Uganda's Fading Luster: Environmental Security in the Pearl of Africa

A Pilot Case Study
Foundation for Environmental Security and Sustainability

EXECUTIVE SUMMARY
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USAID FROM THE AMERICAN PEOPLE

FESS Foundation for Environmental Security & Sustainability

Partnership for African Environmental Sustainability PAES

"Yet it is not possible to descend the Nile continuously from its source at Ripon Falls without realizing that the best lies behind one. Uganda is the pearl."

- Winston Churchill, *My African Journey, 1908.*

The **Foundation for Environmental Security and Sustainability (FESS)** is a public policy foundation established to advance knowledge and provide practical solutions for key environmental security concerns around the world. FESS combines empirical analysis with in-country research to construct policy-relevant analyses and recommendations to address environmental conditions that pose risks to national, regional, and global security and stability.

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The **Partnership for African Environmental Sustainability (PAES)** is a non-governmental organization established to promote environmentally and socially sustainable development in Africa. PAES focuses on policy studies and assists countries to strengthen their capacities in four program areas: environmental security; sustainable development strategies; sustainable land management; and natural resource assessment. PAES is headquartered in Kampala, Uganda, with offices in Washington, D.C. and Lusaka, Zambia.

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EXECUTIVE SUMMARY

I. Background and Approach to Environmental Security

The Foundation for Environmental Security and Sustainability (FESS) is a public policy foundation established to advance knowledge and provide effective solutions for key environmental concerns that pose risks to national, regional, and global security. With Congressional support, and through a grant from the U.S. Agency for International Development (USAID), FESS has developed the Environmental Security Assessment Framework (ESAF), a research methodology that uses a consistent, formalized analysis to construct policy-relevant recommendations that address potentially destabilizing environmental conditions.

At USAID's request, FESS has undertaken a series of three country-level environmental security assessment pilot case studies. The first pilot study focused on Nepal and was completed in the spring of 2004. The second case study dealt with environmental security in the Dominican Republic and was completed in the spring of 2005. Undertaken in collaboration with the Partnership for African Environmental Sustainability (PAES), the findings of the third case study, on Uganda, are the subject of the present report. In each case, the environmental security assessment has proceeded on two levels: as a field test of the ESAF methodology and as a focused country study aimed at producing specific policy recommendations for decision-makers.

Study Methodology and Process

An environmental security assessment examines environmental and natural resource issues as central questions and core analytic variables. However, the conceptual touchstone and key dependent variable is *security*, whether that of the individual (human security), community, nation, or region.

The ESAF is a tool for informed policy decision-making that seeks: a) to identify risks that arise as a result of the confluence of environmental variables and political, economic, and societal factors; and b) to evaluate the implications of these risks. It facilitates the setting of clear priorities, promotes the development of effective and sustainable programs, and provides consistency for comparisons across countries and regions.

The field study for this report was preceded by the international workshop, "Assessing Environmental Security in Eastern Africa: Achieving Sustainable Development and Peace," which took place at the Nile International Conference Center, Kampala, Uganda, on October 14–15, 2004. Convened jointly by PAES and FESS, the workshop brought together 38 participants from diverse disciplines, countries, institutions of higher learning, and international development agencies.

The field research was conducted in Kampala, in the Gulu district of northern Uganda, and in the southwestern area of the country. Particular emphasis and focus was given to northern Uganda in light of the conflict in that region. In addition to interviews, data was collected through the assistance of numerous contacts, both in and out of government, who shared a variety of documents, reports, and studies that touched upon important aspects of the investigation.

II. Patterns of Change in Uganda

Changes in the Environmental Landscape

Despite its abundant endowment of natural resources, Uganda's environmental security has been eroded significantly during the past several decades. Uganda has experienced severe land degradation, massive deforestation, wetland loss, and population displacement. Soil nutrient depletion is among the highest in sub-Saharan Africa. The country's forest cover stands at only 24 percent, compared to 52 percent about a century ago (NEMA 2002). The estimated deforestation rate is 2.2 percent per year (Butler n.d.). In the last decade (1990 to 2005), Uganda's forest cover decreased by 26 percent (Butler n.d.). Wetlands are also a vital resource, accounting for 10 percent of Uganda's total land surface area. Wetland losses have been significant; in Jinja district, for example, 80 percent of the wetlands have been converted to agricultural use (NEMA 2002).

As in many African countries, these changes in Uganda's environmental landscape are primarily due to anthropogenic factors involving population growth and the consequent expansion of agricultural land and urban settlements. Unsustainable agricultural and rangeland practices as well as policy and institutional weaknesses have compounded the problem. To the more than 80 percent of Ugandans who derive their livelihoods from land, land degradation means low and declining agricultural productivity, worsening poverty, and growing food insecurity.

Changes in the Socioeconomic Landscape

Uganda's GDP grew an average of 6.2 percent per year between 1987 and 2004 (IMF 2005a). However, when the country's high annual population growth rate of 3.3 percent is taken into account (Baguma 2005), the per capita growth rate has been relatively modest (2.9 percent) (IMF 2005a). The Ugandan economy continues to face a variety of constraints that may negatively affect the socioeconomic landscape in coming years. These include:

- *High debt.* Uganda is heavily dependent on donor assistance to finance government operations. In 2004, donor inflows net of debt-service payments reached about 12 percent of GDP, of which about half (6 percent of GDP) is provided as direct budget support (IMF 2005a).

- *Narrow production and export base.* Despite efforts at export diversification**,** coffee, tea, and tobacco still hold a central place in Uganda's economy (19 percent, 8 percent, and 8 percent, respectively, of total exports, according to 2003 figures). Non-traditional exports such as fish and fish products (17 percent), cut flowers (4 percent), maize (3 percent), and electricity (3 percent) have been gaining importance as foreign currency earners in recent years (UBOS 2004). Generally, however, Uganda's economy remains vulnerable to international commodity price fluctuations, trade barriers, drought, poor road system, and lack of direct access to the sea.

- *Pervasive poverty and income inequality.* Despite progress made in poverty reduction in the mid-1990s, many Ugandans find themselves in conditions of abject poverty. The proportion of people below the poverty line increased from 34 percent in 2000 to 38 percent in 2003 (IMF 2005b). The fall in agricultural prices (coffee and vanilla) and the protracted conflict in northern Uganda contributed to the reversal.

Uganda has made significant progress in education and health in recent years. Primary education enrollment increased by more than threefold during the period 1986–2003. Specifically,

enrollment figures stood at 2.2 million in 1986 (Kirungi n.d.) and had increased to 7.6 million by 2003 (UBOS 2004). The introduction of universal primary education (UPE) spurred this rise in enrollment but also caused the pupil-to-teacher ratio to jump dramatically, from 38:1 to 60:1 (Kirungi n.d.). This evidently makes it more difficult for teachers to provide attention to individual students. Another problem is that the secondary education system consists of too few schools to serve the rapidly increasing number of primary school graduates. Moreover, the few secondary schools that exist are concentrated in the urban areas making them inaccessible to most rural students.

