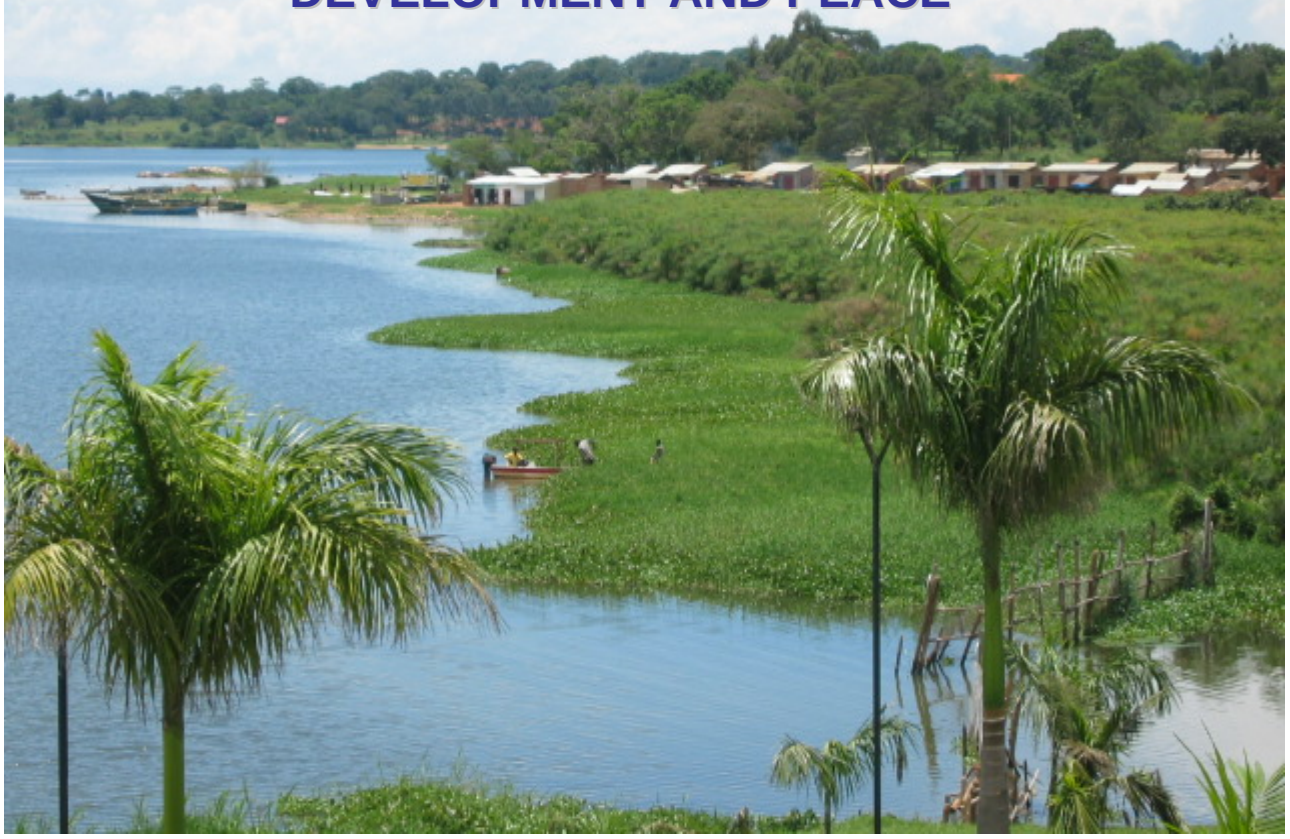
# ASSESSING ENVIRONMENTAL SECURITY IN EASTERN AFRICA: ACHIEVING SUSTAINABLE DEVELOPMENT AND PEACE



## REPORT OF THE INTERNATIONAL WORKSHOP KAMPALA, UGANDA

## NILE INTERNATIONAL CONFERENCE CENTER 14 – 15 OCTOBER 2004

PARTNERSHIP FOR AFRICAN ENVIRONMENTAL SUSTAINABILITY

FESS Foundation for Environmental Security & Sustainability

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 social capital through 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.
*President and CEO:* Mersie Ejigu

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 in the developing 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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# ACRONYMS

| | |
|---|---|
| ADB | African Development Bank |
| ASEAN | Association of East Asian Nations |
| AU | African Union |
| AWF | African Wildlife Fund |
| CARE | Cooperative for Assistance and Relief Everywhere, Inc. |
| CBR | Center for Basic Research - Uganda |
| CEWARN | Conflict Early Warning and Response Mechanism |
| CIDA | Canadian International Development Agency |
| COMESA | Common Market for East and Southern Africa |
| DMC | Drought Monitoring Center - Nairobi |
| EAC | East African Cooperation |
| ECA | Economic Commission for Africa |
| ECOTRUST | Environmental Conservation Trust of Uganda |
| EIA | Environmental Impact Assessment |
| ENR | Environment and Natural Resources |
| ESA | Environment Security Assessment |
| ESAF | Environmental Security Assessment Framework |
| FAO | Food and Agriculture Organization |
| FESS | Foundation for Environmental Security and Sustainability |
| FEWS | Famine Early Warning System |
| FRAME | Framework for Africa's Natural Resource Community for Knowledge Sharing and Collaboration (USAID), www.frameweb.org |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GOU | Government of Uganda |
| HDR | Human Development Report |
| IGAD | Inter-Governmental Authority on Development |
| IMF | International Monetary Fund |
| IUCN | World Conservation Union |
| LRA | Lord's Resistance Army |
| LSSP | Land Sector Strategic Plan (Uganda) |
| LVEMP | Lake Victoria Environment Management Plan |
| LVFO | Lake Victoria Fisheries Organization |
| MDG | Millennium Development Goal |
| MFPED | Ministry of Finance, Planning and Economic Development |
| MUIENR | Makerere University Institute of Environment and Natural Resources |
| MWLE | Ministry of Water, Lands and Environment of Uganda |
| NAP | National Action Plan to Combat Desertification |
| NBI | Nile Basin Initiative |
| NBI-NTEAP | Nile Basin Initiative – Nile Transboundary Environmental Action Project |
| NEAP | National Environment Action Plans |
| NEMA – Ke | National Environment Management Authority of Kenya |
| NEMA-Ug | National Environment Management Authority of Uganda |

| | |
|---|---|
| NEPAD | New Partnership for African Development |
| NGO | Non-Governmental Organization |
| NPI | Nairobi Peace Initiative |
| PADWLIA | Partnership for the Development of Environmental Law and Institutions in Africa |
| PAES | Partnership for African Environmental Sustainability |
| PEAP | Poverty Eradication Action Plan |
| PEI | Poverty Environment Initiative |
| PMA | Plan for Modernizing Agriculture |
| PRSP | Poverty Reduction Strategy Plan |
| SAP | Subsidiary Action Program |
| SEA | Strategic Environment Assessment |
| SOE | State of the Environment |
| SVP | Shared Vision Program |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNOPS | United Nations Office of Project Services |
| USAID | United States Agency for International Development |
| WRI | World Resources Institute |

# EXECUTIVE SUMMARY

1. Over the last decade, considerable progress has been made in stabilizing African economies and fostering sound governance structures and democratic practices. Underlying these efforts are, on the one hand, the impacts of technological innovation, economic globalization, and state reform, and, on the other hand, the challenges of pervasive poverty, high population growth, heavy debt burden, human-induced environmental change, and armed conflict.

2. Effective governance, management, and utilization of natural resources and the environment are critical to social well-being, economic development, and political stability. The misuse of natural resources may create problems that threaten livelihoods, spur large-scale migration, and exacerbate the effects of natural hazards. Threats to natural resources weaken economies and make populations more vulnerable, raising the potential for political, social, and economic instability. Persistent hardship and unrest erode societies, jeopardize social order, impair state capacity, undermine the rule of law, and fuel the precursors to violence. For this reason, it is imperative to develop improved assessment tools, both to recognize the harbingers of environmentally induced conflict in their nascent stages and to prioritize and develop coordinated assistance strategies to mitigate or manage these crisis situations.

3. The international workshop, "Assessing Environmental Security in Eastern Africa: Achieving Sustainable Development and Peace," took place at the Nile International Conference Center, Kampala, Uganda, October 14–15, 2004. Convened jointly by the Partnership for African Environmental Sustainability (PAES) and the Foundation for Environmental Security and Sustainability (FESS), the workshop brought together 38 participants from diverse disciplines, countries, institutions of higher learning, and international development agencies.

4. While the long-term goal of the workshop and subsequent activities is to help build environmentally secure societies — societies that are free from the threat of poverty, deprivation, vulnerability, and armed conflict at the individual, group, national, and regional levels — the immediate objectives of the workshop were to:
   - raise awareness of the critical role environmental security plays in local, national, and regional stability;
   - identify environmental risks to security and stability in eastern Africa;
   - review the Environmental Security Assessment Framework (ESAF) developed by FESS and develop mechanisms for conducting an assessment in eastern Africa; and
   - discuss practical policy options to mitigate potentially destabilizing environmental conditions before they reach a stage of crisis.

5. Organized in plenary and working group sessions, the workshop first discussed the concept and evolution of environmental security. Then, papers were presented that

reviewed Uganda's environmental security situation, focusing on governance, economic and social development, sustainable energy and climate change, poverty, and conflict. Environmental security issues related to the Nile and Lake Victoria basins, Africa's largest fresh water resources, were also presented and discussed. Throughout the two-day conference, participants enthusiastically debated issues and shared their experiences and knowledge. The workshop came to a close with a set of relevant conclusions and recommendations.

## Environmental Security — Its Evolution and the Need for Assessment

6. In the first substantive session, paper presentations and discussions focused on clarifying the link between environment and security, analyzing recent global trends, and tracing the evolution of environmental security as a policy tool. In countries with natural-resource dependent economies, as are prevalent in Africa, the stability and well-being of societies depend on the effective governance, management, and utilization of natural resources, particularly land and water. In environmentally secure societies, citizens are free from threats of hunger, poverty, deprivation, and armed conflict caused or exacerbated by environmental factors; social systems interact with ecological systems in sustainable ways; citizens have fair and reasonable access to environmental goods; and mechanisms exist to address environmental crises and political instability in a proactive manner. In contrast, societies or communities become environmentally insecure when policy and institutional failures create conditions for environment scarcity (or abundance) to become a threat to sustainability or survival.

7. Environmental security assessment is gaining recognition as a tool for informed decision-making. Significant challenges remain, however, because: (1) the relationship between environment and security is complex and multifaceted and is influenced by a broad range of political, economic, social, and cultural factors; and (2) there is a need to express the causal factors that lead to insecurity, instability, heightened tensions, or conflict in a compelling way that policy makers can readily understand. Significant possibilities exist to operationalize and implement environmental security assessments as a tangible policy tool. In this regard, the workshop emphasized the need to develop human and institutional capacity at both the analytical and policymaking levels.

8. Environmental security assessments can be both strategic (overview assessments of national and regional environmental threats) and issue-based (assessments of problems of immediate concern). Strategic assessments focus on changes in critical environmental factors (e.g., land use, deforestation, water quality and quantity, and water delivery infrastructure) in response to stresses on one or more of these factors, taking into account the effects of national/regional policy. Issue-based assessments, on the other hand, are conducted to address problems that arise when environmental threats exceed a specified threshold. Both strategic and issue-based environmental security assessments involve the review of social, economic, political, historical, cultural, and ecological factors.

## Components of Environmental Security Assessment (ESA)

9. **Governance.** The workshop discussed the structure, functioning, and evolution of governance in eastern African countries, specifically in Uganda. One of the key components of ESA, governance includes a wide range of institutional, policy, and legal factors that influence the nature and process of the relationship between people and natural resources at the individual and community levels. Weak governance creates the conditions for environmental insecurity to lead to political unrest, while good governance plays a mitigating role and may prevent environmental insecurity from leading to various forms of conflict.

10. The recent move by many countries toward democracy, rule of law, decentralization, and sustainable development is facilitating the process for multi-stakeholder participation, alignment of development priorities to needs, more effective management and use of natural resources, and mitigation of conflicts. Nevertheless, governance in many African countries today continues to be characterized by fragile democracy, absence of law and order, and a persistent feeling of threat at the individual and community levels.

11. Good governance is accountable, transparent, inclusive, participatory, respectful, and effective in enforcing law and order. Good governance implies accountability to all local stakeholders and the capacity to engage the private sector and civil society in a productive manner. It also implies the capacity to respond, in a timely and effective manner, to livelihood threats, such as drought, famine, flood, or disease outbreaks (e.g., HIV/AIDS), and to conflict. A thorough assessment of governance would review and, where possible, measure the following: (1) legal and regulatory frameworks; (2) socio-cultural and political legitimacy; (3) institutional capacity, structure, and legitimacy; and (4) public access and participation.

12. **Land use change, population movements, and environmental stress.** Existing evidence indicates that considerable changes in land cover have occurred across Africa, notably in eastern Africa, over the last 30 to 40 years. Today, the natural vegetation continues to be under considerable pressure from extensive agricultural practices, heavy dependence on biomass energy, a low level of technology, frequent droughts, and high population growth and migration. In many countries, crop cultivation has expanded into marginal areas, such as steep hillsides, forest reserves, and swampy areas. Such losses of natural vegetation cover (rain forests, savannah, and wetlands) lead to a series of cumulative, often deleterious, effects on the environment, including soil erosion and degradation of water catchment areas. For example, environmental degradation in Uganda, resulting from deforestation, soil erosion, aquatic weeds, water contamination, and biodiversity loss, is estimated to cost the national economy between 4 percent and 12 percent of the Gross Domestic Product (GDP). The agricultural sector is a major contributor to deforestation, soil erosion, and biodiversity loss, accounting in monetary terms for 86 percent to 91 percent of total environmental degradation.

13. **Socioeconomic change, poverty, and vulnerability.** Economic and social well-being is, in part, a reflection of environmental security. Generally, environmentally secure societies possess high per capita income, employment, and literacy rates, as well as good access to markets, technology, credit, land, and other income-generating opportunities. On the other hand, environmentally insecure societies experience slow or no economic growth, often against the backdrop of a rapidly growing population, recurrent drought, a high prevalence of infectious diseases, and weak economic and social infrastructure.

14. Environmental insecurity is organically linked to poverty. Poor and environmentally insecure people suffer from the absolute and relative lack of access to resources. This results in declining productivity, low accumulation of assets, and the erosion or absence of social well-being. The incidence of poverty and the potential for conflict tend to be greater in ecologically fragile, marginal agricultural areas. In this regard, the situation in the Karamoja region of Uganda was extensively discussed in the workshop. A number of factors have contributed to the continuous conflict in Karamoja, including pervasive poverty; severe land degradation; recurrent drought; strong feelings of isolation, exclusion, powerlessness, and deprivation among the local population; precarious cultural norms; and failures of governance. To move toward the attainment of environmental security would facilitate, directly and indirectly, the implementation of national poverty alleviation programs. Conversely, national poverty reduction strategies, if anchored in environmental security, would make a positive contribution to the attainment of peace and political stability.

15. **Sustainable energy.** Many African countries depend heavily on biomass energy (firewood, agricultural residues, animal wastes, and charcoal). In Uganda, for example, more than 90 percent of household energy comes from biomass (firewood, charcoal, and crop residues). In areas where there is a lack of fuel wood, people rely on cow dung reeds or banana fibers. This represents a classical situation in which the use of both primary and alternative sources of energy contributes to environmental degradation. End-use efficiency for most traditional fuels is low; a high concentration of fuels is needed to produce a low level of energy, and a significant share is wasted, resulting in increased deforestation and biodiversity loss. This biophysical change, combined with the combustion of fossil fuels, is widely believed by regional experts to have contributed to climatic variability, which is affecting many countries in eastern and southern Africa.

16. The over-dependence on low-quality traditional fuel in many African countries is compounded by the over-reliance on imported commercial fuel, i.e., with little investment in renewable energy sources. Unfortunately, the situation of oil-producing African countries is equally worrisome from an environmental security perspective, for reasons that are apparent. The experiences of oil-rich Nigeria and Angola offer evidence of a strong positive correlation between oil and conflict.

