESI of 51.3. This gives it a ranking of 57 out of 146 countries whose ESI was calculated in 2005.

Finally, using Ecological Wellbeing Index (EWI) which tests the extent to which Uganda can maintain its diversity and potential to adapt to change, Uganda performed below average, with the EWI of 44. It ranked number 93 out of 180 countries whose EWI was calculated. Without improving its performance on the environment, Uganda's choices to broaden human development too will be undermined. Uganda must thus restore resource productivity.

A key driving force of environmental degradation is Uganda's population. Climate change and degradation are causing food shortage, with negative consequences for nutrition. The value of soil nutrient loss is about $625 million annually, implying that the natural capital is being degraded. The current generation is thus leaving an ecological debt to the future generations. The government needs to assess the missing link between past and current investments in environment and poverty reduction to understand better why resources productivity is generally on the decline.

8.6 Improving access to modern energy

Improved access to energy has direct impact on poverty and overall human development since access to electricity supply raises rural

incomes by permitting the introduction of new technologies and services. Access to clean energry sources will reduce levels of indoor air pollution with overall positive health effects for the household. It will also relieve the girl child and women from the burden of fetching firewood that currently undermines school attendance by the girl child and labour productivity of women. Ready access to modern energy services will also foster the development of micro and medium-sized enterprises with potential positive income and employment effects. Although there is no explicit MDG on energy, it has been demonstrated that unless the government sufficiently invests in energy, it may fall short of its achievements on all MDGs.

8.7 Coming to terms with high population growth rate

With its 3.4% average population growth per annum, Uganda has a higher rate than that of Sub Saharan Africa, which is 2.1%. This growth rate may be sustained for a while given the commendable efforts in controlling the spread of HIV/AIDS. The upshot of this would be increasing population pressure on envirinmental resources, given the dependence of both the rural and urban population on the natural resource base for meeting livelihood needs. Increasing population pressure will also exert pressure on government social sector spending. In th e short run the government is challenged to enhance labour productivity, foster diversification of the economy so that industry and services absorb excess population from agriculture and take other measures necessary in curbing unemployment, which was listed as a cause of poverty by 85% and 28% of urban and rural population. In medium to long term, the government has to sustain programmes aimed at bringing population growth within the carrying capacity of environmental resources. Equally, it has to invest in technologies that generate more value-addition to the use of environmental resources.

8.8 Creating environment for natural resources to pay for themselves

Though tax revenue has increased from less than 7% of GDP in 1991 to about 12% in 2002, public expenditure has remained relatively high at 24.6% of GDP. Thus, the fiscal deficit has remained, reaching 12.4% of GDP in 2002. As the government pursues strategies to restore public accountability through fighting corruption and to attract donor support, it is equally challenged to create an enabling environment to make natural resources pay for themselves through appropriate valuation and pricing, integrating them in local and external markets, and providing incentives to attract private sector investment in them.

8.9 Fine tuning economy wide policies

Since the launch of the Economic Recovery Programme in 1987, the Government has scored on economic growth rates, inflation control and promotion of private sector development. However, increased pollution and demand for natural resources as a result of economic development, now draws our attention for the need to carry out strategic environmental assessment (SEA) and audits of our macro-economic policies to make them environmentally friendly.

8.10 Building capacity for environmental management

Through different legislation, the government has brought local communities, local governments, line ministries, NGOs and private sector into environmental management albeit with varying mandates.

The capacities of all the above have to be built to ensure continuity of effort at all levels. The decentralised planning processes provide an avenue for all inclusiveness in participatory planning, management and monitoring. Within the same framework, support needs to be given to communities to upscale micro-enterprises in environmental and natural resource management, which improve national and global conditions. Promising enterprises already exist in eco-tourism, processing of non-wood forest products, waste recycling and biodiversity conservation.

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