In public health, Uganda is renowned for its success in combating HIV/AIDS during the 1990s. In the early 1990s, Uganda suffered from alarmingly high rates of infection, reaching as high as 30 percent in some especially hard-hit areas (Uganda AIDS Commission 2001). Yet, according to estimates by the U.S. Census Bureau/Joint United Nations Program on HIV/AIDS (UNAIDS), Uganda reduced the prevalence of HIV by two thirds in a decade, going from an overall peak prevalence rate of 15 percent in 1991 down to 5 percent in 2001 (USAID 2002).

Despite its acclaimed success in controlling HIV/AIDS, the HIV/AIDS rate in Uganda remains high by world standards, and there also is a high rate of tuberculosis infection. Much of the HIV/AIDS infection in Uganda is believed to occur in poor peri-urban areas with high population density, poor hygiene, inadequate sanitation, and overall poor housing and living conditions. Thus, a further reduction in the rate of HIV infection may require an improvement in overall living conditions.

Malaria, which has received less attention than HIV, is perhaps Uganda's greatest health care challenge, costing the country more than $347 million a year (Associated Press 2002), with up to 40 percent of its outpatient care going to the infected population (UMOH n.d.a). In 2004, 80,000 people died of malaria in Uganda, half of them children under the age of five (UMOH n.d.b).

Changes in the Political and Cultural Landscape

Questions about the stability and security of Uganda at the national level must be framed within the context of unresolved political and cultural tensions. Under the leadership of Yoweri Museveni and the National Resistance Movement (NRM), Uganda has made strides in moving toward democracy and development, including political stability, brisk economic growth, and a relatively free press and judiciary. Progress in governance has included the establishment of new policies and institutions and of effective working relationships with many international financial institutions and donors. Out of a turbulent past, the NRM has managed to maintain a relatively stable government that has held together for more than twice as long as any other government since independence from Britain in 1962.

Yet, the move toward a multiparty system of government is filled with uncertainties. As Uganda grapples with the contentious nature of the issues surrounding the role of political parties and President Museveni's re-election, pressure may build along existing ethnic and regional fault lines within the country. The persistence of political practices that have run through recent Ugandan history may also contribute to tensions or instability. Such longstanding patterns include the use of the military to advance political objectives, the politicization of ethnicity for mobilization on behalf of state activities, and the use of corruption to build and sustain political alliances.

One notable characteristic of government structures in Uganda is an inadequate capacity to implement policies and enforce legislation which, in combination with corruption, adds to the prevailing mistrust of government. Additionally, the 1995 Constitution and the 1998 Land Act

have contributed to tensions between modern and traditional law, which may complicate the resettlement of displaced persons in the north when the conflict there comes to an end.

Growing environmental awareness and conditionalities imposed by development partners in dispensing aid have resulted in increased environmental legislation. However, this otherwise impressive array of laws has not been adequately matched by the institutional capacity to implement them. Some of the adverse consequences of the weak enforcement of laws on environmental management are becoming evident. The stiff resistance of the local population to eviction from wetlands is one example of the consequences of lax enforcement. The wetlands law had been on the books for a long time but was not enforced. As a result, people encroaching on wetlands came to expect that they had a right to be on the land. When the law was finally enforced, they resisted fiercely. This is an example of how weak implementation of the laws can have tangible repercussions on security and stability.

III. Findings

After exploring the linkages and interactions of a broad array of economic, social, political, and environmental trends, this study finds four principal areas of security concern—land, food, energy, and water. It should be noted that all of these issue-areas are interrelated in a variety of ways, and their separate treatment is for analytical purposes only.

Land Security: Seeds of Conflict

For Ugandans and a majority of Africans, land remains a fundamental resource and the primary source of livelihood and well-being. Indeed, land continues to occupy an important place in the social organization and economic development of Africans.

The 1995 Constitution and the 1998 Land Act of Uganda recognized four land tenure systems: customary tenure, freehold, leasehold, and *mailo*. Leasehold and freehold are the least common. Under customary land tenure, land belongs to the clans within a tribe, and the clan leaders are responsible for allocating it within individual families of the clan. Freehold tenure is a system whereby landowners hold registered land indefinitely, and the landowner enjoys full rights to use, sell, lease, transfer, subdivide, mortgage, or bequeath the land. The leasehold tenure is a system in which the owner grants the tenant exclusive possession of the land, usually for a specific period and, in return, the tenant pays rent or service. The *mailo* tenure system was established by the British colonial rulers in 1900, when they gave legal land titles to the royal family (*kabaka*). The tracts of land allocated were so large that they had to be measured in square miles (or *mailo*, hence the name of this tenure system) (Nkonya et al. 2004). The landlords in the *kabaka* then divided their land into smaller parcels (*kibanja*), which were rented out to tenants (*bakopi*).

The inclusion in the 1995 Constitution and the 1998 Land Act of four types of land ownership has meant at times an acknowledgment of overlapping rights to the same piece of land, and granting occupancy rights to land in perpetuity to both registered landowners and tenants. Today, there are a variety of environmental security concerns arising from land tenure, management, and policy:

- *Land titles.* Under the customary land tenure system, occupants do not have title deeds. Without documentary proof of ownership, customary land occupants are not secure from possible eviction, provided the evicting party tenders satisfactory proof that he or she is the rightful owner of the parcel of land. This entails involvement of local leaders (Local Council executives) alongside the clan elders in mediating the possession and exchange

of customary land. The 1998 Land Act provides for the issuance of a certificate of occupancy "to the occupant on application of the registered owner...." (Tukahirwa 2002). With this certificate, the occupant is able to demonstrate legal habitation and becomes a "statutory tenant of the registered owner" (Tukahirwa 2002).

- *Conflict over the degazetting of government land.* The Government of Uganda has adopted a policy of converting gazetted (public) land to private use in order to encourage investment and economic growth. However, this process, known as degazetting, in some cases has become a source of conflict between the government and local communities. The attitudes of communities in relation to the policy vary widely. For example, while the Government degazetted the Namanve Forest Reserve in 1997 without strife, its decision to degazette the Butamira Forest Reserve in 2002 brought it into conflict with local communities. The case ended with the Government issuing a land use permit—over community objections—to Kakira Sugar Works Ltd. to turn the forest reserve into a sugarcane plantation (Tumushabe and Bainomugisha 2004).

  On the other hand, residents of Kasese district have been demanding degazetting of most of their land or compensation from government on grounds that half of their territory is gazetted as game parks, forest reserves, prisons, or other government institutions. Similarly, the Karamojong have been angered by the gazetting of most of their fertile land, leaving unproductive land for human beings. This situation spurs them to go to neighboring areas, especially Teso and Lango, in search of pasture and water, setting the stage for conflict.

- *Tenure insecurity and unequal land distribution.* In Uganda, there is great inequality in access to and ownership of land among households and across districts (MWLE 2004). Tenure insecurity is widely felt, particularly among women landowners, tenant farmers, and households in densely settled areas. This tenure insecurity curtails land users from investing in land improvement, putting up permanent structures, and undertaking soil and water conservation programs.