17. The attainment of sustainable energy, a critical factor for economic and political stability, requires a major shift to modern energy sources with heavy investment in

hydropower; access to low-cost energy technologies; and promotion of climate change adaptation strategies.

18. **Management of shared transboundary resources.** Most of Africa's rivers and lakes are transboundary resources. For example, ten countries share the Nile River. About 46 percent of the total population of the ten riparian states lives in the basin, while 97 percent of Egypt's population, 77 percent of Sudan's, and 68 percent of Eritrea's population depend on the Nile waters. Population density of the basin, 41.6 people per square kilometer in 1990, is expected to rise to 91 by the year 2025. Of the total irrigated land in the basin, 91 percent is in Egypt. The quality and quantity of the Nile waters is seriously threatened by deforestation, soil erosion, pollution, siltation, waterweed infestation, and frequent droughts. The Nile Basin Initiative (NBI), established by the riparian countries with the support of the World Bank, United Nations Development Programme (UNDP), and Canadian International Development Agency (CIDA), is expected to go a long way toward reducing tensions and creating conditions for political stability in the region. To this end, it is important to consider making the NBI a permanent organization and creating buffer zones, such as peace parks, in the Basin along disputed border areas.

19. The other transboundary resource that was discussed in the workshop is Lake Victoria, the largest fresh water lake in Africa. Lake Victoria remains an area of serious environmental security concerns. Environmental problems facing the Lake include oil spillage, pollution, overfishing, deforestation, aquatic weeds, and frequent conflicts. An important initiative is the Lake Victoria Environment Management Project (LVEMP), funded by the Global Environment Facility (GEF), which brings together under a shared development agenda the five countries that share the Lake Victoria waters (Uganda, Tanzania, Kenya, Burundi, and Rwanda). Among the suggested measures are to conduct research to promote understanding of the Lake's resources, organize public dialogue on policies for joint development, and involve communities in the development of the Lake's resources.

20. **Coping with environmental insecurity.** This was one of the issues discussed in the working group portion of the workshop. It was noted that rural households adopt multiple strategies to cope with environmental stress and insecurity. Some of the common coping strategies are to: (1) lower food consumption and quality (e.g., change from diet variety to basic food items, reduce meal frequency and quantity, and depend on wild foods); (2) shift to non-farm income sources; (3) dispose of and disperse assets; (4) improve the management of natural resources to sustain productivity; (5) rent land; and (6) migrate to areas with low population density. The workshop underlined the need for detailed understanding of the timing of these coping strategies, so that policy interventions may be made before environmental insecurity reaches a crisis level.

21. **Environmental Security Assessment Framework (ESAF).** Developed by the Foundation for Environmental Security and Sustainability (FESS), the Environmental Security Assessment Framework (ESAF) is an analytical tool and process designed to

identify and clarify the implications that environmental issues may have for stability, development, and, ultimately, security. ESAF helps advance environmental security studies along several different fronts, as it: (1) moves the conceptual debate about environmental security past largely deductive assessments of the relationship between the environment and conflict; (2) provides a common analytic vocabulary usable by practitioners in both the development and security communities; (3) offers sufficient consistency for comparisons across countries and regions, while remaining adaptable to account for nuances of local economic, political, social, and environmental factors; and (4) generates practical policy recommendations, informs policymakers, facilitates the establishment of clear priorities, and guides the development of effective and sustainable programs to promote economic well-being, social peace, political stability, and environmental sustainability.

22. The ESAF engages a diverse and rich set of variables relevant to environmental security, which are then examined in their interactions and filtered through a series of analytic phases that lead to the formulation of scenarios and policy recommendations. The ESAF uses a definition of environmental security that encompasses the continuum from human security, a point of reference for many development professionals, to violent conflict, the most compelling concern for security and military professionals.

    *Environmental security* is a condition whereby a nation and/or region, through sound governance, accountable 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.

    *Environmental insecurity* is a condition whereby a nation and/or region fails to effectively govern, manage, and utilize its natural resources and environment, causing social, economic, and/or political disruption to occur at a scale leading over time to heightened tensions, social turmoil, and/or conflict.

23. The ESAF utilizes various categories of stability and instability (e.g., social, economic, political) as initial barometers of security conditions in a country or region. The ESAF consists of seven phases. *Phase I* provides a general profile of the country or region under study, with special attention to cleavages and contentions that may contribute to instability and/or insecurity. *Phase II* recognizes that environmental security is grounded in the tangible linkages among economic activities, social conditions, and the environment. *Phase III* investigates the relative condition and vulnerability of a set of common critical concerns of the country. *Phase IV* adds another crucial level of refinement through a detailed examination of *environmental governance*, defined as the traditions and institutions by which power, responsibility, and authority over a nation's natural resources are exercised. In *Phase V*, the ESAF generates and field tests its preliminary hypotheses. *Phase VI* relates the findings in specific and concrete ways to U.S. development assistance activities in the country or region under study. *Phase VII* is the culmination of the ESAF, providing a

comprehensive assessment of both the principal environmental security threats and alternative remedial actions. The results of these phases are consolidated as ESAF findings in the form of a draft final report and appendices (e.g., baseline data worksheets, analytic charts, environmental security factor profiles, and summary scenario reports). The final recommendations put forth by the ESAF are comprehensive in the sense that they entertain the full range of options available not only to policymakers, but also to stakeholders in civil society and the private sector.

24. **Capacity development for environmental security assessment.** Capacity development for environmental security assessment was an issue discussed in a working group session of the workshop. Capacity development comprises wide-ranging issues, including the effective use, strengthening, and building of both human resources and institutional capacity, in order to undertake environmental security assessment and mainstream it into policy decision-making processes. While this is a medium- to long-term task, workshop participants emphasized the need in the short term to promote environmental security in eastern Africa at the regional level, through the New Partnership for African Development (NEPAD), African Union (AU), Nile Basin Initiative (NBI), and Inter-Governmental Authority on Development (IGAD), to help bring environmental security to the forefront of the development agenda. Such processes will include the development of core expertise, mechanisms for the effective use of local knowledge, and institutional partnerships.

25. **Building alliances and partnerships.** The attainment of environmental security requires the effective involvement of all sectors: the government, private sector, non-governmental organizations (NGOs), the academic and research community, and regional, bilateral, and multilateral organizations. The building of alliances and partnerships needs to be both horizontal (among sectors and development organizations — government, private sector, and civil society) and vertical (local, national, regional, and global institutions).

26. While the state sector retains a prominent role in the attainment of environmental security, the private sector, civil society, and the international development community have equally vital roles, for they not only are affected by political instability and governance failures, but they also have the capacity to contribute to the realization of sustainable peace and development. It is important to ensure that all sectors understand their respective roles and responsibilities, and that they contribute to environmental security assessment as well as to the integration of environmental security in development.

27. The international development community makes massive investments in peacekeeping and peace-making, and also in conflict prevention and resolution. To anchor these processes in environmental security will give impetus to the realization of sustainable peace. The international development community has multiple opportunities, as well as responsibilities, to: (1) bring environmental security to the forefront of the development agenda, more specifically to the poverty reduction strategies which it espouses; (2) mainstream environmental security in peace-keeping

and conflict prevention programs; and (3) provide financial and technical support to the promotion of environmental security assessments and follow-up activities.

## Conclusions and Recommendations of the Workshop

28. The following summarizes viewpoints shared by workshop participants with regard to environmental security assessments (ESA), in general, and the Environmental Security Assessment Framework (ESAF) developed by FESS, in particular. Participants generally agreed with the need to:

    a. recognize environmental security assessment (ESA) as a timely and important initiative and establish a series of coordinated programs of awareness-raising and capacity-building to promote cross-sectoral understanding of ESA and encourage its application as a tool for informed decision-making.

    b. adapt the ESAF to a country's prevailing economic, political, social, geographical, cultural, and climatic situations; use the workshop papers, the discussion, and this report as building blocks for adapting ESAF to eastern Africa, and in particular to Uganda; and to ensure that ESAF is comprehensive and adaptable.

    c. approach the promotion, adaptation, adoption, and application of ESAF as a medium- to long-term undertaking, and to consider pilot studies and refinements of ESAF as vital components of the process.

    d. support the testing of the ESAF through pilot studies in neighboring countries, either in parallel with or subsequent to the Uganda Pilot Study. Workshop participants from Ethiopia, Kenya, Rwanda, and Tanzania expressed interest in ESA and ESAF and proposed making contact with the appropriate officials.

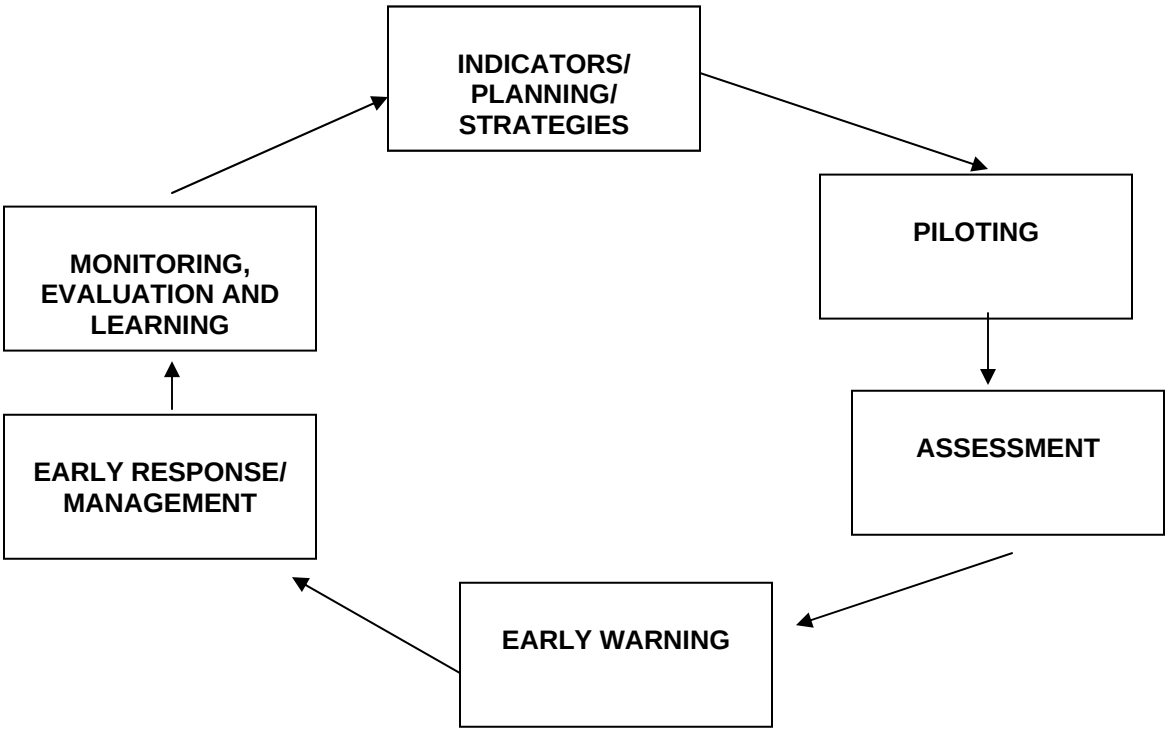
    e. explore the possibility of streamlining the ESAF in view of its complexity and large data requirements, with the aim of enhancing its utility in countries where there are significant data limitations. In this regard, participants inquired whether a partial ESAF could be considered.

    f. increase the relevance of ESA as a policy tool by establishing threshold points to inform judgments as to when and where environmental insecurity may result in conflict or in significant political or socioeconomic insecurity.

    g. build the knowledge base and develop clear linkages between environmental degradation and environmental insecurity as a fundamental step toward promoting the acceptability of ESA in the eastern Africa region.

    h. integrate ESA in the development policy decision-making process**,** and consider a way to link early warning with early response. The diagram below illustrates the

cycle from indicators of environmental insecurity to pilot study, to assessment, to early warning, to early response, and to monitoring and evaluation.




29. Based on all of the above, workshop participants made the following recommendations:

    a. Promote the understanding of ESA as a cross-sectoral, multi-layered, and complex undertaking. While the ESAF is a useful tool and methodology for operationalizing ESA and for integrating these complex processes, there is a need to promote broad awareness and understanding of the Framework by capitalizing on this Kampala workshop and organizing others at the regional and continental levels.

    b. Support the implementation of ESA on both the country and transboundary levels. FESS offers what appears to be a sound approach to pursue: begin with a workshop that promotes understanding of ESA, undertake a pilot study, and then refine and implement the ESAF.

    c. Build alliances and partnerships for ESA. Additional resources and the involvement of a variety of institutions, both regional and global, are crucial for undertaking ESA and implementing the ESAF. Thus, FESS and PAES should do their utmost to expand the consortium.

d. Promote the ESAF in annual environment reports. FESS and PAES should contact and coordinate with national environment agencies responsible for these annual environment reports and also organize a regional consultation of these agencies at an appropriate time.

e. Raise the ESAF to the level of the New Partnership for African Development (NEPAD) and with United Nations organizations such as the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). Explore the possibilities of promoting the concept of ESA in the Human Development Report (HDR).

f. Use existing institutions, activities, and processes for promoting the ESAF. In addition to organizing workshops both at the country and regional levels, promote the ESAF and enhance knowledge-sharing through the use of existing networks, such as USAID's FRAME, and establish new ones, such as an African knowledge network for environmental security, which can be housed within PAES or FESS.

g. Find champions for environmental security assessment and its integration in development. FESS and PAES should continue to promote the ESAF at the global, regional, country, and local levels. As a way forward, FESS could consider hosting a global network of experts and practitioners linked to an African regional network of experts hosted by PAES. There is also a need to establish country focal points and contacts.

h. Effectively use existing human and institutional capacity and, where necessary, strengthen and build such capacity for promoting, elaborating, and integrating the ESAF, and undertaking ESA.

i. Disseminate the workshop report as widely as possible and, to the extent that budgetary resources permit for FESS and PAES, make the report available both in hard copies and through the Internet.

30. In collaboration with Ugandan authorities and as one of the first steps toward implementing the above, PAES and FESS will jointly launch the Uganda Environmental Security Assessment Pilot Study in early 2005. Based on the results of the Pilot Study, detailed country and sector-based (e.g., land, water) assessments are envisaged.

# INTRODUCTION[1]

The origin of the use of the concept of "environmental security" dates back more than 25 years. In 1977, Lester Brown, an environmental pioneer from the Worldwatch Institute, wrote a piece titled, "Rethinking National Security," which used a long-term perspective to argue for the inclusion of environmental problems in national security planning. However, the time was not yet ripe for environmental security to enter the mainstream of policy discussions.

A dozen years later, writing from the perspective of a foreign policy analyst, Jessica Mathews wrote an influential article in *Foreign Affairs* making a similar linkage between the environment and security. Shortly thereafter, a literature began to emerge that explicitly used the term environmental security in relation to scenarios of political, economic, and social conflict due to resource scarcity in combination with population growth. Focusing on the degradation of land, water, forests, and marine and coastal resources, writers including Thomas Homer-Dixon and Robert Kaplan sounded the alarm bell to warn of the need for policy responses to forestall potential environmental threats to security and stability, especially in the developing world. However, a counter-critique soon responded to the sometimes hyperbolic tone of these pieces, asserting that their analyses were marked by weak causal linkages and simplistic linear projections into the future.

Concurrent with these developments, a wave of democratization spread over much of the globe. From 1975 to 1990, some 30 countries underwent democratic transitions of various stripes, opening spaces for public debate of emerging citizen concerns, which often related to environmental problems or the use of natural resources. In the early 1990s, with the end of the Cold War, a spate of articles appeared posing the question of "whither security?" after the end of superpower competition. What were the components of the post-Cold War security agenda to be? In this new context, environmental problems received increasing attention from security analysts, who further elaborated the potential threats of environmental degradation.

Those working in the international development community also began to make the linkage between environmental problems and security. In the *1994 Human Development Report*, issued by the United Nations Development Program (UNDP), a new paradigm of "human security" was put forward, which became a common frame of reference in the ensuing decade. In UNDP's usage, human security referred to existential threats at several different levels – economic, health, community, personal, political, food, and environmental. National security agencies also began to investigate aspects of environmental security through the use of new technologies, such as remote sensing, satellite imagery, and various forms of mapping.

[1] Contributed by Jeffrey Stark, Director of Research and Studies at FESS, as part of his presentation on the background to the Environmental Security Assessment Framework (ESAF).

Today, the literature on environmental security has moved beyond the debate between the environmental security "alarm bell ringers" and their critics and skeptics. Environmental security analyses are more nuanced, with recognition of the core linkages between the environment and security being widely accepted.

In the past two years, major international agreements have also come explicitly to reflect recognition of the environment-security nexus. In October 2003, the member states of the Organization of American States reached agreement in Mexico City on the *Declaration on Security in the Americas*. The *Declaration* states that "the traditional [security] concept and approach must be expanded to encompass new and nontraditional threats, which include political, economic, social, health, and environmental aspects." In declaring the ASEAN Environment Year 2003, Cambodian Prime Minister Hun Sen stated that, "Environmental interests span borders as well as generations. As such, environmental security is as important as economic and political security." And in February 2004, the African Union's *Solemn Declaration on a Common African Defence and Security Policy* stated that the "newer, multi-dimensional notion of security embraces such issues as … protection against natural disasters as well as ecological and environmental degradation." Most recently, the awarding of the Nobel Peace Prize to Wangari Maathai, the well-known Kenyan environmentalist, implicitly recognized the close relationship between solving environmental problems and the alleviation of economic, social, and political instability and insecurity.

It is against this background that the international workshop on "Assessing Environmental Security in Eastern Africa: Achieving Sustainable Development and Peace in Africa" was convened in Kampala, Uganda, October 14 – 15, 2004. While the long-term goal of the workshop and subsequent activities is to help build societies that are free from the threat of poverty, deprivation, vulnerability, and armed conflict at the individual, group, national, and regional levels, the immediate and specific objectives of the workshop were to:

- Raise awareness of the field of environmental security;
- Identify environmental risks to security and stability in eastern Africa;
- Review the Environmental Security Assessment Framework (ESAF) developed by FESS and develop mechanisms for conducting an assessment; and
- Discuss practical policy options to mitigate potentially destabilizing environmental conditions before they reach a stage of crisis.

This report is presented session by session in order of the sequence shown in the Workshop Agenda (Annex I). For each substantive section of the report, summaries of the presentations are followed by discussions. All efforts are made to reflect both the presentations and discussions as comprehensively and concisely as possible.

Following the opening session, the workshop discussed papers on the concept and evolution of environmental security and the need for assessment. This was followed by presentation and discussion on the environmental security situation, focusing on governance, economic and social development, sustainable energy and climate change,

poverty and conflict. Environmental security issues related to the Nile and Lake Victoria basins, Africa's largest fresh water resources were also presented and discussed.

## SESSION I: OFFICIAL OPENING OF THE WORKSHOP

**MODERATOR: Mr. Bwango Apuuli, Acting Director for Lands and Environment, Ministry of Water, Lands and Environment, Republic of Uganda.**

Mr. Apuuli called the meeting to order and welcomed participants to Kampala and the workshop. Mr. Apuuli then invited Mr. Mersie Ejigu, President and Chief Executive Officer of the Partnership for African Environmental Sustainability (PAES), to make the opening statement.

**Mr. Mersie Ejigu, President and Chief Executive Officer, Partnership for African Environmental Sustainability (PAES)**

On behalf of the workshop organizers, Mr. Ejigu welcomed participants and asked them to introduce themselves. Mr. Ejigu thanked the Honorable Minister Kahinda Otafiire for adjusting his very busy schedule to give of his valuable time to the workshop. Mr. Ejigu then thanked the FESS leadership for the confidence it has placed in PAES and for building a solid partnership that has borne fruit in a relatively short period of time. Mr. Ejigu added, "FESS and PAES share a common goal, common idea, and common sense of purpose." He expressed "the full commitment of PAES's leadership to enlisting the support of the organization's knowledge, experience, and network of scientists to effectively undertake environmental security assessment." Mr. Ejigu also thanked USAID for its role as a global leader in environmental security and conflict management.

Mr. Ejigu introduced the workshop saying, "We are gathered here to talk about environmental security assessment. When we talk about security, with whatever adjective preceding it, our primary concern is human security. Human security is a product of the interactions of all the factors that affect us; for example, economic conditions, population and settlement patterns, political systems and institutions, cultural systems, and ecological situations. If the economic, social, and political policies are functioning well, they can work toward guaranteeing our security."

"Furthermore," Mr. Ejigu explained, "the notion of environmental security enables us to examine environmental changes in the light of their potential to trigger, amplify, and/or cause political instability, social unrest, and violent conflict. It also helps us to examine the impact of changes in human activities (both adverse and constructive) on the environment. Indeed, environmental security assessment is a tool for informed decision making. It is a proactive, forward-looking framework for strategic thinking that will help

us identify situations of tension and conflict before they reach crisis proportions. That is what we are going to discuss during these two days," Mr. Ejigu concluded.

**Mr. Ray Simmons, President and Co-Executive Director,**
**Foundation for Environmental Security and Sustainability (FESS)**

In his opening remarks, Mr. Simmons stated, "FESS is a non-profit, education and research foundation headquartered in the Washington, DC area. The Foundation was created in 1999 on the premise that environmental issues can and do play a vital role in the security and sustainability of communities, countries, and regions. Hence, they constitute a significant security issue for nations and the international community."

Mr. Simmons noted, "In recent years, the human security discussion has shifted dramatically. Today, effective governance, management, and utilization of natural resources and the environment are frequently recognized as critical elements of stability and prosperity. Land and water resources, in particular, are seen as essential foundations for economic development and as contributors to social well-being. Threats to natural resources that weaken economies and make populations more vulnerable are understood to raise the potential for political, social, and economic instability. Persistent hardships and unrest are known to erode societies, jeopardize social order, impair state capacity, undermine the rule of law, and fuel the precursors for social unrest and violence."

Mr. Simmons explained, "Having been at the forefront of this new thinking, FESS, at the urging of the U.S. Congress and with the support of USAID, has set out to develop an improved assessment tool to recognize the harbingers of environmentally derived stress in their nascent stages and to prioritize and develop coordinated assistance strategies designed to mitigate or manage these crisis situations. The resulting Environmental Security Assessment Framework (ESAF), which will be discussed in more detail later in the workshop, seeks to make tangible progress in understanding environmental issues in the political, economic, and social contexts of specific regions. The ESAF is constructed to identify potential areas that could exceed the coping capacity of states and populations and contribute to or exacerbate instability, as well as to formulate assistance strategies that can mitigate problems before they become intractable."

In conclusion, Mr. Simmons emphasized, "This workshop represents a number of new opportunities and milestones for FESS. First, we appreciate this opportunity to review our ESAF with you and solicit your comments, both in general and also in relation to the specific context of East Africa. Over the past year, we have conducted pilot studies in Nepal and the Dominican Republic. We hope, with your knowledge and assistance, to further refine the ESAF methodology through this workshop and through a follow-up pilot assessment focused here in Uganda. The present workshop is the culmination of a great deal of hard work that began in May 2003 at the International Conference on Environment, Security, and Sustainability in The Hague. We see the workshop as one of the building blocks for a long-term, multi-agency partnership. The ESAF represents an effort to

establish an enduring approach to environmental security and sustainability in Africa and in the world."

**Dr. Jody Stallings, Natural Resources Management Advisor,**
**U.S. Agency for International Development (USAID), Uganda**

Representing USAID, Dr. Stallings explained in his opening statement that, although the "concept of environmental security is nascent, in the recent past, a plethora of studies and analyses on environmental security and the ecology of conflict has enabled us to focus on linkages among environmental insult, social and policy change, and regional and national conflict. Resource scarcity often drives conflict. Resource degradation and disaster affect the poor most severely, and the loss of livelihood can lead to social tension, migration, inappropriate settlement, and often to conflict. Sparked by environmental stress and vulnerability to disaster, conflict tends to occur within rather than between nations."

Dr. Stallings continued by saying, "While developed countries are not immune from environment-related conflict and social stress, the vast majority of natural disaster-related deaths occur in countries that are in the process of development. Hurricane Mitch and the recent Tropical Storm Jeanne are examples of what we can expect in the 21st century. Deforestation of watersheds and transformation of land by human activity have produced conditions for devastating floods and mudslides that will result in staggering losses of life, massive migrations of people, and potential conflict."

According to Dr. Stallings, "The theme of this conference is timely indeed. The stage is set for insecurity from natural resource deficiencies and environmental stresses. For example, over 40 percent of the Earth's land mass has been transformed, and major cycles of carbon, nitrogen, and water have been altered. Species extinctions are some of the highest in recorded history. About 65 percent of the people in developing countries live in rural areas, and two-thirds of them are farmers. Nearly all of the population growth in the world for the next 50 years is expected to occur in countries where livelihood security is largely resource dependent."

Concluding his statement, Dr. Stallings said, "The U.S. Agency for International Development (USAID) is committed to assisting countries in the process of development to maintain their biologically diverse habitats and environmental resources, while supporting sustainable development and economic growth. USAID in Uganda partners with national and international organizations to provide resources for environmental programs, particularly in the western and southwestern regions of the country known as the Albertine Rift." Dr. Stallings emphasized the importance of taking planetary and global concerns to local levels, because this is where the theme of environmental security and sustainability is of vital relevance to the livelihoods of millions of people. Dr. Stallings closed his statement with a quote from Ms. Wangari Maathai, the first African woman to win the Nobel Peace Prize: "The environment is very important in the aspects of peace because when we destroy our resources and our resources become scarce, we fight over that."

**Mr. Ben N. Kamugasha, Chairman, Governing Board,**
**Partnership for African Environmental Sustainability (PAES)**

Mr. Ben Kamugasha gave additional context for the concept of environmental security, saying, **"**When I worked in the World Bank and later in the African Development Bank environment units, we used to talk about assessment only in terms of environmental impact assessments (EIA) of development projects. Now, we are discussing issues of environmental security assessment (ESA), which is much broader and all encompassing. Security affects our daily life and activities. Thus, environmental security assessment clearly brings the environment issue closer to us. I have no doubt that this workshop and its outcome will develop a methodology for environmental security assessment that can be taken up at the global level to supplement and parallel the EIA."

**The Honorable Colonel Kahinda Otafiire,**
**Minister of Water, Lands and Environment, Republic of Uganda**

In his official opening statement, the Hon. Col. Kahinda Otafiire said, "The environment is a source of our livelihood. The food we eat, the clothes we wear, the water we drink, the air we breathe, and, for that matter, everything that makes and sustains us as human beings is the 'environment.' Thus, protecting the environment means not only protecting our own selves, but also protecting generations to come. On the other hand, to fail to protect the environment and to let environmental degradation take its course means degrading our welfare, degrading our future, and degrading our security and sense of freedom."

He argued, "Environment and peace are organically linked. Peace is a fundamental human right that we can achieve only when we have a healthy environment and equitable access to the means of livelihood. There cannot be peace if people have no food to eat. There also cannot be peace if people are poor."

The Hon. Col. Otafiire further said, "When I was in the military and until recently, we never linked security and environment. It is heartening to talk now about environmental security, income, and food security. To ensure that our citizens are able to live in peace and harmony, sound management of natural resources is a requirement. Sound natural resource management means attainment of food security, income security, and environmental security."

Concluding his opening statement, the Hon. Otafiire said, "We support efforts made by the workshop organizers to address such a timely and important issue as environmental security. You need to keep up the momentum and follow up this excellent beginning with a series of projects and programs in order to have impacts at the country and regional levels. In all that you do to promote environmental security and its integration into development policy, you can always count on us." The Hon. Col. Otafiire then declared the workshop open.

## SESSION II: ENVIRONMENTAL SECURITY — A GLOBAL PERSPECTIVE AND THE NEED FOR ASSESSMENT

**MODERATOR: Mr. Ben N. Kamugasha, Former Permanent Secretary, Ministry of Environment, Republic of Uganda**

### Environmental Security Assessment in Perspective

**Mr. Jeffrey Stark, Director of Research and Studies, FESS**

Mr. Jeffrey Stark, Director of Research and Studies at FESS, introduced the Environmental Security Assessment Framework and discussed its theoretical underpinnings. Mr. Stark began his discussion by noting that the origin of the use of the concept of environmental security dates back more than 25 years. "Today," he said, "environmental security analyses are more nuanced, with recognition of the core linkages between the environment and security widely accepted. In the past two years, major international agreements have also come explicitly to reflect recognition of the environment-security nexus."

"Nevertheless," Mr. Stark argued, "although environmental security has gained increasing recognition as an issue worthy of the attention of policymakers, significant challenges remain with respect to environmental security policy analysis and environmental security assessments." Mr. Stark elaborated upon some of the challenges with the following remarks:

- The field is marked by an asymmetry between the large number of mostly deductive analyses and the existing base of empirical knowledge. There is a clear need to build the knowledge base for environmental security analyses through specific case studies in specific locales. There is also a need to sharpen our ability to distinguish between those environmental issues that *do* reach the threshold of environmental security – i.e., raising fundamental concerns about stability and insecurity – and those that *do not* meet that threshold.

- Because the linkages between environment and security are typically mediated by the interaction of a number of political, economic, and social variables, policy research needs to focus on the precise relationships and causal mechanisms that lead to insecurity, instability, heightened tensions, or conflict. What are the pathways by which environmental degradation and/or the abuse of natural resources contribute to the potential for conflict?

- Insights from environmental security assessments need to be expressed in a compelling way that policymakers can readily understand and use in their decision-making. Part of this challenge involves making environmental security issues more "visible." Purely environmental analyses too often fail to make crucial linkages to livelihoods, stability, and security, while traditional security

analyses too often focus narrowly on political and economic conflict, without exploring environmental factors that often contribute to conflict potential in powerful ways.

- There is the crucial question of how environmental security assessments can be operationalized and implemented as tangible policy measures. As a new policy issue-area, environmental security is not easily captured by existing bureaucratic structures. Yet, the implementation of policy recommendations will require someone in government taking bureaucratic leadership and, in most cases, a certain degree of interagency coordination. In other words, there must be the capacity to move from analysis to action on problems of environmental security.

Mr. Stark concluded by saying, "The Environmental Security Assessment Framework (ESAF) developed by FESS is one effort, one methodology that tries to meet some of these challenges. In a later session during this workshop, we will have the chance to review and discuss the ESAF to clarify further some of these and other issues."

**Environmental Security: Its Growing Importance on the Development Agenda and As a Policy Response**
**Mr. Mersie Ejigu, President and Chief Executive Officer, PAES**

Mr. Ejigu began his presentation by saying, "Mr. Stark has given us an excellent *tour d'horizon* of the evolution of the concept of environmental security and the global debate surrounding it. He has, indeed, made my task easier. I can now concentrate on sharing with you the findings and conclusions of the four-country study on environmental security and conflict that PAES completed with funding from the European Union."

Mr. Ejigu then said, "Environmental security must be seen as an integral part of human security. Human security means a state of human conditions that are free from threats of hunger, poverty, and armed conflict at the individual, group, community, country, regional, and global levels. A society or community becomes environmentally insecure when severe environment scarcity arises and becomes a threat to national, community, and individual welfare and survival." He argued, "In natural resource dependent economies that are prone to political instability and conflict, environmental security is emerging as an important development paradigm for addressing multiple societal concerns."

Mr. Ejigu briefly reviewed the methodological approach and then highlighted some of the important findings of the four-country study, including:

- Strong evidence of severe and significant environmental insecurity in the four study countries: Burundi, Ethiopia, Rwanda, and Uganda. This pervasive environmental insecurity is manifested in the form of: (1) small and declining farm size; (2) high incidence of land fragmentation; (3 increased cultivation

intensity; (4) increasingly landlessness; (5) shortage of grazing land; and (6) emerging tenure arrangements, with rising informal land transactions.