- *Weakness in land governance.* This is a problem that the government's own Ministry of Water, Lands, and Environment (MWLE) has recognized. In a 2004 paper on national land policy, the MWLE recognizes that, until recently, land sector institutions were designed to serve the interests of a narrow minority of relatively wealthy registered landowners (MWLE 2004). The paper further states that decision-making processes have lacked transparency, and local institutions have not been empowered as foreseen in the decentralization policy. In urban areas, the existence of multiple large-scale landowners has made enforcement of regulations complex and difficult.

This study considered three regions in particular (northern Uganda, Karamoja, and the Albertine Rift area) where land tenure, use, and management may be a special source of security concerns.

- In northern Uganda, much of the land falls under the customary tenure system. Although the 1998 Land Act recognizes customary tenure and the fact that it is governed by traditional laws, the Act gave administrative power to modern institutions. This undermines traditional institutions and triggers land disputes. Further, the 1998 Land Act stipulates issuance of Certificates of Customary Ownership (CCOs) as proof of ownership, yet CCOs have not been issued, depriving landowners of a sense of security.

Contradictions in environmental legislation, particularly land and water resource laws, have the potential to be (and in some cases have already been) root causes of environmental insecurity in Uganda. Of more concern, however, is that although these anomalies have been identified, no steps are being taken to rectify them. As the war in the north slowly winds down, the need to streamline land laws becomes more urgent lest land tenure issues end up ultimately undermining the hard-earned stability in the region.

The 1998 Land Act stipulates that any tiller who has lived or used land for 12 years has a claim to it. Unfortunately, the Act does not make a distinction between landowners displaced by war and other absentee landowners. Because most Internally Displaced Persons (IDPs) have been away from their farms for more than 12 years, some fear that they might have lost the right to their land. This fear was compounded by widespread allegations that officers of the Uganda People's Defense Force (UPDF) have taken possession of privately owned land and used it for their personal benefit. In addition, there are reports of illegal logging by the military in areas where the local people were relocated in order to isolate the Lord's Resistance Army (LRA).

- Karamoja has been a scene of environmental scarcity, poverty, and protracted political instability. Data from the Uganda Bureau of Statistics show that the districts of Karamoja posted the highest Human Poverty Index (HPI) in the country. This, combined with environmental changes in Karamoja, has resulted in diminished crop cultivation and increased competition over shrinking pastoral resources. The outbreak of cattle diseases is common, and the Karamojong cope with these changes through moving to places where pasture and water can be obtained and through cattle raids against agriculturalists to re-stock lost cattle. The conflict has been fueled by the proliferation of small arms and ammunition.

- Rich in biodiversity, the Albertine Rift also has a high population density, with up to 600 people to 700 people per square kilometer in some areas (Plumptre et al. 2004). People living in the region have among the lowest incomes in the country, with over 95 percent relying on subsistence farming. Traditions of dividing the land among all children have placed huge pressures on the land. Heavy farming has destroyed and fragmented many habitats of the region. Firewood collection is also a serious problem that at times contributes to conflict. Further, recent wars in Rwanda, Burundi, and the Democratic Republic of Congo, have spilled over into western Uganda with adverse consequences for both the population and the ecosystem.

Food Security: From Seeming Plenty to Apparent Scarcity?

Benefiting from fertile soil and adequate rainfall, Uganda has escaped famine and extreme food insecurity common to many other sub-Saharan nations. Agriculture is one of the most important elements of the country's economy and employs between 78 percent and 90 percent of the population (FAO 2005 and AFDB 2005).

Yet food insecurity is growing, and today one out of every four children in the country is underweight (WRI 2003). Reflecting the decline in food security, there is a general trend toward increasing cereal commercial imports and food aid shipments.

Nearly two-thirds of the 3.5 million rural households are mired in unproductive, low-input/low-output farming producing food largely for their own consumption (USAID n.d.). On average, 40

percent of the country's households are food insecure throughout the year (Bahiigwa 1999). Leading problems contributing to this growing trend include:

- *Declining per capita land availability*. According to the National Environment Management Authority (NEMA) projections, between 1991 and 2015 the per capita cultivated land in Uganda is expected to shrink from 1.1 hectares to 0.6 hectares. The projections further estimate that by 2032, nearly all of the available arable land will be under cultivation.

- *Massive nutrient mining and consequent decline of soil quality*. One of the key threats to the country's capacity to feed its population is land degradation, particularly nutrient mining, in which nutrients are leached out of the soil as a result of frequent cropping without organic or inorganic replenishment. High population growth rates, extensive agricultural practices, and low rates of technological adoption and inorganic fertilizer use (compared to other African countries) have wreaked havoc on Uganda's soils. Today, farmers can no longer afford to leave areas fallow. No natural nutrient recycling occurs, and almost all crops are showing a decrease in output. The areas most affected by soil degradation include the highly populated areas of southwest, northeast, and northwest regions of Uganda.

- *Declining crop yields.* The continuous cultivation and cropping system practiced by farmers contributes to lower yields with each harvest. Declines in soil fertility have resulted in reductions in yields of both cash and food crops across Uganda. Between 1970 and 1997, per capita food production dropped by 44 percent (Bahiigwa 1999). The growth rate of food production, estimated at 1.5 percent a year, is less than half of what is needed to keep up with a population growing at more than 3 percent per year (FAO 2005).

- *Prevalence of pests and diseases.* Because of overuse and degradation of the land, almost all crops are affected by pests and diseases. Banana (*matooke)* production, the most important domestic food crop, already threatened by declining yields and by bacterial wilt existing in half of the districts in the country, is the biggest concern.

- *Lack of access to finance and extension*. Studies have found that "limited access to credit, agricultural extension and market information were associated with less use of fertilizer and, in the case of credit, lower productivity" (Nkonya et al. 2005). While increased access to finance and extension could help reverse problems of food insecurity, this would require significant resource allocations.

- *Deficient infrastructure*. Uganda's physical infrastructure is extremely inadequate and serves as a significant constraint to crop transportation. In the countryside, it is common to see bags of food sitting on the road waiting to be picked up and shipped to a larger community. Furthermore, an inadequate food distribution system prevents the balancing of surpluses and deficits across various areas of the country.

Energy Security: Approaching a Limit?

Uganda is endowed with significant energy resource potential. Hydropower is estimated at 2,000MW (NEMA 2002), the largest in the region (NEMA 1996). Hydrocarbon exploration has been undertaken in the Albertine Rift, and solar energy shows promise. Yet, 93 percent of the country's energy is derived from biomass, particularly wood and charcoal, and only 5 percent of the country is connected to the electrical grid. While the demand for energy is increasing yearly due to rapid population growth, only very limited progress has been made in developing hydro, solar, geothermal, and bioenergy resources.

Access to electricity exists primarily in the urban setting, yet urban dwellers face increasing prices and inconsistent supply. Urban residents and NGOs have voiced anger against the electricity provider. The lack of a comprehensive energy policy based on modern and sustainable energy is hampering the country's development.