- Evidence that poverty and environmental degradation are closely linked. While the majority of the population is dependent on natural resources for their livelihoods, particularly agriculture, the natural resource base is shrinking due to unabated soil and forest degradation. The incidence of poverty tends to be greater in ecologically fragile, marginal agricultural areas with few routes to escape poverty.

Mr. Ejigu mentioned that, in all four countries, comparable sets of indicators for assessing the prevalence of environmental insecurity were employed. These include:

- Changes in biophysical characteristics:
  - Land cover/use change
  - Soil depth as an indicator of soil erosion and soil fertility
  - Water stress or scarcity

- Economic valuation of resources:
  - Increase in land rental value
  - Demographic changes, particularly migration

- Socio-economic conditions:
  - Yields per hectare
  - Change in income sources
  - Change in consumption

- Economic and institutional indicators:
  - Involuntary landlessness
  - Trend in rental price of land
  - Increase in the extent of land market transactions
  - Change over time in the economic value of renewable natural resources (e.g., rental value of farm and grazing lands)
  - Change in institutional arrangements (i.e., change in tenure responses to environmental scarcity)
  - Change in welfare (i.e., change in environment linked to income sources and impoverishment)

- Population mobility:
  - Different scales of migrations involving either voluntary or involuntary movement
  - Voluntary migration of adults in search of better economic opportunity

- Prevalence of armed conflict (where firearms are used between communities to settle environmentally induced conflicts):
  - Presence of violence

    - Frequency of conflicts
    - Levels of conflicts (i.e., within or between households and between communities)
- Indicators of governance deficit:
    - Power grab by interest groups
    - National and local policy disconnect
    - Local people or communities do not trust their governments
    - Governments lack human and institutional capacity and political will
    - Wasteful and environmentally unfriendly procurement practices – lack of transparency and accountability

Mr. Ejigu further explained that the primary conclusion of the study is that "environmental insecurity plays a significant role in triggering, aggravating, and causing armed conflicts." However, he warned that the link between environmental insecurity and conflict is non-linear and influenced by a host of factors. These factors include high population pressure, low institutional and technological response, poverty, population mobility, and deficient tenure rights and practices, etc. Mr. Ejigu emphasized that, according to the study, "the probability of conflict increases where environmental insecurity induces population mobility, particularly towards heterogeneous (ethnic, cultural, religious, etc.) communities and where these migrants tend to dominate economic and political spheres. If that happens, the recipient communities tend to become aggravated and the propensity for conflict mounts." Mr. Ejigu also emphasized that during the study it was made apparent that "ethnicity" was used as a cover for much of the environment-induced conflict in all four countries.

## SESSION III: ENVIRONMENTAL SECURITY ASSESSMENT — THE BUILDING BLOCKS

**MODERATOR: Mr. Ray Simmons, President and Co-Executive Director, Foundation for Environmental Security and Sustainability (FESS)**

**Governance, Participatory Development, and Environmental Security**
**Mr. Ben N. Kamugasha, Former Permanent Secretary, Ministry of Environment, Republic of Uganda**

Using Uganda as an example, Mr. Kamugasha's paper discussed issues of governance, participatory development, environmental security, and sustainable development in the eastern Africa region. The paper discussed issues of governance in the context of political will, law and order, land, and gender policies. The paper examined governance aspects in the context of legal and institutional frameworks and addressed issues of participatory development in the context of the environmental sector. It discussed activities of the private sector, civil society organizations, and development partners. In

addition, the paper discussed issues of industrialization and their implications for environment and poverty and examined the future outlook of interventions by partners in the Environmental and Natural Resources (ENR) sector. The author contended that environmental security is, in many respects, a by-product of effective governance and participatory development, two important ingredients of sustainable development and peace. He further gave a brief survey of the literature on environmental security since the 1980s and concluded by highlighting a few causes of environmental insecurity. Finally, the author looked at "environment and empowerment," a concept in which converge the three ingredients of governance, participatory development, and environmental security.

**Governance.** The sustainable management of natural resources depends on good governance- governance that is accountable, transparent, inclusive, participatory, respected, and effective in enforcing law and order. Good governance implies accountability to all local stakeholders, and it implies consideration of and responsiveness to their livelihood interests. Mr. Kamugasha's paper looked at Uganda in light of these five measures of governance:

*Accountability:*

- The "Land Sector Strategic Plan" (LSSP) has been prepared as part of the medium and long-term policy strategies for productive and sustainable management and utilization of land resources in Uganda.
- Linkages between governance, environmental security, and sustainable development are spelled out in the 1995 Constitution.
- Government has adopted multi-sectoral approaches to implementing polices and laws and has developed strategic plans aimed to improve sustainable use of resources.

*Transparency:*

- Uganda's National Environment Management Policy was instituted in 1994, followed by the National Environmental Statute in 1995. Additionally, sectoral policies and laws have been introduced, including: the Wildlife Policy, 1996; Wildlife Statute, 1996; Water Policy, 1995; Water Act, 1995; National Wetlands Management and Conservation Policy, 1996; and the Land Act, 1998.
- National Environment Management Authority (NEMA) is the principal agency in Uganda for the management of the environment. Its mandate is to coordinate, monitor, and supervise all activities in the field of the environment. NEMA holds one of the highest positions of all public institutions in the country. The supreme organ of NEMA is the Policy Committee on the Environment, chaired by the Prime Minister and composed of 11 cabinet ministers.

*Inclusiveness:*

- The LSSP strategic objectives consistent with environmental management are to: (1) create pro-poor policies and legislation for the land sector; (2) allocate land resources to more productive uses and users; (3) ensure a more equitable distribution of land access and ownership; and (4) establish greater tenure security for vulnerable groups (women, squatters, orphans, widows, landless).

- In the natural resource sectors, where gender inequality still remains, women are the primary users of environmental resources, for purposes of production and energy.
- Since 1986, the government has pursued a policy to mainstream gender issues in all development programs. The Constitution attempts to guarantee to all Ugandans the right to a decent environment, by providing an atmosphere conducive to open participation in environmental and natural resources management.

*Participation:*

- Decentralization has been gaining momentum since the 1990s as a mechanism for enhancing participation.
- Reforms have sought to give formal legal expression to the concept of sustainable development in which issues of governance, participatory development, and environmental security have been paramount.
- The 1995 National Environment Management Statute sets out environmental management principles that assure all people living in the country the fundamental right to an environment adequate for their health and well-being, and it encourages maximum participation of Ugandans in the development of policies.
- Uganda has established, where appropriate, arrangements to strengthen the active participation of indigenous people and their communities in the national formulation of policies, laws, and programs relating to resource management and other development processes that affect them.

*Effectiveness/Respect:*

- Devolving natural resources management has increasingly gained acceptance as an environmental governance norm.
- The main legislative framework, such as the Land Act 1998, recognizes the traditional dispute resolution mechanism and has set up new institutions (land tribunals and mediators) to handle land disputes.
- In the last two decades, extensive legislative reforms have taken place in the Environment and Natural Resources (ENR) sector in sub-Saharan Africa as part of the National Environmental Action Plans (NEAPs).
- One of the important aspects of the LSSP that is bound to have significant impact on the environment and reduce environmental conflicts is the systematic demarcation of land, which is meant to ascertain and demarcate land rights, as well as adjudicate, readjust, and survey the demarcated land.
- Institutions responsible for environmental management have been restructured. They now include local /village committees responsible for monitoring and ensuring adherence to proper environmental management.

**Institutional capacity.** The legal system and institutional frameworks must have adequate capacity to promote good governance, participatory development, and environmental security. Uganda has modern policies which, if successfully implemented, would promote environmental security.

- The main objectives of the current approach are to:

1. Enhance democracy and good governance;
2. Promote community participation;
3. Eradicate poverty;
4. Encourage participation of community-based organizations and NGOs;
5. Develop modalities for conflict resolution; and
6. Establish policies to promote sound management of natural resources and environmental protection.

- Coordination between institutions, both public and private sector, and ministries needs to be intensified so that duplication and rivalries are minimized or eliminated.
- The possibility of merging the various local government environment-related committees set up by the various sectoral laws and regulations should be considered in order to harmonize and avoid waste of resources and to improve the co-ordination, efficiency, and effectiveness of environment programs.

**Participatory Development.** Activities, projects, and programs carried out by stakeholders and partners have important implications for participatory development. In turn, these implications have important bearing on issues of governance and environmental security, particularly as they relate to poverty and environment.

*Private sector*

- The State of the Environment (SOE) report addresses issues of the private sector from a broad perspective. It recognizes the private sector as the engine of economic development and needs to work in support of sustainability, economic prosperity, sound economic management, industrialization, poverty eradication, and civil society participation.
- The policy preference has been to involve the private sector in actual environmental management of natural resources, while government agencies (with NEMA taking the lead role) limit themselves to a supervisory role. Already, some successes (e.g., the forestry sector in the granting of leases to the private sector) have been achieved with this approach.
- If the private sector is to effectively contribute to good governance and environmental security, it should take into account observations made in the SOE report:
  1. Poor people tend to be highly dependent on natural resources for their livelihood. The extent of this dependence may not be revealed by traditional income analysis.
  2. Property rights, communal or private, formal or informal, are fundamental for natural resources utilization.
  3. Natural resource utilization should be seen not only in the context of limiting access and exploitation, but also from the perspective of sustainable economic opportunities.
- A challenge for the private sector is to make acceptable and innovative investments through which economic opportunities offered by the environment can be utilized in a sustainable manner.

*Civil society organizations and communities*

- The National Environment Action Plan (NEAP) process did acknowledge the contributions civil society can make, observing that "particular attention will be directed to those NGOs which provide support and opportunities to the more disadvantaged groups, such as women, the aging, and youth."
- The SOE report recognizes the important role civil society organizations can play in environmental management by carrying out those functions that cannot be accomplished by formal private sector institutions. Initiating participation of communities at the local level, mobilization, and sensitization are some of the areas in which NGOs have demonstrated comparative advantage.

*Development partners*

- In Uganda, limited domestic resources must be inevitably distributed to high priority sectors like education, health, and defense. The environment has tended to be accorded secondary importance, despite the fact that sound investments in environmental management yield substantial benefits.
- The support from development partners has been instrumental in plugging this gap in domestic resources.
- The United Nations Environment Programme (UNEP) is supporting the development of an environmental information system.

*Industrialization*

- The government looks at industrialization as a clear path toward economic development and, ultimately, as one of the solutions to the scourge of poverty.
- While industrialization must be encouraged, it could generate unintended adverse environmental impacts unless carefully managed.

**Environment and empowerment.** Environmental activities can contribute to the empowerment of local people. In turn, local communities that are empowered to participate in decision-making on environmental resources can help themselves maintain their livelihoods, gain equitable access to resources, and use these resources in a sustainable manner. The guiding principles for community empowerment are:

- Environmental activities can contribute to the empowerment of local people. When communities are empowered, natural resources can serve as a platform of economic opportunity upon which to build social capital.
- Examples of community empowerment in natural resources management include joint or collaborative forest management, community wetland management planning and implementation, and Community Protected Area Institutions (CPIs).
- Forming committees to manage common property resources is also potentially a good way to empower communities. The Land Act of 1998 empowers communities to form land management associations for the purpose of enhancing tenure security.

**MODERATOR: Dr. Henry Aryamanya-Mugisha, Executive Director,**
**National Environmental Management Authority (NEMA), Uganda**

**Assessing Environmental Governance: A Comparative Overview**
**Mr. Eric Dannenmaier, Director,**
**Institute for Environmental Law and Policy, Tulane University**

Following Mr. Kamugasha's presentation, Mr. Dannenmaier discussed environmental governance as an important parameter in any comprehensive plan to identify nations and regions vulnerable to instability and conflict. The paper asserted that environmental governance indicators can be assessed by looking at characteristics and aspects of a country's environmental legal and institutional framework in four principal areas:

1. **Legal and regulatory framework.**
   The understanding of legal and regulatory frameworks within which resources are managed, requires reviewing the following:
   - Constitutional provisions and structures addressing issues such as land tenure and allocation of governance responsibility, jurisdiction or institutional competence, and consideration of international and transboundary commitments made by the state.
   - Legislation establishing broad national environmental policies, further refining institutional competence, and creating a monitoring enforcement and compliance framework.
   - Regulations providing the detailed instructions to implement national laws — setting specific conditions for regulated communities whose activities have environmental consequences, and creating procedures by which access to resources is managed.

*In assessing legal and regulatory frameworks, the characteristics that must be measured include:*
- International commitments undertaken by the state.
- The existence of a basic environmental law or code that includes provisions for environmental impact assessments and enables the government to issue regulations for the protection of air and water quality.
- The existence of constitutional environmental protections, including the right of standing to address grievances over environmental harms or tenure decisions.
- A modern administrative code that includes provisions for the systematic and orderly development of environmental regulations.
- The existence of modern codes in areas identified in other priorities for the country (such as water quality, forest resources, mining, etc.).

2. **Socio-cultural and political legitimacy.**
   - Political and socio-cultural legitimacy are strong indicators of the overall health of an environmental governance framework, and may also have independent predictive value in a vulnerability assessment.

- When legal frameworks and institutions fail to be seen as legitimate, important, or even relevant. This is a key challenge to effective environmental governance**.**
- Securing legitimacy, particularly within communities that are subject to, or most affected by, environmental regulations, is a critical determinant of the efficacy of any environmental governance system.

*In assessing socio-cultural and political legitimacy, the characteristics that must be measured include:*

- Annual environmental budget (as percentage of GDP).
- Status of key environmental appointees.
- Private sector compliance attitude.
- Compliance rate.
- NGO compliance perception.
- NGO compliance actions.
- Land tenure statistics.
- Media reporting.

**3. Institutional structure, capacity, and integrity.**

- Clarity of structure of institutions, including lines of authority and decision-making, and the parameters of institutional competence.
- The integrity and transparency of environmental agencies and officials is an important consideration in assessing the ability of institutions to mitigate and mange environmental stress.

*In assessing institutional structure, capacity, and integrity, the characteristics that must be measured include:*

- Key environmental agency budgets, relative to government total and/or GDP.
- Percentage of key agency budget from external sources.
- Environmental staff training/expertise level (including the number of full time-equivalent personnel devoted to environmental matters and their education, training, and expertise).
- Overlapping jurisdiction in other priorities for the country (such as water quality, forests resources, mining, etc.).
- Compliance monitoring capacity/activities conducted by the government.
- The number, frequency and type of administrative/judicial actions taken.
- The existence and persistence of institutional corruption.

**4. Public access (participation).**

- Engagement of citizens as environmental monitors through public access mechanisms improves environmental governance framework.
- Public access to information, decision-making processes, and/or the redress of grievances.
- Access is a particularly important consideration for traditionally marginalized groups, including women, racial and ethnic minorities, indigenous populations, and others who are not well represented within politically powerful groups.

*In assessing public access, the characteristics that must be measured include:*

- Access provisions in Administrative Law (including general administrative provisions as well as those devoted to environmental issues).
- Access provisions in constitution.
- Access provisions in key environmental legislation.
- Active, stable NGO funding.
- Information access provisions for key environmental parameters.
- Actions successfully brought by non-state actors.
- Media reporting.

**Discussion on presentations by Mr. Kamugasha and Mr.Dannenmaier:**

- *Joy Tukahirwa:* Ironically, Mr. Kamugasha's paper indicates that the Ugandan government plays an important role in enabling discussions on environmental conservation issues, but then does not commit any resources to these issues. Furthermore, there seems to be a lack of capacity to manage environmental resources at the grassroots level and to harmonize the involved bodies. With regard to the PAES study, we need a larger survey that covers all areas of potential and actual conflict, with the necessary scientific control to convincingly establish the correlation between environmental degradation, insecurity and armed conflict.

- *John Katunga:* I appreciate the analysis of the Ugandan government's achievements and the need to bring community voices into policy. How are the local committees established, what are their capacities, what powers do they have to make decisions and on what levels, what is their role in application and in monitoring, and how are their conclusions taken? Finally, have these committees influenced events?

- *Philip Gwage:* Environmental security is tied to global environmental degradation. We can look at good governance at regional, national, and local levels, but we also need to look at international governance, a lack of which is a significant threat to environmental security.