Uganda's energy insecurity arises from a host of factors, including:

- *Heavy dependence on biomass*. Fuel wood accounts for nearly 83 percent of overall energy use. In urban households, biomass is used for 78 percent of energy needs, and the figure rises to a staggering 99 percent in rural homes (Pedersen et al. 2003). In rural areas, only about two percent of households have access to electrical power. Industrial use of wood and charcoal is also on the rise, with high rates of consumption in the brick and lime sectors as well as in the tea industry.

- *Limited access to electricity*. Per capita consumption of electricity is only 44 kwh/year (GOU 1999), one of the lowest rates in the world (NEMA 1996). The power sector suffers from regular supply deficits, frequent load shedding, illegal hook-ups, corruption, and challenges related to Uganda's topography. Twenty years of political turmoil, civil war, and economic instability incapacitated the energy sector by curtailing efficiency in energy consumption and production, reducing commercial energy supplies, and limiting energy options. Furthermore, where electricity does exist, most Ugandans cannot afford it.

- *Insufficient capacity and frequent power shortages.* This is one of the greatest threats to the sector's viability. Planned outages and system breakdowns are a daily occurrence and place significant strain on domestic consumers and businesses. The national grid loses as much as 28 percent of transmission due to theft (Luggya 2005). Collusion to avoid charges among personnel, paying customers, and non-paying customers is rampant.

- *The hydropower question*. Hydropower potential in Uganda is significant and is a viable renewable energy option. However, controversy and criticism over efforts to construct dam projects along the Nile have beset both large and small projects. President Museveni's recent pronouncements regarding a quick completion of Bujagali and Karuma dams notwithstanding, financial and other difficulties make that unlikely. Therefore, hydropower does not offer a short-term panacea from electricity shortages.

- *The uncertainty of oil.* Renewed interest in the search for oil in the Albertine Graben area may help alleviate the high petroleum costs the country faces. Surveys from one site estimated the area may contain as much as 1.2 billion barrels of oil (U.S. Department of Energy 2004). However, the use and sale of oil will enhance energy security only if the country avoids pitfalls common to resource-rich countries.

Water Security: An Emerging Destabilizing Factor?

Historically, Uganda's water resources have been sufficient to sustain the population as a whole, but this situation may not hold in the longer term. Since the late 1990s, Uganda has transformed its water sector and increased availability of water sources around the country. Despite its short-term success, in the medium term Uganda faces a significant challenge in meeting the steadily increasing demand for accessible, adequate, and clean water resources. Water requirements are rising at an alarming rate as a result of recurrent droughts, high population growth, and increased per capita demand. If current trends continue, demand may outpace supply of accessible water by the year 2025 (NEMA 2002).

While generous in quantity, Uganda's water resources are unevenly distributed across the country. Many subregions, notably those in the northern half of the country, have only sparse resources, such as groundwater and springs, available to the rural population. This situation is exacerbated by sporadic, drought-induced water scarcities that give rise to conflicts within and between communities. At the same time, prolonged drought conditions have contributed to a ten-year low in the water levels of Lake Victoria and to lower groundwater and spring levels in other areas.

Water policies and regulations are in place in Uganda, and the government has been working closely with the donor community and private sector to develop the water sector. Nevertheless, the current situation is one of uneven development resulting from neglect of certain areas, weak management at the district and local levels, and low institutional capacity for regulation and enforcement. Rural areas, in particular, are disproportionately underserved for both water and sanitation. The disparity between rural and urban areas may become a trigger for conflict as increasing population densities put more stress on limited rural water supplies.

Prominently located in two major basins, Uganda shares Lake Victoria with the two other border states of Tanzania and Kenya, and it shares the Nile River waters with nine other riparian states. Because of this, the utilization and management of Uganda's water supply must be viewed in light of transboundary concerns. Expanding populations within the riparian states and increasing population densities around Lake Victoria will continue to stimulate competition for water and other natural resources associated with Lake Victoria and the Nile, potentially generating community and transboundary conflicts.

IV. Environmental Security Scenarios: Whither Uganda?

Scenarios are not predictions; rather, they seek to define the boundaries of the possible in ways that illuminate differing potential futures. These possible futures are contingent in large measure on human agency—decisions made by citizens, communities, and policymakers. Policy actions (or the decision not to act) will influence greatly Uganda's development path and its chances for enhanced stability and security.

It is worth restating the definition of environmental security used in this study:

Environmental security is a condition whereby a nation or region, through sound governance, capable management, and sustainable utilization of its natural resources and environment, takes effective steps toward creating social, economic, and political stability and ensuring the common welfare of its population.

As can be seen in this definition, environmental security is an ongoing process rather than a static achievement. Similarly, the purpose of the three scenarios that follow is to trace out possible trends and directions rather than predict certain outcomes.

In the case of Uganda, assumptions about a set of key factors necessarily affect each of the scenarios. First, the range of climate variability that the country faces will be a significant conditioning factor, especially in terms of drought and other natural hazards. All of the scenarios assume that in the near- to medium-term climate variability will not increase markedly. Second, the chances for stability and security in Uganda are closely linked to the eventual resolution of the conflict in northern Uganda. The study assumes that the conflict will come to an end—at least in its present form—over the next few years. Third, changes in the rate of population growth will

produce differential effects on the environment and human security and on the probability of conflict. The study anticipates a range of outcomes, from continued population growth at current rates to a gradual but steady decline in the rate of growth. Fourth, the openness of foreign markets to Uganda's products will have significant effects on the potential for economic growth. In the near to medium term, this scenario assumes that the trend toward incremental but not dramatic liberalization of Uganda's foreign markets will continue. Lastly, the wild card in all scenarios dealing with Uganda's future security is the political evolution of the country. Will Uganda definitively move into stable electoral politics and beyond the extra-constitutional changes of government and violence that have marked the post-colonial era? Given the shifts over the past two decades in domestic political life and international norms, there is reason to be optimistic, but this question remains a cloud over the country that has not been entirely dispelled.

Scenario One: A Slide Toward Breakdown?

In comparison with other African countries, the state of Uganda's environment and natural resources is not seen as alarming by most knowledgeable observers. However, an initial scenario, which plays out over time the baseline trends identified in this study, suggests serious problems and the potential for a breakdown of stability and security.

For agriculture, the first scenario envisions modest successes at reversing soil productivity declines in certain areas. Nevertheless, overall the country would continue to face mounting problems of food insecurity. As a result of continued population increase, the number of farmers would rise in relation to total agricultural land. No groundbreaking transformations in the sector would dramatically mitigate land degradation and plant disease outbreaks. Sluggish rates of agricultural technology adoption would hamstring the country's ability to export commodities and feed the domestic population. Much of the remaining wetland and forest areas would be converted to agricultural land in order to produce for a growing population, with negative consequences for energy supply and environmental integrity. The development of irrigation would lead to occasional conflicts between pastoralists and farmers, with each competing for the use of stored water resources. In the near term, government spending on public goods, such as health and education, would take precedence over agricultural investments.

Given the heavy dependence on wood and charcoal by a growing population unable to afford electricity, the country would encounter limited success in solving the critical problems afflicting the energy sector. Only incremental progress in providing electricity and alternative energy sources would be anticipated. Intermittent load shedding, with the potential for periodic sustained blackouts, would occur. The extraction of oil resources might alleviate some problems, but oil discoveries could not be expected to act as a panacea for the struggling energy sector. Some progress in hydropower expansion might occur, and negotiations over pending projects would continue, with aggrieved communities typically excluded from the decision-making process. The availability of wood would remain tenuous as some successes in commercial plantations would offset the increasing demand for energy. Some areas of the country would fully deplete their meager wood supplies and resort to less efficient forms of biomass to cook, while the incidence of health problems would increase as indoor air pollution grew. Communities without energy alternatives would see significant migration flows.

In this initial scenario, the ambiguities and tensions over land tenure would heighten, especially in northern Uganda. In the context of the Plan for Modernization of Agriculture (PMA) and donor priorities, both of which envision a more market-based and export-oriented economy, there would be a secular trend away from customary land tenure toward leasehold and freehold tenure, which would facilitate the buying and selling of land for commercial purposes. Where overlapping and unclear tenure claims existed, the asymmetries of power would favor modern court and tribunal

procedures over traditional forms of adjudicating disputes. While this might resolve individual cases, grievances would linger, adding to latent tensions and instability. With the land tenure system biased in favor of male ownership, women and children would be vulnerable to dispossession and landlessness. The further fragmentation of landholdings, in combination with persistent levels of low agricultural productivity and reduced opportunities for relocation through migration, would add to the seeds of conflict in the land sector.

In post-conflict northern Uganda, absent a concerted effort on the part of government to assuage fears and clarify uncertainties over land rights, contention and conflict over land would increase, and the traditional authority by which chiefs and elders enforce negotiated compromises would diminish. Insofar as the decision of modern tribunals tended to reflect the preferences of the central government for alienable land rather than customary tenure, tensions between the north and central authority would be reinforced, if not amplified. In addition to these pressures over land issues, there would be instability resulting from the difficulty of integrating an entire generation of young people who, having grown up mostly or entirely in IDP camps, had neither the disposition nor the skills to develop a sustainable livelihood based on the land.

Looking ahead, in this scenario, if new policies are not developed, it would be hard to envision any lessening of land conflicts in Karamoja and the Albertine Rift. Indeed, in Karamoja, with population increasing and the amount of available and productive land limited, the Karimojong's search for water and grassland would become even more difficult, and conflict would increase. The spillover of pastoralist-cultivator and pastoralist-pastoralist conflict into Sudan and Kenya would raise the possibility of higher-level conflict over issues of sovereignty and law enforcement. The increasing availability and spread of small arms and other weapons would add a further destabilizing element to the equation. In the Albertine Rift, steady population increases would contribute to intensified competition over land. With sparsely settled land disappearing, the previously available escape valve of migration would begin to close. As land fragmentation and declining productivity eroded the viability of agricultural livelihoods, some persons would be driven into illicit crossborder activities, involving the smuggling of contraband such as gold, coltan, precious stones, ivory, and skins. These activities would raise the potential for transboundary conflict among the security forces or other armed groups in Uganda, the DRC, and Rwanda.

On the other hand, in the near to medium term, water is not likely to become a serious security issue. In this scenario, one would expect to see Uganda working to strengthen institutional capacity, especially at the local and district levels, although progress would be incremental, especially in terms of building transparency and accountability. Inefficient management and enforcement would continue to result at times in poor construction, inequitable distribution, and inadequate supervision of water and sanitation facilities. However, in coordination with donors and the private sector, Uganda would be able to continue to develop water and sanitation delivery to the rural population and be able to meet the Millennium Development Goals (MDG) for access to water before beginning to direct its focus away from simple provision of water points and toward more sustainable and integrated services. Increasingly frequent meetings with neighboring riparian countries over issues of transboundary water basin management would keep any international tensions over water within manageable bounds, although the institutionalization of these processes would remain incomplete.

Scenario Two: From Pressing Problems to Intractable Insecurity?

Although it is perhaps unlikely, it is by no means unimaginable that several of the many pressing problems faced by Uganda might worsen in sequences clustered so closely in time that they

would produce strongly negative synergies. The second scenario considers such possibilities and tries to envision some of the likeliest of these "less-than-likely-but-real" possibilities.

In agriculture, this scenario would entail continued rapid population growth, little or no change in the rate of agricultural technology adoption, and a steady decline in output, leading to increases in food shortages, often severe in some areas. The spread of banana wilt would destroy nearly all banana crops, exacerbating periodic food shortages and mortality. Minor conflicts in markets and other public spaces would occur over the price and availability of foodstuffs. Farmers unable to adapt quickly to growing new crops would migrate or be displaced. An eventual reliance on rice, cassava, and other calorie-dense food might mitigate the impact of the decline in bananas, but rice and cassava diseases already existing in Uganda would periodically place the country in an even more precarious position. An increased reliance on rice would result in further wetland encroachment, decreasing water supply and increasing pollution. The demand for rice would also politicize the agriculture sector in northern Uganda with powerful entrepreneurial forces advocating the development of large-scale rice plantations at the expense of small-scale farming. Long-held expectations concerning Uganda's food self-sufficiency would be overturned, and the country would begin to resemble other African nations facing severe food insecurity.

Under this scenario, the viability of the electricity sector would be severely threatened, and domestic and international efforts to support it would experience limited success. Incremental policy steps aimed at reform in the energy sector would not be effective enough to keep pace with biomass loss, bringing the sector to the brink of collapse. During several periods of intense drought closely bunched together, the water levels in Lake Victoria would drop, and frequent load shedding would be impossible to avoid. Small and medium enterprises would suffer from high failure rates as a consequence of constant interruptions in energy supply. Where electricity did exist, prices would increase. The number of users able to afford electricity would decrease, and they would turn to other unsustainable sources. Electricity theft also would surge. The high rate of population growth would have a proportional effect on the rate of deforestation, and the supply of wood would become nearly depleted. The government would face frequent incursions into national protected forests as people became desperate for resources for cooking and other basic needs. Conflicts over private property also would be likely to arise. In areas with minimal or no access to biomass, problems of malnutrition would increase; the worst-hit areas could face starvation. With government institutions weakened by crisis, the extraction of oil (were it to be found) would be marked by corruption and significant environmental degradation.

In a situation of food insecurity and energy crisis, the forces contributing to conflict over land would be intensified. Pressures on landholdings with declining productivity would increase and, for many people, access to the remaining sources of biomass would become a matter of survival. The government would turn to the rapid opening of public lands to the private sector in hopes of spurring investment and the commercialization of agriculture. Already unclear and overlapping land tenure rules would be subject to manipulation by powerful interests as they sought coping mechanisms or exploited opportunities created by economic disarray. The erratic, unpredictable, and ineffective implementation of government policies would deepen citizen cynicism and call into question the rule of law.