- *Bekele Wegayehu:* The most serious problem is that environmental security issues arise out of actions beyond the borders of each country. How can we raise the notion of governance to the global level, so that environmental issues will be addressed at multinational levels? How can the governance concept be applied on the global level?

- *Frank Muhereza:* At the Center for Basic Research, we have looked at the relationship between the decentralization of government and natural resource management. Uganda has been hailed as a model for decentralizing state powers. When we look at how environmental governance plays out in natural resources management, we see the political administration transfers power from the center to the local community. But, the state gives it with the right hand and takes it away with the left. In forestry, for example, residual powers are retained by the

ministry. To support sustainable management, we need to encourage the devolution of power away from the center to where people actually have the resources to use it and are affected by the practices.

- *Savino Katsigaire:* In regard to security and the environment, people tend to concentrate on human security and ignore the environment. Uganda and Zimbabwe provide an example, where devolving powers were given to the community with incentives to help manage elephants and restrict illegal poaching. But since the governance was weak, human encroachments into the area confined the elephants to a smaller area and resulted in elephants spoiling crops and killing people. From the governance point of view, there is a need to secure other components of the environment, not just humans.

- *Frank Muhereza:* There are areas similar to the Karamoja cluster in other parts of Uganda, as well as in Kenya and Sudan**,** where there is a correlation between environmental security and small arms proliferation. Trade in small arms has existed there for a long time, but to what extent has the government dealt with the symptom (in this case, arms proliferation) and not the underlying cause? We need to push the issue farther. As conflict studies show, environmental security is linked to marginalization and competition for natural resources. We can see this link in northern Uganda.

*Response from Mr.Dannenmaier:*

- Let me ask whether, for example, ECOTRUST's external funding results in more or less stable governance. My bias is that a governance system with greater dependence on external funding is inherently less stable for two reasons. One, it is less predictable because the financier is not controlled by the recipient country. Two, it may reflect a marginalization of interest in environmental issues by the government; for example, on issues of the environment where there is 90 percent external funding and 10 percent government funding. This suggests the country's support is low and subject to priorities of external agencies. We have been discussing the points that decentralization results in management capacity devolving to the local level and that environmental security issues have an international and global scope. When we look at mechanisms and approaches, we can look at the subsidiary model, which allocates responsibilities to the most appropriate levels. It should depend on the issue as to the level at which there will be both authority and financing.

*Response from Mr. Kamugasha:*

- Institutional innovations that create local environmental/natural resource committees have been well received in Uganda. However, the assumptions of how effective they would be were wrong. In order to have village and local committees, we need to have communities' trust. The Ugandan population is still very suspicious, given the history of wars and oppressive governments. The first step is to try to raise people up from this perspective and reduce their

suspicion, so they may begin to accept the government's innovations. At the present time, people say they go to meetings looking to see how they can develop their own coping strategies for what government interventions impose on them. The government is trying, but, of course, politicians have their own agendas. In addition, we assume there is grassroots capacity, though we do not know for sure. Committees need special skills to relate to people at the grassroots level and to get messages across on issues that may be unfamiliar to the local people.

*Response from Mersie Ejigu:*

- The PAES study sample included four sites with 480 households in potential and/or actual conflict areas. The sample size was small, but it included community-based focus group discussions that helped us capture community perceptions of environment, degradation, insecurity and conflict. We supplemented primary sources with secondary sources, including extensive literature, and saw that the primary source data was consistent with the secondary source data. As you very well know, establishing the link between environmental insecurity and armed conflict is a huge undertaking; we thus encourage further research.
- As regards the issue of resource allocation in government, we have to understand that it is a complex process. Often, the government takes resources from areas that it believes are attractive to multilateral funding and shifts them to other areas that do not have the support of the international development finance community. In other words, the more external funding an area receives, the less the government allocates to it. This is a kind of game within the government because resources are extremely scarce and budgets are too tight to ensure survival. So the level of governmental funds committed to a particular sector may not be an accurate indicator of governmental development priorities and level of commitment.

**MODERATOR: Mr. Hamid Rohilai, Research Associate, FESS**

**Land Use Change, Population Movements, Environmental Stress, and Security – The Ugandan Case**

The following summary is extracted from the PAES Study, "Environmental Security in Uganda: Biophysical and Socioeconomic Evidence" by Sam Mugisha, et al. Annex II of the Main Study of the EU funded project: *Integrating Environmental Security Concerns in Development Policy in Africa*, April 2004.

Uganda is a landlocked country in eastern Africa, whose neighbours are Kenya in the east, Democratic Republic of Congo (DRC) in the west, Sudan in the north, Tanzania in the south, and Rwanda in the southwest. Uganda has a total land area of 241,500km$^2$, of which 15 percent is covered by open water. About 84 percent of the country is a plateau, lying between 900 and l500 meters above sea level and about 7 percent is over l500

meters above sea level. This latter part includes the Western highlands and mountain ranges, of which the Kabale hills, Bufumbira, and Rwenzori Mountains are famous. The Elgon and Moroto are significant volcanic mountains in Eastern Uganda. The main water bodies include Lakes Victoria, Albert, Edward, George, and Kyoga. There are several rivers in Uganda, the most prominent being the River Nile and its tributaries. Annual average temperatures range between l7$^{o}$C to 26$^{o}$C. Annual rainfall varies considerably from region to region. The highest levels average over 2000 mm in the Lake Victoria crescent. In contrast, Karamoja, the driest area, receives as little as 500 millimeters of rainfall annually. The south, west, and Mount Elgon areas have two rainy seasons a year, while the north has a unimodal rainfall pattern. The north has a dry spell from November to March, while the south, has a dry season from June to August and then December to February. The southwest, described as the "Switzerland of Africa," is exceptionally cool, with annual average temperatures of about 17$^{\circ}$C and well-distributed rainfall.

Tropical rain forests occur mainly in southern and western part of Uganda. Savannah ecosystems are widespread across the whole country. There are also extensive herbaceous wetlands, especially around major lakes such as Victoria, Kyoga, Albert, and George. In 1990, small-scale farmed ecosystems accounted for about 35 percent of the country, while large-scale farming accounted for only 1 percent of the country. About 22 percent of the land is covered by fertile soils, 43 percent with soils of fair productivity, and 33 percent with soils of low productivity. Most of the country has loamy soils with varying proportions of sand and clay components. Volcanic fertile soils are found in the eastern and south western parts of the country.

The 1991 census put Uganda's population at about l6.6 million, of which nearly 90 percent lived in rural areas. The growth rate was estimated at 2.5 percent per year. However, the 2002 census put Uganda's population at 24.7 million, with an average annual growth rate of 3.3 percent for the period 1991 to 2002. The high population growth rate is associated with the high fertility rate and the young age at which Ugandan women marry. Over 50 percent of Ugandan women get married before the age of l8 years. Other factors associated with high population growth rates include: (1) the low status of women, (2) the importance attached to children as sources of labour and prestige, (3) the desire to propagate the family tree, and (4) the need to have family members care for the elderly. In conjunction with the growth in population has been a consistent increase in population densities, which puts added burden on the natural resource base.

As in many other countries, loss or deterioration of natural vegetation cover in Uganda has been mostly due to anthropogenic factors. The natural resource base, natural vegetation in this case, is under pressure in all parts of Uganda accentuated by a number of factors, including high population growth, large-scale dependence on subsistence agriculture, harsh rainfall, and less resilient, fragile, and hence easily degradable soils. Other factors such as poverty, pressure on the land, land tenure, labor availability, economic incentives and indigenous technical knowledge also have an impact on the soils. Most of the soil degradation in Uganda occurs as soil erosion, caused largely by the combined effects of poor farming practices and high population pressures. In

addition to the scarcity of land, the availability of water was found to be a limiting factor leading to societal conflict. As a result of the high population density and the consequent land scarcity, Uganda has experienced massive rural-urban migration over the past few decades.

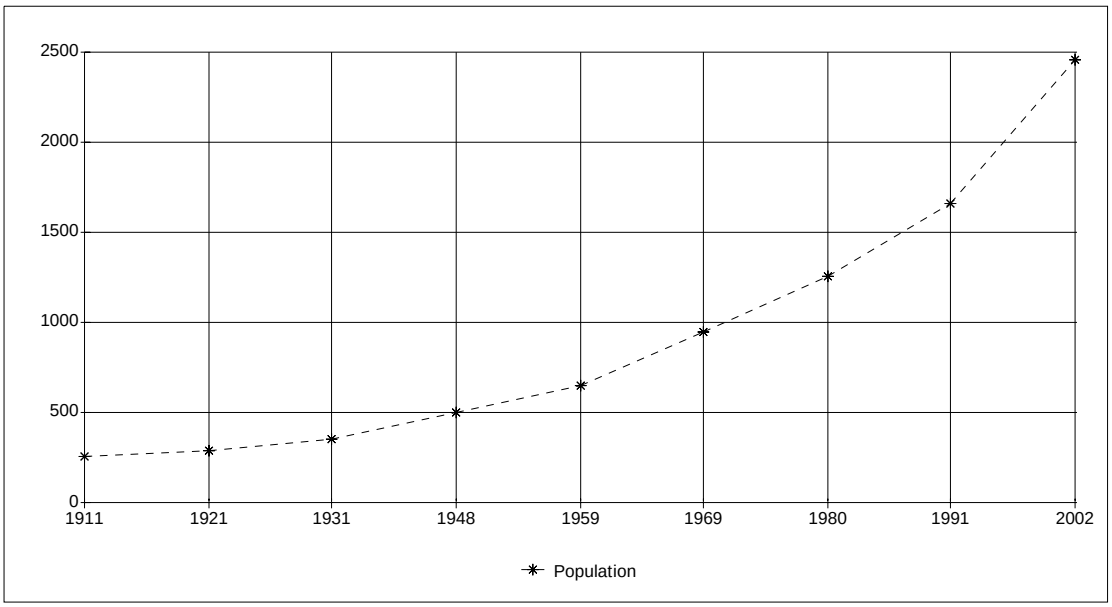



*Figure 4.1. Population change in Uganda between 1911 and 2002 [Source: Uganda-LUCID Working paper Number, in prep.].*

**Agriculture, Poverty Eradication, and the Environment**
**Dr. Eseza Kateregga, Department of Economic Policy and Planning, Makerere University, Kampala, Uganda**

Dr. Kateregga's paper discussed the changes in agricultural production and in poverty levels in Uganda, linking these changes to the rate of environmental degradation. Recognizing agriculture as the backbone of the Ugandan economy, the author used an econometrics model to determine a relationship between the share of agriculture in GDP and income per capita. Dr. Kateregga concluded that increasing productivity through improvements in agricultural technologies could reduce environmental degradation and assist in poverty reduction.

*Agricultural sector and the environment:*

- A majority of Ugandans live in rural areas, engage in subsistence agriculture, and live in poverty. About 80 percent of the population is engaged directly or indirectly in the agricultural sector. Due to the significant contribution that agriculture makes to GDP, the success of poverty eradication programs largely depends on improvements in productivity in this sector.
- The sector's output has grown by an average rate of 4 percent per annum in real terms over the last ten years.

- Environmental degradation, including biodiversity loss, deforestation, soil erosion, and water contamination, costs the national economy between 4 percent and 12 percent of GDP.
- The agricultural sector is the major contributor to deforestation, soil erosion, and biodiversity loss. Its share of environmental degradation lies between 86 percent and 91 percent in monetary terms.

*Poverty Eradication Strategy:*

- Poverty eradication remains a major objective of Uganda's development strategy. The framework for poverty reduction is presented in the revised national Poverty Eradication Action Plan (PEAP), a multi-dimensional approach that seeks to address poverty and its derivatives in a multi-sectoral framework.
- The priorities for poverty eradication include improvements in health care, roads, education, water and sanitation, and the modernization of agriculture.
- The overall objective of PEAP is to reduce the proportion of the population living in absolute poverty to 10 percent and in relative poverty to 30 percent by the year 2017.

*Conceptual framework behind the analysis of poverty and environmental degradation:*

- Poor Ugandans lack access to production resources. Due to the ill-defined nature of property rights in the case of many "commons," survival can at best be achieved by acquiring ownership of some portions of the "common land." The result is the rapid destruction of natural vegetation, as the quest for arable land increases.
- In the short run, agricultural production will increase and food security will improve.
- In the long run, a number of factors will control the ability of farmers to efficiently manage soil productivity in the pieces of land they secure from the "commons."
- Those who manage to use farming practices that augment soil fertility may tend to reap stable output over time.
- Those without access to the means to augment soil fertility, perhaps due to poverty, may adopt practices of shifting cultivation or leaving land under fallow.

*An econometrics model to determine correlation between the share of agriculture in GDP and income per capita:*

- The model stipulates a relationship between poverty reduction and environmental degradation. The hypothesis is that an increase in per capita GDP generally reduces poverty, which enables farmers to access better farming techniques and, as a result, reduces both the desire for land conversion and the associated environmental costs.
- Data is used for the period 1983 to 2003. The results show that per capita GDP fell between 1983 and 1987, steadily rose between 1987 and 2001, and declined in 2002 (Figure I). The steady increase in per capita GDP in the period after 1987 may result from improved economic performance and perhaps because of PEAP. The share of agriculture in GDP consistently fell during this period (Figure II).

- Estimation of the share of agriculture in GDP requires a careful analysis of the time series characteristics of the data. The sample period under consideration is quite narrow for such analysis. This prevented the author from conducting tests on the two variables.

Figure I: Per Capita GDP 1983 – 2003

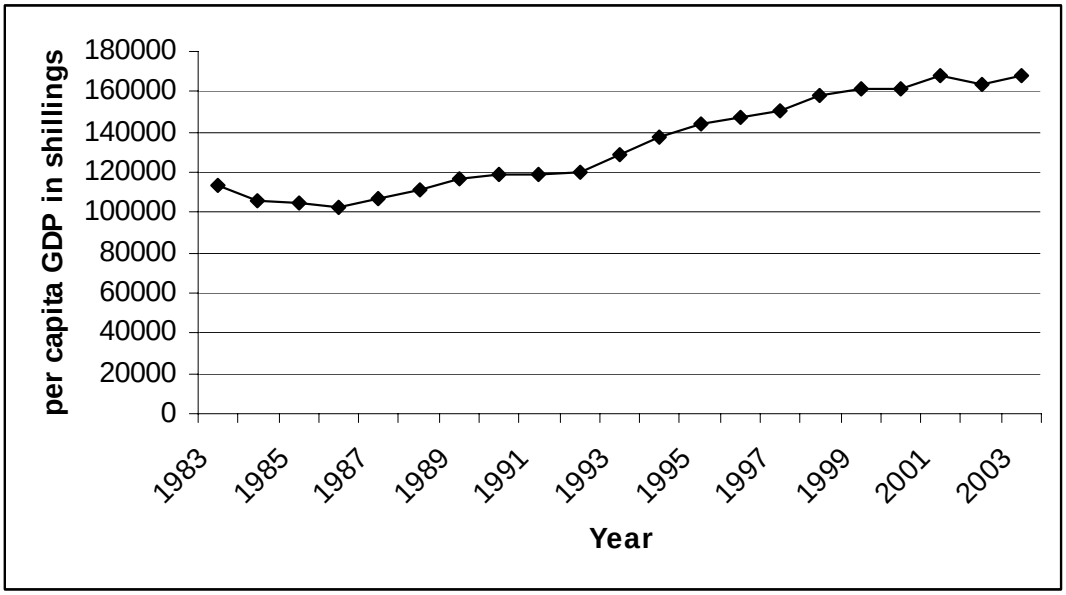
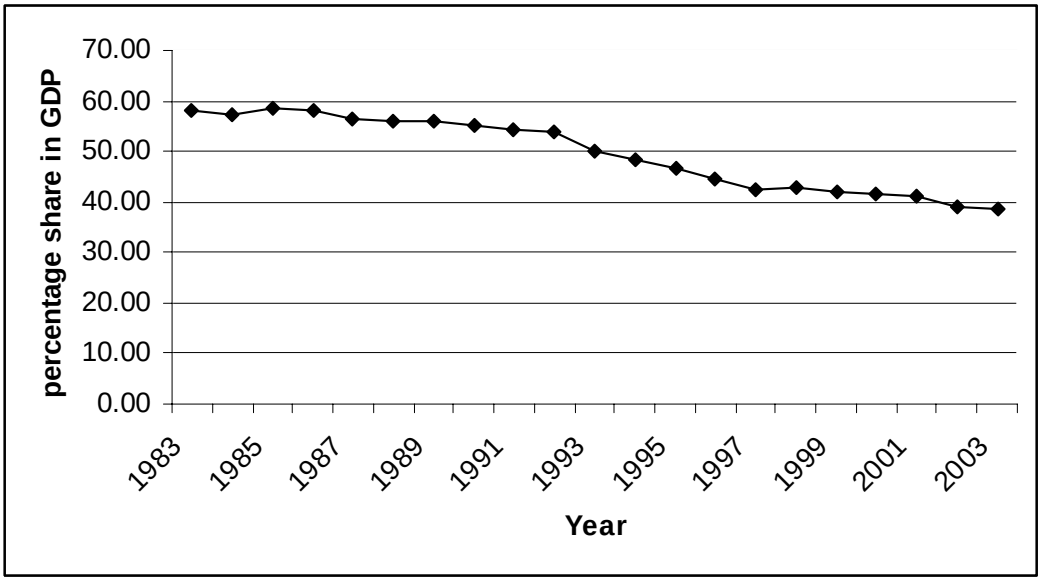



Figure II: The Share of Agriculture in GDP 1983 - 2003



Dr. Kateregga concluded:

- The analysis points to the need to reduce the share of agriculture in GDP as a means of curbing environmental degradation. This may require the strengthening of policies already in place to encourage expansion of investment in other sectors.
- Farmers should be provided with assistance to access better farming methods, enabling a shift from farming practices that threaten environmental security.
- Policies need to be implemented to enhance productivity in the agricultural sector.
- Efforts should be increased to educate and sensitize the farming communities about the social costs of farming methods that are detrimental to the environment.
- Sustainable use of environmental resources will require that efforts geared toward poverty reduction be maintained for a longer period.