In northern Uganda, the crisis would be acute, with already suspicious former IDPs finding their fears confirmed in apparently arbitrary land decisions that undermined traditional forms of authority and destabilized the effort to restore secure livelihoods. Over time, the fallout of the extremely high HIV/AIDs infection rates in the north would become a serious drag on labor productivity and a burden for government services. Protests and continued instability would push the government to maintain the presence of the UPDF in the north, whose personnel would be

pursuing their own coping strategies, often involving the illegal use of land or other natural resources. Out of these economic, social, and political stresses, a post-LRA rebel group might emerge in Acholiland, with perhaps a wider social base and a more coherent political message.

Instability and insecurity would spread similarly to Karamoja and the Albertine Rift. Food shortages would heighten conflict between the Karimojong and cultivators, with both sides seeking to better arm themselves. Pockets of severe food insecurity would be found along the densely populated Albertine Rift. In both regions, the crisis would drive people across the borders in search of basic needs, and Uganda's neighboring states would feel obliged to attempt to secure their borders in response to the prospect of large-scale migration. The resulting instability in Uganda would have regional effects, given its role as a source of steadiness and strength for both East Africa and the Great Lakes region.

Confronted with urgent problems in agriculture and the energy sector, and with growing security concerns, Ugandan policymakers would shift funding away from the water sector. Existing gaps would widen in the development and delivery of water and sanitation facilities. Rural areas would be underserved, while their populations continued to expand and have greater per capita consumption needs. No structural changes would be initiated, with the result that sanitation would continue to be considered secondary to water access as a national concern. Inadequate sanitation development would become a major health hazard, especially in communities with increasingly dense populations. The lack of clean, readily accessible water would exact a toll on the health and livelihoods of the Ugandan population, with polluted and inadequate water sources adding to declining health and decreased economic productivity. Were there to be, as might be expected, inadequate waste management in the heavily populated Lake Victoria basin, it would cause disease and pollution that would threaten the viability of fishing livelihoods, having a significantly detrimental impact on the dynamic and growing fish export sector.

Preoccupied with its domestic crises, Uganda might well fail to commit adequate resources toward negotiation, policy development, and financial contributions to the regional organizations dedicated to address transboundary resource management for Lake Victoria and the Nile River. Competition over shared water resources would intensify as the demand grew over time within the various states for hydropower generation and irrigation, while the resources continued to be degraded by human activity. Relationships among the states would be eroded by lack of cooperation and coordination of policies and regulations, destabilizing the Great Lakes region.

Scenario Three: Gaining Ground in Pursuit of Environmental Security

The foregoing scenario is alarming by any standard. But what is perhaps most noteworthy, beyond its very preoccupying possibilities, is the interconnectedness of the various elements of food security, energy security, land security, and water security. The negative synergies that unfold among them are clear and powerful—a downturn in any single sector increases (although by no means guarantees) the chances of a downturn in the others. However, just as the lack of effective governance and poor policy choices can lead to vicious cycles, wise policy decisions can lead to *virtuous cycles* that support sustainable development and contribute toward the goal of environmental security.

A productive and sustainable agricultural sector would play a central role in the stability of Uganda in the near and medium-term. New and ongoing efforts to resolve challenges in the sector would begin to bear fruit. Some of the necessary elements would include measurable adoption of appropriate fertilizer use, near containment of banana wilt and other harmful diseases and pests, and an increase in market access. Cultural, financial, and educational barriers to appropriate agriculture technology adoption would be overcome by concerted and coordinated

policies and adequate resources. Soil degradation problems would receive enhanced levels of attention by the government, the international community, and individual farmers. A better balance of small-scale and industrial farming operations would emerge, and value-added industries would begin taking root, providing alternative sources of income for Ugandans and a strengthened economy less vulnerable to international price fluctuations for basic commodities. Ugandans would experience less food insecurity throughout the year in all parts of the country, but particularly in the north. Greater food security in the north would result from the cessation of violence, a peaceful return of IDPs to their homes, and the provision of resources needed to begin planting crops as soon as possible. These outcomes would be based on a sustained dedication of resources to preventing land conflicts, fostering sustainable agriculture and rural economic development, and financing transportation infrastructure.

Access to sustainable and affordable sources of energy would entail the initiation of a comprehensive paradigm shift in the country's approach to energy sector development. To put into motion such a process, policymakers, academics, and environmental activists would lay the foundation for initiatives to help the country establish sustainable alternative sources of affordable, efficient energy. The country's policy would seek a profile composed of a balance of renewable energy sources including such elements as solar power, hydropower, and biofuels. Critical components of a revitalized energy sector would entail the development of hydropower projects in coordination with the interests and needs of surrounding communities, resulting in supply of electricity to increasingly larger parts of the country. Wood and charcoal use would decrease, as ever larger segments of the population would begin converting to energy efficient practices, including improved cooking stoves and industrial reliance on renewable energy. Profits from investment in wood plantations needed to replenish biomass stocks would encourage expansion of the industry throughout the country. Plantations would gradually serve as a reliable source of local employment and income. The growth of plantations and the reduction of wood cutting would decrease soil erosion and improve soil fertility, with tangible benefits visible in agriculture and water.

Appropriate governmental oversight would ensure that any oil discovered in the Albertine Rift would benefit the country in the form of revenue and energy generation. The government, oil companies, and NGOs would actively participate in preventing or minimizing harmful impacts on local communities and protected areas. The government and the oil companies would agree to an extraction process conducted in a transparent and sustainable manner with active community participation. Effective environmental assessments and practices would guarantee minimal environmental damage. Regional discussions over the transport and sale of the commodity would push all participating countries toward enhanced regional integration and cooperation, with corollary benefits for regional security.

Increased agricultural productivity and a shift toward alternative energy sources would reduce pressures on the land and remove many of the underlying sources of conflict. The point of departure for a more secure land tenure system would be the completion of a systematic review of land titles, accompanied by a commitment to clarification of overlapping forms of tenure and the dissemination of reliable information to the public. The principle of resolving land disputes through traditional forms of dispute resolution wherever appropriate and whenever possible would be implemented, and the gazetting and degazetting of land would be done in the public interest rather than for the benefit of private parties.

The attainment of sustainable peace in post-conflict northern Uganda would be based on the early recognition of the urgent need to build trust between IDPs returning to their lands and the national government. This would entail a coordinated effort with the donor community to ensure the

provision of education, farm implements, and credit sufficient to establish sustainable livelihoods. An active effort to reintegrate the citizens of northern Uganda into the nation's political life would be carried out and coupled with social and economic assistance. This would reflect a conscious acknowledgement of the need for reconciliation beyond the simple cessation of violence. Dealing with land issues in a transparent manner respectful of local authority would be a cornerstone of political reconciliation. The return to barracks of the UPDF at the earliest time possible would be part and parcel of the process of confidence-building.