**Discussion on presentation by Dr. Kateregga:**

- *Eric Dannenmaier:* Does productivity per hectare mean agriculture use or what was actually cultivated in a given year? What is the relationship between agricultural productivity and environmental stress?

- *Eseza Kateregga:* Actual cultivable land, the areas covered by crops, not including fallow lands. For the second question, our proposition is that if productivity is raised, people will require less land for the same output, thereby reducing the desire to clear more land and reduce land conversion.

- *Eric Dannenmaier:* In some cases, it could be the opposite, due to use of nutrients, pesticides, etc., and its run-off. Unfortunately, there is no data behind the numbers.

- *Fadhila Ali:* Agriculture, environment, and poverty are all linked in the paper. In Tanzania there is little linkage between what is researched and what is discussed in terms of environmental degradation and poverty eradication. In theory the link is there, but in practice there is little input. We would like to understand what is happening in Uganda and what is actually being produced to combat food insecurity. The question is, if people increase production in Tanzania, where would they sell their products?

- *Fred Onduri Machulu:* We are all aware that Uganda's economic performance has been an example for Africa, where government introduced policy measures such as agricultural modernization, liberalization of trade that created links to the international markets, and anti-poverty initiatives. Before the periods discussed in the presentation, there was a significant decline in production because people lost trust in the government to give them a legitimate price for cash crops such as cotton, coffee, and tea. When the new government came to power, people believed that the government was offering a fair price, so people felt comfortable again. They got ready to diversity their production. Through natural resource management there can be an open link between the producer and the open market, with output increased by diversification. There was definitely environmental stress because people cultivated more land, and the growth in rice production

increased — rice is not a traditional crop. People will stick to a change, however, if it works. Rice is grown in wetlands and swamps, and this encroachment is a serious environmental challenge. We need to work against this trajectory of encroachment into the wetlands and land expansion. Land used for millet and banana cannot sustain the economy, but in these there is a rigidity of cultural and historical tradition against changing what lands are used for certain crops. The government is making efforts to change the mindsets. Rice is being cultivated in the northern and the eastern parts, areas which traditionally did not produced rice. Gulu district, for example, now produces good rice. Agriculture is making a relatively smaller contribution to GDP, not because of a decline in production, since it has remained about the same, but because of the growth in other sectors, notably the service sector, including telephone, banking, and insurance.

- *Gedion Asfaw:* Another conclusion is that when production increases, income rises and the environment improves. Is this a localized conclusion? The argument here today is the opposite, and that one must take care of the environment.

- *Jody Stallings:* It is globally recognized that habitat destruction, caused by the conversion of land use, is the number one threat to species biodiversity. I have limited experience in Uganda, but I see no native habitats outside of protected areas that are not being used for some purpose. When it is lucrative to do so, people tend to convert native habitat for some purpose. So when Dr. Kateregga mentioned that the area under cultivation increased, does that mean that native habitat land was converted, or fallow land was being used? *Dr. Kateregga* responded that "land under cultivation" in her paper referred to land that was not fallow. *Mr. Stallings* asked if other lands existed that could be converted that have native habitat, for example, forests that are privately owned. *Dr. Kateregga* responded affirmatively that land existed but there were no statistics to show this.

- *Savino Katsigaire:* Rice in northern Uganda is cultivated on land that is not owned by the cultivators. There is more to study on conflict and the relationship of entrepreneurs to economic forces.

- *Frank Muhereza:* There is an argument that when agricultural activities increase, the environment gets neglected. Whether or not agricultural production improves or there is a shift in GDP or not, the industrial strategies being pursued are dependent on the natural resource base. All Ugandan industries are dependent on natural resources or are agriculture based, so environmental issues need to be at the center of discussion in order to protect the environment.

- *Mersie Ejigu:* Our PAES study offers some good examples from Uganda, Ethiopia, Rwanda, and Burundi. With a significant increase in population, there was higher food demand and more cultivation to increase agricultural production. In Uganda, there is an increase in area cultivated as a result of the demographic push. Farmers show very limited interest to rehabilitate or improve the land.

They prefer to bring other land into cultivation instead, which destroys indigenous species. It would be good to see to what extent the PRSP (Poverty Reduction Strategy Plan) has reflected environmental concerns. In my limited view of this plan to modernize agriculture, it seems the emphasis is more on increasing production as opposed to investing in soil and water conservation techniques. The plan is based on the assumption of resource abundance, while ignoring the issue of resource scarcity.

- *Henry Aryamanya-Mugisha:* The PMA (Plan for Modernizing Agriculture) makes the assumption of resource dependence. Land outside protected areas that is owned by individuals is being opened up and habitats are being lost. Population density is high in northern Uganda, and the people see no land to move to for cultivation. In western areas, there are already population pressures.

- *Ben Kamugasha:* A general problem is that many policies were put into place all at once in Uganda in the 1990s. One of the easiest ways of undermining capacity is to overwhelm institutions with responsibilities. The country is very weak with respect to monitoring and evaluation of policies. We need to ask if the tools are in place for there to be a basis for strong, comparative analysis. Policies must be accompanied by clear tools to measure and monitor them.

- *Seyoum Mengistu:* The most important agenda for the southern part of the country is deforestation, as some areas have been completely deforested and this has created serious downstream effects and degradation of the environment. People are allowed to cut down trees because it is profit oriented. The government should do something to reforest the degraded areas.

- *Eugene Rurangwa:* In Rwanda, the agricultural sector is not a good friend of the environmental sector, because more than 90 percent of Rwandans depend on the agricultural sector but there is limited land. Mr. Ejigu's figures show 65 percent of land is used for agriculture, up from 52 percent. I think by now, with the cutting down of trees for agriculture purposes, we have probably reached 80 percent in Rwanda. Vision 20/20 is a program whereby the Ministry of Agriculture seeks to reduce the percentage dramatically in the next twenty years. This is a difficult challenge, especially without an obvious alternative to diversify income. We have been trying to convince the agricultural ministry to adopt some new practices and to grow more appropriate crops such as fruit trees on the slopes, instead of maize and beans. We should import the latter crops rather than grow them in Rwanda. It is a big challenge to change the mindsets in the agricultural sector and find alternative solutions.

- *Henry Aryamanya-Mugisha:* If we look at livestock issues from 1960 to the present, in one part of Uganda livestock have been allowed to roam freely, leading to land degradation that is mainly serious soil erosion. In another part, where agriculture and fishing are predominant, the livestock are being kept in

paddocks and the vegetation cover has increased. Are we looking at crops or animals?

- *Gerard Nyabutsitsi:* The link between poverty and environmental security is evident in Rwanda, where people in poor communities may sell their land to pay for schooling of their children. We tend to undervalue agricultural products. For example, you will find that 100 kg of beans is not worth a vial of malarial medicine and one liter of milk is not worth one bottle of "Fanta" soda. This is a very big issue. Regarding consumption trends, the old saying that "Africa produces what it doesn't consume and consumes what it doesn't produce" is relevant. People will spend half of a family income for a cell phone, but how are these useable in remote areas? Another issue has to do with perpetuating the dependency syndrome.

- *Joyce Onyango:* Only 50 percent of Kenya is arable. People's dependence on agriculture leads to encroachment on marginal and protected areas, causing environmental stress and poverty. Due to the land tenure system, many people have extremely small plots, causing out-migration and stress on the environment. Inheritance of land that is not viable leads to the usual migration under environmental stress to seek shelter, water, and sanitation. These things are linked. The private sector is increasing vis-à-vis the public sector. Kenya's first poverty strategy, PEI (Poverty Environment Initiative), initially lacked attention to the environment, but now policy makers realize that the lack of care for the environment is linked to an increase in poverty.

**MODERATOR: Dr. Ellen Suthers, Research Associate, FESS**

**Environmental Insecurity, Poverty and Conflict in Karamoja, Uganda**
**Mr. Frank Muhereza, Senior Research Fellow,**
**Centre for Basic Research, Kampala, Uganda**

Mr. Muhereza linked environmental security, poverty, and conflict in an analysis of underlying causes of armed conflicts and of non-violent, small-scale conflicts within the Karamoja region. His paper tied environmental insecurity and poverty to armed conflict, and identified underlying causes of the violent conflict as a failure of governance over contested interests that are compounded by ethnic and cultural factors and by tension between subsistence and commercial sectors over natural resource use. Furthermore, the paper gave a detailed presentation of how poverty causes environment degradation and vice versa, while both are leading to conflict in the Karamoja region.

Mr. Muhereza made the following observations, based on his field research in the Karamoja region:

*a. Poverty is pervasive:*

- A multi-dimensional phenomenon among the Karamojong people that results from lack of alternative employment opportunities, productive resources, and social assets.
- Poverty is being reinforced by social and political factors that condition the use of, access to, and control over environmental and natural resources.
- The impact of poverty and the resulting cattle raiding is so damaging for human development that the Karamoja region fared worse than districts afflicted by the 18-year armed conflict led by the Lord's Resistance Army (LRA).
- Poverty and inequality lead to increased pressure on natural resources. This exacerbates environmental insecurity, feeding into the vicious cycle of poverty, environmental insecurity, and armed conflict.

*b. Indicators of significant environmental change occurring in Karamoja include:*

- Land degradation, soil erosion, reduced crop yields, and overgrazing in the rangeland.
- Rapid deforestation in the permanent settlement areas.
- Depletion of underground water aquifers and reservoirs.
- Unplanned and rapid depletion of the environment through limestone and marble mining, with no land restoration plans in place.
- Increased flooding.
- Decline in per capita livestock due to increased raids and disease.
- Prolong droughts and occurrences of famine.
- Increasing conflicts over scarce grazing resources.
- Lack of food and proper diet; lack of access to safe drinking water, sanitation, drainage, healthcare facilities, and schools; and vulnerability to disease.
- Lack of sufficient natural resources to meet local demand, as well as degradation of the environment and natural resource base due to misuse and over-exploitation.
- Lack of governance that exacerbates the unsustainable use of natural resources.

*c. Environmental insecurity, poverty, and conflict are linked in Karamoja:*

- A strong feeling of isolation, exclusion, powerlessness, deprivation, and helplessness is shared among the local population.
- Many of the environmental issues and natural resource-based constraints are both a cause and a consequence of poverty.
- Conflicts may involve differences of opinion, contradictions, disputes, disagreements, or clashes that manifest themselves in various forms, degrees, and scales.
- Violent conflicts are usually associated with small arms and ammunition, but can also involve weapons such as machetes, axes, bows and arrows, and spears.

*d. Serious ecological threats continue:*

- Low rainfall, which is highly seasonal and occurs in a very short period of time; heavy rain leading to surface run-off and flooding.
- Due to prolonged drought conditions, crops fail 5 out of 6 years.

- Spatial and temporal variability of rainfall leads to very limited and seasonal availability of resources for livestock, exposing pastoralists to immense risks and uncertainties.
- In Karamoja, survival depends on protection of livestock — hence small arms proliferation.

*e. The policy and legal environment is in flux:*

- Lack of a national policy on pastoralism.
- A wide range of livestock-related policies have been formulated, mainly in order to regulate livestock production.
- Acts have been amended to enhance the contribution of livestock production to the economy: the Animal Breeding Act 2001, the 1964 Veterinary Surgeons Act, and the 1964 Animal Disease Act. Most of the acts are skewed toward commercialized livestock production.

*f. Modern public administration is not integrated with the traditional authority structure:*

- Under Uganda's decentralization plan, certain powers have been transferred from the center and consolidated in modern governmental structures, such as local councils. These new structures are superimposed on, rather than integrated into, existing institutions. In Karamoja, the pervasive customary institutions for public administration and law are based on the authority of a traditional council of elders. This authority system continues to operate, although it is not formally recognized by the modern government.
- The modern legal system is not yet fully implemented, nor is it integrated with traditional institutions. Judicial proceedings of the modern justice system take a long time before a sentence is passed, and often suspects are released due to lack of sufficient evidence. In Karamoja, disputes are settled quickly and aggressors are punished in the traditional manner.

*g. There is failure to maintain law and order:*

- Both police and the army have not been successful in enforcing law and order.
- The regular police and local administration police are far outnumbered.

*h. Economic and political marginalization of the Karimojong is traced to policies that:*

- Restricted mobility through the alienation of land by declaring the entire Karamoja sub-region a protected area; physically prohibited mobility by creating international borders; and re-drew internal tribal administrative boundaries.
- Declared Karamoja a "closed district" with entry permitted only by "special permit" from any outlying district origin.
- De-stocked Karamoja through a government-run cattle scheme that set cattle prices and taxes payable with cattle.
- Confiscated female cattle when forced sales failed to contain "over-stocking."
- Introduced "poisonous" weeds to ward off herds from "protected forests."
- Gazetted areas as "national parks, game or forest reserves or wetlands" which represent about 36 percent of the total land area of the three Karamoja districts of Morot, Kotido, and Nakapiripirit.

- Created boundaries, which led to conflicts over diminished grazing lands, leading to degradation and environmental insecurity. Degradation was already an issue in Karamoja by 1940.

*i. Socio-cultural concerns include:*

- Marriage systems, which require large herds, encourage raiding activities, and male competition to pay bride prices.
- When faced with food shortages, married women sing their husbands into raiding.
- Initiatives to disparage warriorhood are undermined by cultural norms that emphasize warrior pride.

*j. Impacts of the proliferation of small arms include:*

- Commercialization of livestock raiding.
- Loss of control over armed youth by traditional authority structures.
- Environmental degradation. Herds are concentrated in areas that are secured by clearing trees to construct thick thorn stockades.
- Interferences in traditional mobility system.
- Intensification of raiding, causing environmental insecurity because large expanses of grazing resources became increasingly inaccessible. Karamoja is at the center of three major international illegal arms and ammunition trafficking corridors (Sudan, Ethiopia, and the Kenya-Somali frontier).
- Political upheavals experienced in the country over the past 25 years led to massive acquisition of small arms and ammunition.
- Failure of government disarmament initiatives.
- Failure to secure the international border to prevent attacks on disarmed Karimojong by armed groups from Southern Sudan and Kenya undermined the success of the previous disarmament exercise.