A more productive and diversified economy would relieve pressures in both Karamoja and the Albertine Rift, although perhaps to a greater extent in the latter region than in the former. In Karamoja, sporadic conflicts would be apt to persist, but the more secure position of cultivators might somewhat attenuate the frequency and intensity of conflict. To the extent that new forms of employment become available through economic diversification, tensions would ease in the Albertine Rift as job-seekers from the region migrated to urban centers or acquired employment with new agricultural enterprises.

With a stronger economy and greater resources, the government would continue to place a high priority on the water sector and to provide it with adequate financing as to remain on target to exceed the MDG goals by 2015. Water and sanitation facilities would become more equitably distributed throughout the country in accordance with varying population densities and in order to provide equal access to people in rural, urban, and semi-urban areas. These facilities would meet the growing needs of an expanding population for household consumption, waste management, irrigation, energy generation, and the development of industry.

Data collection and analysis would be improved. A non-centralized system of tanks and pipes for rainwater harvesting would be implemented in areas of the country most in need of increased water supply. Implementation of water and sanitation programs would reduce or prevent conflicts within and between communities over water rights. Although competition for water resources within the Nile and Victoria basins might increase over time, Uganda would play a constructive role in establishing effective transboundary management and governance to ensure the long-term peaceful sharing of water resources in the Lake Victoria and Nile River basins.

V. Recommendations

Based on our findings, we make the following recommendations:

To the Government of Uganda (GOU):

1. The GOU needs to continue taking concrete steps to reduce and overcome the trends leading to food insecurity in the country. Some of the key strategies to address this issue include:

    a) Developing a practical and efficient system for gathering crop, livestock, and other agricultural data from district officers. Currently, the collection of accurate data on a regular basis is almost entirely lacking.

    b) Enhancing the promotion of organic and inorganic fertilizer use and training in the areas where application is appropriate to improve production and food security levels, particularly in areas experiencing heavy nutrient mining.

c) Balancing efforts to commercialize the agricultural sector with the needs of small, subsistence farmers in order to avoid leaving a majority of subsistence farmers behind. "Outgrower schemes," which were first introduced in the 1960s, could effectively address this challenge. In these schemes (which were particularly utilized in tea and tobacco agriculture), small subsistence farmers at the outskirts of big industrial estates sell their crops to the company, which takes the responsibility for processing, marketing, and other infrastructure that peasant farmers cannot afford on their own. The company also provides extension services that expose subsistence farmers to better farming practices.

d) Focusing on the critical issue of soil erosion and nutrient mining in order to stem the decrease in productivity and wealth from land degradation.

e) Strengthening agricultural research programs that study preventive methods to curb pest and disease outbreaks, particularly those threatening key crops integral to the country's food security.

f) Maintaining and further improving the investment climate in order to advance food processing businesses and in order to provide additional income, jobs, and export revenue.

g) Strengthening agricultural extension services. Recent policies and innovations aimed at improved agriculture, e.g., the National Agriculture Advisory Services (NAADS), have not incorporated effectively the lessons of the traditional agricultural extension services, particularly the two-way exchange of information between government and the peasant farmer. The emphasis has been on research and technology, and there has been insufficient attention paid to grounding these in cultural and traditional practices. A review is needed in order to synthesize innovations with lessons from previous practices.

2. Improving current energy initiatives to reduce dependence on dwindling forest resources, avoid the use of expensive fossil fuels, and harness renewable sources would greatly enhance the country's security. It will also reduce deforestation and accompanying problems of soil productivity loss, lake and river turbidity, disease outbreaks, and threats to forest-dependent livelihoods. Efforts to advance the attainment of energy security should include:

a) Increasing investments in energy efficiency, not just in electricity access. Reducing electricity theft is one important element; promoting the spread of improved cooking stoves and other efficient technologies is another.

b) Developing a strategy to increase biomass density, which will both increase energy supplies and improve the environment.

c) Avoiding increases in the country's reliance on imported fuel, which could lead to instability as price and availability fluctuate.

d) Integrating the Ministry of Agriculture in planning on alternative energy sources, including biogas, biofuel, and biodiesel.

e) Focusing on small-scale hydropower projects to win the support of local communities and to minimize damage to surrounding environment and natural resources.

3. To increase land security throughout the country, ongoing and emerging threats should be addressed by:

    a) Developing a sustainable land use policy and management framework. The formulation of policies that promote equitable access to land and tenure security is indispensable for ensuring sustainable peace and development.
    b) Building understanding on all levels of government and society regarding existing land tenure practices, land rights, and legal procedures for obtaining titles.

    c) Clarifying and changing as necessary Land Act language to offer the greatest protection of rights and minimize conflicts between traditional and modern systems of land tenure.

    d) Amending the Land Act to establish and protect the rights of women to own land.

    e) Establishing public trust in the fairness and equity of land allocation decisions. Showing by example and by enforcement of the laws that land grabs will not be tolerated in the north or anywhere in the country.

    f) Raising institutions, such as the National Environment Management Authority (NEMA), the Uganda Wildlife Authority (UWA), and the National Forest Authority (NFA), up a level from government "authority" so as to increase their government funding and enforcement capacities.

4. A protracted war, pervasive poverty, mass displacement, and constant intimidation and fear, have made northern Uganda highly unstable and insecure in a variety of ways that are specific to that region. A post-conflict environmental security agenda in northern Uganda should include:

    a) Rehabilitating economic and social infrastructure and restoring livelihoods through the provision of an integrated package of agricultural inputs.

    b) Building the trust of internally displaced persons (IDPs) in government through improved communication and participatory development.

    c) Compensating for land occupied by the Uganda People's Defense Forces (UDPF) and IDP camps in the north, land displacements caused by small-scale conflicts as in Karamoja, and land occupied by refugee resettlements.

    d) Planning for the long-term effects of post-conflict urbanization. Because of the protracted displacement of northern populations to IDP camps, many young people are unlikely to pursue traditional agriculture. Putting into place strategies to support small town development, employment, and housing for the poor or homeless may help to avert the growth of slums at the edges of major population centers.

5. Water availability is emerging as a concern in Uganda as a consequence of rapid population growth, increasing per capita water demand, inefficient utilization of water supplies, intermittent and prolonged droughts, and pollution of sources. Water stress, if not addressed through concerted efforts by the government, civil society, and the private sector, may in the longer term lead to water insecurity. The following policy initiatives should help prevent the intensification of water-related conflicts in Uganda and in the Great Lakes region:

a) Improving the availability of clean, sustainable water supplies for the entire country. While Uganda is on target to meet the Millennium Development Goal for coverage, reaching Uganda's stated target of 100 percent coverage of both the rural and urban populations by 2015 will require an even higher level of commitment of financial and institutional resources than in the past.

b) Addressing the issues of parity between the urban and rural populations to alleviate tensions across communities and districts. Water and sanitation are managed by different agencies depending on urban or rural location. A structural reorganization potentially would facilitate rural-urban parity.

c) Elevating the priority and funding levels for the extension of sanitation coverage. Currently, the high priority given to attaining the Millennium Development Goal of total rural water coverage subordinates sanitation improvements to expansion of access to water.

d) Increasing institutional capacity for the collection and analysis of hydrological and climatological data. Strengthening capacities for early warning assessment and adaptive strategy planning would help mitigate conflicts that occur over periodic water scarcities resulting from drought and population migrations.

e) Addressing as a priority issue the need to harmonize national policies and regional agreements related to common water resources. Tensions within Uganda, as well as among riparian states, may be anticipated to increase as pressures on water resources grow in conjunction with rapid population expansion.

f) Strengthening institutions developed to coordinate and manage the negotiated use of the basins of the Nile River and Lake Victoria. To envision and plan for a future in which the country may significantly increase its draw on these bodies, Uganda should take an active role in regional discussions.