*k. Lack of a vibrant civil society in Karamoja is evident:*

- Effective and accountable pastoral civil society capable of engaging national policy processes for the benefit of Karimojong pastoralists is absent.
- Government programs are implemented by districts and lower local governments, which make their own plans and implement them.

Mr. Muhereza concluded his presentation by highlighting what he called *pathways to environmental security* in Karamoja:

- Integrate indigenous technical knowledge in natural resources management.
- Enhance the role of traditional shrines and other customs, rituals, and practices in natural resources management.
- Track seasonally available resources.
- Disperse and diversify herds.
- Develop interventions that take advantage of the social resilience of the people in Karamoja. In spite of the adversity, they have maintained a very rich cultural heritage and strong traditional institutions and authority structures that are lacking in many communities in Uganda. Identify and uphold strong traditions and seek

appropriated and acceptable ways to minimize the negative aspects in order to promote the continued cohesion of the Karimojong community.

- Develop technology of production to overcome constraints caused by physical and ecological factors and scarcities in production output.
- Diversify and integrate economic activities around livestock production and crop cultivation, to make it easier for households to deal with effects of prolonged drought conditions which cause famine.
- Democratize decision-making further, so that political and civil leaders in Karamoja, as well as the poor and marginalized, can have a greater say in the allocation of scarce resources. This will increase the legitimacy and authority of the state in Karamoja.
- The more unrepresentative the governance structure (both traditional and modern), the more difficult it will be to involve all stakeholders in the development of Karamoja. The more underdeveloped, marginalized, and unequal (in terms of incomes) the society of Karamoja remains, the more difficult it will be to break the vicious cycle of environmental insecurity, poverty, and armed conflict.

**Discussion on presentation by Mr. Muhereza:**

- *Henry Aryamanya-Mugisha:* What was the situation before independence? A historical perspective would supplement this material.

- *Joyce Onyango:* Why was there a difference in response to environmental insecurity by the Ankole and Karimojong in Uganda, and the Maasai in Kenya? To understand the role of external factors, we need holistic analysis. What challenges in the environment have brought innovations, if any?

- *John Wole:* How may we establish standard measures of poverty that are applicable to different income-producing variables? For example, one cow would equate to how many gardens? It is important to consider the cultural aspects of East Africa, as in Maasai culture to gain adult male status a young man must kill a lion, while in Karimojong culture young men raid for cattle back and forth among communities. If there is environmental insecurity, what can they conclude? If these people had access to natural resources, would there still be conflict?

- *Eric Dannenmaier:* It may be useful to consider environmental security not as a right in itself, but as the outcome of rights any government is obliged to provide that lead to environmental security.

*Response from Mr. Muhereza:*

- How would it help to say someone has a right to what is the end or outcome?
- On cultural issues, one might note that body scarification is a source of pride. The more scars, the more power a person has.
- On the role of women facilitating raids, it may be noted that the bride price is a means of proving manhood. A man must have a gun and raid to acquire enough animals to pay the bride price in full, or be at risk that another man who can pay

in full will take his intended wife and children. This cultural system promotes insecurities.

- I used the UNDP index relatively. The UNDP looks at access to social services and other factors as an indicator for its own purposes, but this may or may not work. One cow costs less in Karamoja than in Kampala. We need to understand poverty in context, as a relative term having to do with access. We can use it as a measure.
- Environmental degradation leads to armed conflict, and I have published a book on the subject of the paper.
- In 1940, soil degradation began as a result of colonial policies.
- Raids before the 1970s were to replenish the stocks; raids now are different. Since the 1980s, there is commercialization and accumulation, with warlords and large numbers of guns, with the goal to sell.
- The transboundary issue is important.
- Traditional authority is not all lost, because if the elders do not want the young men to raid, they can threaten to curse them. This is still somewhat effective; however, there are only about 100 elders still living.

**MODERATOR: Dr. Jody Stallings, Natural Resources Management Advisor, U.S. Agency for International Development (USAID), Uganda**

**Environmental Security, Sustainable Energy, and Climate Change**
**Mr. Bwango Apuuli, Acting Director for Lands and Environment, Ministry of Water, Lands and Environment, Uganda**

Mr. Apuuli identified two significant and interrelated environmental security concerns for Uganda: (1) the need for sustainable energy development and (2) the threat of various impacts of climate change on the environment. His paper discussed actual and potential adverse impacts on the physical environment, linking these effects to both human activity and climate change. Mr. Apuuli highlighted key sector policies related to energy and climate, analyzing them with respect to environmental sustainability. In addition, he suggested intervention points for mitigation of the effects of environmental degradation, as well as options for adaptation to climate change. For policy responses to be sustainable, Mr. Apuuli argued, they must take into account the interrelationships of environmental security, sustainable energy, and climate change.

The environmental security of a landlocked country like Uganda, where the economy is dependent on rain-fed agriculture, is in danger of being compromised by a number of *environmental risks*, including:

- Natural disasters,
- Physical changes (e.g., deforestation and pest infestations),
- Scarcity of resources,
- Overexploitation and competition for access to highly marketable resources, and
- Land degradation due to conflict and poor management of natural resources.

The paper discussed the interconnectedness of these environmental risks with social problems, including conflict and poverty. For example, the poor rely heavily on natural resources to meet basic needs, yet the unsustainable use of land and water contributes to declining productivity, which in turn increases poverty. Agricultural land is made unproductive through deforestation, soil erosion, and nutrient depletion. Lack of adequate sanitation facilities in poor communities leads to water contamination, sickness, and disease, causing further decline in the quality of natural resources and productivity.

*Environmental sustainability and development are interdependent*. Good policies for natural resource management, which focus on poverty and social inclusiveness, can function to sustain and even improve the environment. For example, effective land management can increase the income and nutrition of poor people and reduce the risk of disaster from floods. Improved water, sanitation, and drainage can reduce the risk of diseases, such as malaria.

*Environmental security and energy concerns* in Uganda are related to:

- *Biomass* (firewood, charcoal, and crop residues), which provides most of the energy used to meet basic needs in rural and most urban households, institutions, and commercial buildings. Biomass constitutes over 90 percent of the total energy consumption in Uganda. This contributes to forest degradation, which is occurring at a rapid rate in many regions. Charcoal consumption increases at a rate close to that of urban population growth (6 percent per annum).
- *Alternative fuels* (dung, reeds, or banana fibers), which are used where people lack fuel wood. These fuels generate less heat, result in consumption of less nutritious food that requires a shorter cooking time, and increase the risk of malnutrition and susceptibility to disease.

Sustainable energy development, an environmental security imperative in Uganda, is:

- *critical* to poverty alleviation and economic development;
- *difficult* to achieve because of the prevalence of poverty in the country; and
- *challenging*, especially in hydropower because of the high risk for environmental damage.

Energy is a key sector in the Ugandan economy and a major contributor to government revenues through fuel taxes, VATs on electricity, levies on transmission purchases of electricity, license fees, and royalties; a recipient of significant public investment, especially in electricity supply; and a sector that is directly linked to other sectors of the economy. Nevertheless, there is energy poverty all over the country. Electricity is not affordable, efficient, or widespread. Uganda's abundant renewable energy resources are underdeveloped.

*Energy development needs* include:

- Development of resources and improved energy supply. Current generation is 220 to 270 MW and peak demand is 347 MW, with a shortfall of about 100 MW. During the daytime, demand is 245 MW, which leads to load shedding. The electrification rate is very low, with grid access of only 5 percent for the whole

country and less than 2 percent in rural areas. The annual growth rate is between 5.5 and 7.5 percent.
- Shift in energy planning for a modern energy supply, especially in electricity, which so far has been limited mainly to urban and semi-urban areas.
- Large investments in the power supply system, which is inadequate and inefficient due to stunted generation capacity growth, poor transmission and distribution infrastructure, and poor commercial utility practices.

*Key energy policies* address the need to mitigate the physical and social impacts of energy development on the environment. Although limited in their effectiveness, existing energy policies are attempting to:
- Develop positive integrations of energy sector developments with poverty alleviation goals and economic growth incentives.
- Develop the use of renewable energy resources.
- Integrate the objective of environmental sustainability into all energy initiatives.

*Policy implementations* that have begun in Uganda include:
- A liberalization move that unbundled the Uganda Electricity Board to create separate business entities for the generation, transmission, and distribution of electricity.
- Initiatives to conserve biomass resources, such as the promotion of cleaner production through improved household stoves and reforestation.

*Environmental security and climate change concerns* in Uganda include:
- Global climate change that, according to Mr. Apuuli, is attributed to an increase in greenhouse gases caused by human activities, primarily the combustion of fossil fuels, deforestation, and agricultural practices.
- Climate variability in Africa that is projected to increase over time and to have uneven impacts across ecosystems and across societal sectors.
- Uganda, as a developing country, is highly vulnerable to climate changes that may have adverse impacts on water supply and quality; agricultural production and food security; ecosystem stability and biological diversity; and sea level rise. All of these potential impacts would have implications for human health and mortality.

Climate-related changes cited as adverse impacts of global warming on Uganda include:
- A warming trend in the Kabale region, formerly a relatively cold high-altitude, where now fires are no longer necessary for warmth in the houses. Once free of malaria, areas including Kabale in southwestern Uganda now have epidemics.
- Floods associated with El Nino in 1997-1998 that left an estimated 525 dead, 11,000 hospitalized with cholera, 1,000 dead in flood-related accidents, and an estimated 150,000 people displaced. Infrastructure costs were estimated at over $400,000 in Uganda.
- Droughts that have doubled in number and increased in severity during the period 1970-2000 as compared to the period 1920-1970.

Potential adverse impacts of climate change and associated changes in the spatial and temporal patterns of temperature, rainfall, and winds in Uganda that may increase environmental risks include:

- Crop failure or significantly reduced crop production, leading to increased hunger and famine.
- Increased land degradation.
- Destruction or damage to wetlands and estuaries.
- Increased pest infestations such as armyworm, cassava mosaic, and other temperature/weather related plant pathogens.
- Increased costs of production, increased risks, lower profitability, leading to a decrease in food security, reduced exports and a need for more food imports.
- A shift in vegetation zones that will affect livestock and wildlife.
- Reduction in available water for livestock and wildlife that will cause displacement of people for pasture and create potential conflict.
- Reduction in the biodiversity in tropical forests, which may result in the loss of important medicinal and gene resources.
- Reduction in forest areas, resulting in reduced moderating influence of forests on climate as well as reduced water catchment areas and downstream flow.
- Loss of the regeneration capacity of forests.
- Reduction of underground water resources, especially in the Karamoja region, resulting in changed land cover and lack of water for human settlements.
- Expansion of some disease vectors, leading to increased incidence of climate-related diseases including malaria, schistosomiasis, trypanosomiasis, yellow fever, onchocerciasis, and encephalitis.

Risks for sustainable development associated with climate change in Uganda are of critical concern in the area of agricultural productivity, where the population is heavily reliant on rain-fed agriculture and monoculture of the banana staple. The growing area for the Robusta coffee, the main foreign exchange earner, would be drastically reduced in size if there were to be a 2 percent increase in average temperature.

*Suggested mitigation points* for policy responses to climate change:

- International policies that reward investment in projects designed to reduce net greenhouse emissions.
- Technologies related to energy and agriculture.

*Adaptation strategies* that address identified vulnerabilities in Uganda include:

- Development of better heat- and drought-resistant crop types and seed banks.
- Reduced reliance on monoculture.
- Expansion of irrigation and increased irrigation efficiency.
- Contingency planning for drought and floods.
- Water conservation at all levels.
- Protection of biodiversity.
- Strengthening of Early Warning Information capacity.
- Mainstreaming of climate information into the national planning process.

*Indicators* for monitoring sustainability of development, according to Mr. Apuuli, include:

- Proportion of land area covered by forest.
- Ratio of area protected to maintain biological diversity to surface area.
- Energy use per unit of GDP.
- Carbon dioxide emissions (per capita) and consumption of ozone-depleting chlorofluorocarbons.
- Proportion of population with sustainable access to an improved water source, urban and rural.
- Proportion of population with access to improved sanitation.
- Proportion of households with access to secure tenure.

In conclusion, the paper emphasized that environmental security, sustainable energy, and climate change are intricately linked. Environmental security can be ensured only through sound and sustainable management of the environment. Energy services are critical to development and poverty alleviation in developing countries such as Uganda, while energy resource development has the greatest impact on the environment. The challenge is to assist developing countries, as they expand their production and consumption of energy, to find ways to produce, distribute, and consume energy in a manner that will adapt to or mitigate the impacts of climate change.

**Discussion on presentation by Mr. Apuuli:**

- *Ben Kamugasha:* How has climate change in Uganda influenced assistance from within the country?

- *Eric Dannenmaier:* I see a synergy between the papers of Mr. Apuuli and Ms. Kateregga on the issue of environmental degradation and its threat to monoculture economies such as that of Uganda with the banana staple crop.

- *Ray Simmons:* I believe it is most useful to focus on adaptation strategies rather than on causes of climate change, since the existing body of scientific evidence cannot adequately explain or predict climate change.

- *Eric Dannenmaier:* Localized impacts of climate change, including variations in temperature and rainfall, leave some communities as winners and others as losers. This situation may call for a "no regrets" approach that uses diverse stocks and crops to both mitigate and adapt to climate changes.

- *Joyce Onyango:* Ongoing negotiations between developed and developing countries are important. More capacity building is needed in developing African countries. It is a positive step that developing African countries are addressing global issues.

*Response from Mr. Apuuli:*

- Adaptation strategies in Uganda that promote adjustments in planting season calendars have experienced problems of knowledge transfer and application.

These strategies require more training and flexibility to accommodate differences among targeted local communities. Adaptation and mitigation are important, with adaptation usually taking priority for local people. *Mr. Kamugasha* added a warning that developing countries must be concerned about both adaptation and mitigation, or they will pay higher costs for this in the future.

## SESSION IV: REGIONAL ENVIRONMENTAL SECURITY — THE CASES OF THE NILE RIVER AND LAKE VICTORIA

**MODERATOR: Ms. Kimberly Sais, Senior Policy Advisor, USAID**

**Environmental Security: Issues and Options in the Nile River Basin**
**Mr. Gedion Asfaw, Regional Project Manager, Nile Basin Initiative — Nile Transboundary Environmental Action Project**

Mr. Gedion Asfaw addressed the task of identifying and assessing environmental security issues in the Nile River basin, an area that extends over ten sovereign states (Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda) and across a land area of over 3.1 million square kilometers. His paper began with an overview of characteristics of the Nile River basin that influence environmental security in the region, followed by an analysis of each of eight environmental concerns with respect to its symptoms and impacts, immediate causes, root causes, extent, and severity. The paper demonstrated how each concern may be considered an environmental security threat for the Nile basin, by identifying its environmental effects, social effects, and paths to potential conflict on the national and transboundary levels. The role of factors such as institutions, physical resources, and ecosystem vulnerability was taken into account for each concern. Given the potential for conflict over water scarcity in the transboundary area, Mr. Asfaw highlighted some of the factors that have had restraining influences in the region in this regard. Finally, the paper discussed options for improved environmental security that are embedded in the Nile Basin Initiative, and gave suggestions of additional options for consideration.

*Nile basin characteristics that influence environmental security in the region:*

- The area constitutes 35 percent of the total area of the ten riparian states.
- An overall 46 percent of the population of the ten riparian states lives in the basin. More than 70 percent of the populations of Egypt, Rwanda, and Sudan live in the basin.
- Population density is increasing, from 41.6 people per square kilometer in 1990 to an expected 91 people per square kilometer by the year 2025.
- Riparian states differ greatly in dependency on the Nile waters. States with high dependency ratios are Egypt (97 percent), Sudan (77 percent), and Eritrea (68

percent). Rwanda, Burundi, and Ethiopia are self-sufficient, while all other states augment their waters from other countries.