6. The linkages among environment, health, and security remain insufficiently addressed in government policies. In light of the fact that malaria is the leading cause of illness and death in Uganda, a serious review of all the alternatives to malaria control should be undertaken. Given the controversy surrounding the positive and negative consequences of DDT in fighting malaria, other efforts focused on disrupting the vector's lifecycle, as well as growing trees and flowers that serve as natural insecticides, should be given immediate priority. Efforts to reduce wetland destruction and to control deforestation should take full account of environmental health implications, including the spread of insect-borne diseases.

7. Beyond the foregoing recommendations pertaining to specific issue-areas, there are fundamental higher level policy shifts that can help ensure Uganda's future stability and security. These include three key steps:

a) Informing development policy-making with an appreciation of the nexus between environmental degradation on the one hand and instability and conflict on the other.

b) Enhancing the enforcement capacity of existing environmental and natural resource management policies by increasing institutional capacity and coordination among agencies responsible for environmental management.

c) Using fiscal and monetary policies to encourage the prudent and rational use of natural resources and to minimize land degradation.

To the Ugandan Civil Society:

1. Civil society should promote the country's attainment of sustainable food and energy security by:

   a) Leading local efforts to fight the spread of diseases and pests, including awareness campaigns that educate farmers on control methods.

   b) Improving monitoring of timber extraction and educating farmers and local community members of the importance of forest reserves and their sustainable use.
   c) Calling for and ensuring the effective participation of surrounding communities affected by oil drilling and other extraction efforts such that local residents are guaranteed basic rights of consultation and approval.

2. Civil society should continue to build community understanding of the sustainable use of natural resources by:

   a) Engaging the education system to engender cultural attitudes that support protection of natural resources for long-term sustainability.

3. Civil society should help to increase recognition of the value of traditional conflict management mechanisms, particularly in relation to land issues.

4. Civil society and community-based organizations should help local communities respond to current and future water quality and quantity concerns by:

   a) Expanding awareness of the link between water resource degradation and environmental security. Of high priority is Lake Victoria, a critical resource for the 30 million people who live in the surrounding area. As population densities increase, pollution and unsustainable fishing and agricultural practices threaten the viability of Lake Victoria to provide livelihood security for Ugandans.

   b) Strengthening local capacities within communities for the integrated management of water resources.

To the Ugandan Private Sector:

1. The private sector can and should play an integral role in the country's development of renewable energy. Industry leaders should take the lead in initiating partnerships with the public and nongovernmental sectors to initiate research and development efforts aimed at promoting the development of biofuels and other alternative energy sources.

To the Government of the United States (USG):

1. Agricultural development will play a prominent role in the country's food security and stability. Strategies to address potential food insecurity problems must be tailored to meet the needs of local communities and farmers given the diversity of the landscape, soils, rain levels,

population rates, and access to markets. The USG should remain engaged in fighting the country's vulnerability to food insecurity by:

a) Expanding support for agricultural extension programs, including research and outreach efforts intended to devise alternative approaches to increasing production and investing in the sustainability of soils.

b) Increasing the ability of farmers to reach and sell to local, regional, and international markets by continuing to encourage and fund activities that improve road infrastructure and access to credit.

c) Helping the country anticipate and plan for the significant environmental, health, and socioeconomic effects of a shift in the country's staple food from *matooke* to other densely caloric items like rice and cassava.

d) Intensifying efforts aimed at increasing the use of insecticide-treated nets in order to reduce the incidence of malaria, given the huge impact of malaria on the labor force and agricultural productivity.

2. Energy insecurity in Uganda can be alleviated only through a fundamental paradigm shift in the country's overall energy strategy. As a contribution toward that end, the USG should encourage and support planning for the use of biofuels.

3. In anticipation of an eventual cessation of conflict in northern Uganda, USAID's advanced preparation to respond to development challenges is commendable. The need to prevent the region from slipping back into conflict will be paramount to ensuring the country's security. Once agricultural development activities can occur without interruption, the following efforts should be considered in order to address issues of food insecurity in the north:

   a) Moving quickly from a relief approach (in order to avoid dependency) and toward a development model to include discouraging international groups from providing unproductive handouts, including uncertified seeds and other purely relief-focused materials.

   b) Putting in place block farming by groups, which involves an organized system of planning food security through shared cultivation, credit, and tools in the production of subsistence and cash crops. There are useful precedents from past experiences in Uganda from which such initiatives can borrow beneficial lessons. The Mubuku Block Irrigation Scheme and Rurandabara Block Farming, both in Kasese in western Uganda, which flourished in the 1960s and early 1970s, provided models that successfully combined food security and cash crop requirements in a coherent block farm system. Both schemes were undermined by the volatile political situation of the mid-1970s but are now recovering. The current government policy to revive the once successful cooperative movement in Uganda offers an excellent opportunity for re-energizing and re-organizing block farming by groups.

4. In view of the significant potential for land conflicts upon the cessation of violence in northern Uganda, the USG should provide technical assistance to help Uganda harmonize existing laws, regulations, and procedures pertaining to land tenure and their relationship to important traditional practices for dispute resolution.

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Gulu District Council

Col. Nathan Mugisha
Commander
UPDF Fourth Army Division
(Chief of Military Operations in Northern Uganda)

Mr. Richard Muhvule
Head of Gulu District Police

Mr. James R.D. Nyeko
Programme Officer-Pader
ARLPI

Lowi Rwoti Ochana II
Paramount Chief

Archbishop John Baptist Odassau
Catholic Archbishop of Gulu Diocese
Acholi Religious Leaders Peace Initiative (ARLPI)

Mr. Emmanuel Okema
ARLPI

Mr. Phillip Okin
District Disaster Management Committee

Mr. Godfrey Ogwang
Chief Administrative Officer (CAO)
Gulu

Mr. Mathew Okio
Environment Management Officer
ACORD

Mr. Alex Otenya Oloya
DAP Area Manager-Gulu Livelihood Project (Food Security Monetization Program)

Mr. William Oloya
Project Manager
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Bishop Nelson Onono-Onweng
Head of the Anglican Church
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Dr. Fred Opio
Director
Northern Uganda Social Action Fund

Fr. Julius Orach
Head of the Orthodox Church
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Mr. Christopher Oyat
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Head of Gulu Sub Office
UN Office for the Coordination of Humanitarian Affairs

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Hunger Alert
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Pabo Sub County Chief

Pabo Camp Leader

Pabo Camp Local Officials

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