- Of the almost 3,000 billion cubic meters of rain water that falls in the basin area, only about 84 billion cubic meters reaches Aswan.
- Utilization of hydropower potentials is vastly uneven across riparian countries. Whereas Egypt has utilized 84 percent and Sudan 60 percent of their potentials, the countries of the Democratic Republic of Congo, Ethiopia, and Tanzania have utilized only 5 percent of their combined potential of 128,000 megawatts out of a total of 134,000 megawatts for the entire basin.
- Out of the total irrigated land in the basin, 91 percent is in Egypt and Sudan.
- The share of GDP from agriculture in seven of the riparian states is over 40 percent, while in Egypt, Eritrea, and Kenya it is less than 20 percent.
- Each of the ten riparian states has more than 900 kilometers of boundary shared with one or more of the other states.
- Situations of water scarcity and stress existed in four riparian states in 1994 and in five states by 2002, and they are expected to exist in all of the states by 2025, except the Democratic Republic of Congo. Water scarcity may be a major factor of insecurity and potential conflict in the basin in the next two decades.

*Environmental security concerns.* From the 2001 Nile River Basin Transboundary Environmental Analysis, Mr. Asfaw extracted the following list of eight common concerns related to environmental security:

1. Deforestation
2. Soil erosion.
3. Sanitary concerns (Mr. Asfaw added agriculture and industrial pollution).
4. Water weeds infestation.
5. Siltation.
6. Flood and droughts (Mr. Asfaw added water scarcity).
7. Loss of species and ecosystems.
8. Wetlands degradation.

Next, he systematically analyzed each environmental concern, or threat, with respect to its symptoms and impacts, immediate causes, root causes, extent, and severity. Then, Mr. Asfaw demonstrated how each concern represents a threat to environmental security for the Nile basin area, by identifying its environmental effects, social effects, and paths to potential conflict on the national and transboundary levels. He also considered for each concern the role of factors such as institutions, physical resources, and ecosystem vulnerability for each concern.

For example, *deforestation* was determined by the analysis to be a severe environmental threat. About 91 percent of the Nile basin area is deforested. A symptom of deforestation was listed as large-scale habitat destruction, loss of wildlife and diversity, and the progressive disappearance of national parkland. One of the immediate causes was uncontrolled logging for fuel wood and charcoal production, construction material, and local industry fuel use. A root cause was identified as insufficient energy

alternatives to fuel wood. The threat of deforestation in Uganda extends into the Mt. Elgon and Rwenzori areas, as well as the southwestern highlands.

On the national level, deforestation may have the environmental effect of leading to: (1) widespread shortage of fuel wood and construction material; (2) rapid soil erosion that may cause flash flooding downstream; and (3) the drying up of springs and shallow wells. The social effect may be the exodus of villagers to other areas. Conflict may result locally or with the national government if encroachment is on government land. On the transboundary level, deforestation may lead to cross-border exodus that sparks conflict in the recipient community. If grievances and exodus are widespread, some governments may resort to conflict with neighboring countries as a strategy to divert attention from internal problems. Institutionally, many of the riparian countries are weak, lack of appropriate policies, and have insufficient awareness to effectively respond to deforestation threats. Alternative energy resources are available only to two countries in the Nile basin, and alternative energy use is not widespread.

*Environmental resource scarcities* and some of their effects in riparian states include:

- Mass displacements of populations due to water scarcity, agricultural land shortage, fuel wood needs, and depletion of grazing and browsing resources.
- Spontaneous settlement of people from the Ethiopian highlands in neighboring regions due to land and other resource depletion, resulting in recent inter-ethnic conflicts.
- Encroachment of pastoralist populations into Sudan for grazing land, resulting in frequent conflicts with sedentary agriculturalist populations.

*Potentials for conflict* due to water scarcity include:

- Increasing population.
- Water-intensive development activities.
- Unfavorable historical and political factors.
- Threats and counter-threats of the use of force.
- Continued unilateral water development activities.
- Lack of a water-sharing agreement among all riparian states.

*Restraining influences* and potentials for non-conflict resolution of water issues:

- Conflict would probably involve more than two countries, because of the types and levels of cooperation agreements existing among the different countries.
- To carry out threats of force may not be feasible because it would be extremely difficult to: 1) sustain water flow in the numerous tributaries of the Nile through military means, and 2) fully control and deprive downstream users by means of physical controls in upstream countries.
- Religious and cultural values may constitute a major restraining factor, for peoples in both downstream and upstream countries attach a spiritual value to water, which is respected as a god-given resource to be shared freely. In past decades, there were no public pressures in any of the countries to resort to force, despite the repeated rhetoric of politicians.

Environmental security and sustainable development through two programs of the Nile Basin Initiative (NBI): (1) the Shared Vision Program (SVP) that is intended to create a basin-wide environment for sustainable development, and (2) the Subsidiary Action Programs (SAPs) that are joint investments intended to deliver actual development projects involving two or more countries. Embedded in these programs are what Mr. Asfaw sees as "the best options for improved environmental security in the Nile Basin," including:

- A strategic environmental framework to be developed and implemented.
- Community-level environmental management projects supported by micro grants.
- Environment education and public awareness components.
- Water quality capacity building and training components.
- Applied training, confidence building, and benefit-sharing projects.

*Potential threats to cooperation* that may lead to conflict include:

- Unilateral construction of large-scale hydraulic structures, such as dams and water diversion canals, without prior notification and environmental impact assessment may result in misunderstandings and environmental damage.
- Soil erosion in highlands of upstream countries, if left unabated, may reduce the useful life of dams in downstream countries.
- Small- and large-scale irrigation in upstream countries may substantially reduce the flow of the Nile River.
- Unsanitary practices, compounded with use of agricultural chemicals, may render the Nile waters unusable by downstream countries.
- Wasteful water use in downstream countries may lead to highly disproportional water use among the riparian countries.

In conclusion, Mr. Asfaw recommended several actions for improving environmental security through the NBI process:

- Institute a permanent Nile basin organization that includes all of the NBI countries.
- Institute an integrated environmental preparedness strategy that includes:
  1. Environmental security assessment.
  2. Mitigation and capacity building on the country and NBI levels.
  3. Promotion of cultural and religious values that enhance cooperation.
  4. Establishment of peace parks in transboundary areas along disputed borders and at border-crossing points, to maintain natural and cultural resources and promote cooperation.

**Transboundary Environmental Security: The Case of Lake Victoria Basin**
**Dr. Henry Aryamanya-Mugisha, Executive Director,**
**National Environmental Management Authority (NEMA), Uganda**

Dr. Aryamanya-Mugisha discussed how natural resources in the Lake Victoria basin support the livelihoods of over 30 million people in the East African states of Uganda, Tanzania, and Kenya, as well as people living in Sudan, Ethiopia, Rwanda, Burundi, and

Egypt. This paper demonstrated that interrelated environmental problems within this single ecosystem pose environmental security concerns for the entire region. Highlighting several indicators of increasing transboundary environmental stress in the basin, the paper identified resource management challenges and the influences of governance, political, social, economic, cultural, and religious factors. Dr. Aryamanya-Mugisha's paper provided an overview of interventions undertaken so far through policy, law, and institutional initiatives, concluding with a list of recommendations.

**Environmental resources** around Lake Victoria offer significant potential benefits for Uganda as well as for the neighboring countries in the basin. However, many of the resources appear to be threatened by a host of internal and external factors that have implications for environmental security in the entire basin area:

- *Forests* offer opportunities for poverty alleviation, economic development, and environmental improvement through the provision of firewood, charcoal, and timber. However, over 80 percent of the population uses wood for fuel at an estimated rate of one-meter-cubed per person. The high level of forest consumption, in combination with high population density within the 100 kilometer buffer zone around the Lake, may pose a serious threat to the ecosystem. Forests are threatened by uncontrolled degradation, land use conversion, reduction of biodiversity, soil erosion, and encroachment into unprotected areas. The riparian countries share these impacts.

- *Fisheries* offer significant socio-economic, nutritional, and food security benefits. In Uganda, industrial fish processing brings in over US$300 million in foreign exchange annually and contributes over 6 percent to GDP. Fish is a major export commodity in Uganda, whose annual value has risen from US$4.8 million to between US$79 and US$100 million from 1991 to 2002. Current high demand for Nile perch is resulting in overfishing and reduced fish catches that affect all of the riparian countries. Challenges include: (1) how to sustain Nile perch fisheries while addressing the associated near extinction of an estimated 200 native fish species, and (2) how to control degradation and loss of fish habitats. The fish industry provides livelihoods for over three million people in the three countries bordering Lake Victoria.

- *Wetlands* provide socio-economic and cultural benefits to local communities and they buffer the Lake from pollutants. Threats to viability include intensive grazing and cultivation, chemical infiltration from agriculture, macrophyte exploitation, hunting, brick making, and sand mining. Numbers of people settle along lakeshores and riverbanks, encroaching on these fragile ecosystems despite well-established laws and regulations. Wetlands are becoming degraded as a result of agricultural practices and industrial and human waste effluents. As these degrade the buffering capacity, water resources deteriorate in quality and further affect the decline in fish species.

- *Water resources* are vital for domestic use, industries, hydroelectric power, fishing, climate modification, transport, tourism, and recreation. The growth of urban centers around the Lake has led to unsustainable use of the basin water. Water resources are affected by industrial, agricultural, and municipal pollution that lead to the loss of aquatic life through eutrophication and by poor fishing methods that lead to fish depletion. The problems originate in the three East African countries, as well as from neighboring states whose waters drain into the basin. About 85 percent of the inflow is from precipitation, and the rest is from rivers. Pollution is one of the major transboundary problems. It is linked to the high rate of population increase, estimated at 3.4 percent growth per year around the Lake, which leads to social activities that drastically change the ecosystem. The National Water and Sewerage Corporation in Uganda has indicated that the rising cost of water service delivery is due to the high costs of water treatment because of pollution.

- *Agricultural resources* include a most favorable climate for food production, cash crops, and livestock tending, with temperatures ranging between 15-35 degrees Celsius all year long. Rainfall, estimated to total about 1000-3000 millimeters annually, is usually well distributed and bimodal over a large area of the basin.

**Major environmental security concerns** include:

- *Oil spillage* potential is large due to cargo haulage for the Uganda Railways, but investment and development of infrastructure to respond effectively is minimal. There is insufficient capacity to remedy problems and a lack of coordinated guard systems to avert disasters.

- *Human and ecological health problems* include water-borne and water-related diseases, as well as social and economic factors that contribute to HIV/AIDS among migrant fishermen.

- *Overfishing* results from 1) poor fishing practices using small mesh nets that catch immature fish, and 2) exploitation above the maximum sustainable yield. An increase in fishing effort was documented by the increase from 8,000 boats in 1990 to 15,418 boats in 2000, but overfishing was evidenced by the decline in Catch per Unit Effort (CPUE) from 36 tons per boat per year in 1998 to about 13 tons per boat per year in 2002. Poor fishing practices have altered the ecological balance by reducing fish biodiversity and loss of habitat. The stock of exploitable fish is becoming scarce, due partly to open access with no controls. Uganda's national annual catch has increased from an estimated 45,000 metric tons in 1983 to 105,400 metric tons in 2001. Total harvest levels have increased from an estimated 77,700 metric tons in 1983 to 330,000 metric tons in 2002.

- *Deforestation* is driven by demand for household and commercial fuel, fish drying, brick baking and building; refugees and internally displaced people; sugarcane, tea, and coffee plantations; and overgrazing by livestock. Increase in siltation from soil erosion, coupled with natural vaporization, has led to declines

in water levels. These, in turn, affect marine transport and hydroelectric generation.

- *Aquatic weeds*, including the water hyacinth, represent a transboundary problem that is linked to high nutrient levels in the water. The weeds contribute to lower fish production, due to reduced access to fishing grounds. They hamper marine cargo and small human transport vessels, reduce water supply to villages and municipalities from blockage of water pipes, and increase the breeding ground for disease vectors, such as mosquitoes. The area between Entebbe and the Uganda/Kenya border has had widespread floating mats more than 1,000 hectares in size. Intakes at Owen Fall Hydroelectric Power have been at risk also. Although interventions have been effective, the potential for problems remains.

- *Water quality* has declined greatly, due chiefly to eutrophication from increasing inflow of nutrients into the Lake. Estimates suggest increased nutrient flows come primarily from rural areas, but rates, sources, and effects are not well quantified. From urban areas, the main sources are sewage and industrial discharge. Local and national authorities have collected information and implemented pollution management measures, but the level of control is low. Water quality problems arise in the watershed, so it is in catchments that the solutions must be found.

- *Wars and conflicts* create internal displacement and influx of refugees, causing environmental degradation and health and pollution hazards from poor sanitation.

Recent challenges regarding transboundary issues in the basin lie in the areas of governance and management:

**Governance** is a basic principle in the management and sustainable use of natural resources, and it is influenced by the following:

- *Social aspect***:** NGOs and other groups work to integrate the cultural values of people into natural resource management initiatives. Illiteracy and poverty are two factors that present challenges to education and governance.
- *Political aspect***:** The East African Community tries to coordinate environment policies. National Environment Action Plans (NEAPs) have focused on Lake Victoria as an urgent area for regional cooperation. Kenya and Uganda have established National Environment Management Authorities (NEMAs) to oversee transboundary issues related to the Lake basin.
- *Economic aspect*: Poverty is the major cause of over utilization of natural resources in the basin. The Poverty Eradication Action Plan has undertaken to address poverty-related issues in each riparian state.

**Management** weaknesses and challenges include:

- Policies and laws are not coordinated among the riparian states to ensure sustainable management of resources.
- Enforcement of laws and regulations is weak.

- Funding is limited to undertake management activities.
- Monitoring and inspection of the shared ecosystem is not systematic.

*Mitigation* opportunities and intervention points include:

- *Policy*: The East African Community of riparian states signed a memorandum of understanding that could be strengthened through negotiation and development of a protocol on environment. In Uganda, several recent policies that focus on sustainable use and management of environment and natural resources include: The National Water Policy, 1995; The Uganda Wildlife Policy, 1995; the Draft Fisheries Policy, 2000; and The Forestry Policy, 2001.
- *Law*: Some of the existing laws include The National Environment Act, Cap 153; The Water Act; The Wildlife Statute; The Local Government Act; and The Control of Agricultural Chemicals Act, Cap 28. Regulations include Environmental Impact Assessment Regulations and The National Environment Regulations on waste management; wetlands, riverbanks, and lakeshore management; and minimum standards for management of soil quality. Opportunities exist for harmonizing and operationalizing laws and regulations at the regional level.

*Institutional initiatives and projects* include:

1. Lake Victoria Fisheries Organization (LVFO).
2. Lake Victoria Environment Management Project (LVEMP).
3. Nile Basin Initiative (NBI).
4. Agro Ecosystem Management Programme (FAO).
5. Cross Border Biodiversity, funded by the Global Environment Facility (GEF) of the U.N. Development Programme (UNDP).
6. Partnership for the Development of Environmental Law and Institutions in Africa (PADWLIA).
7. Individual initiative by Wangari Maathai and the Green Belt Movement.

Dr. Aryamanya-Mugisha recommended the following actions:

- Tackle the information gap through research for a detailed understanding of current conditions and functions.
- Engage in public dialogue on goals, policies, and trade-offs. Discuss diverse approaches among governments and NGOs.
- Strengthen, harmonize, and integrate the rational utilization, management, and conservation of the Lake basin resources, taking into account regional concerns.
- Involve local communities. This can yield a more equitable distribution of the benefits and costs of ecosystem use.
- Develop a collective approach involving the three riparian states to deal with the problems.

In conclusion, Dr. Aryamanya-Mugisha emphasized that transboundary environmental security faces vital issues, including the increasing threats of human health problems from inadequate, unsafe water and of potential conflicts over shared water resources.

The sustainable management of transboundary environmental resources calls for a multi-dimensional approach with multiple stakeholders.

**Discussion on presentations by Mr. Asfaw and Dr. Aryamanya-Mugisha:**

- *John Katunga:* Dr. Aryamanya-Mugisha's paper did not discuss conflict issues, although recent arrests of Kenyans for fishing in Lake Victoria have sparked some conflict.

- *Hamid Rohilai:* Would Mr. Asfaw explain what he means by "equitable utilization?"

- *Ben Kamugasha:* When there are shared resources, such as in Lake Victoria, governments on both sides need to have the capacity to negotiate. Government representatives need to recognize that weak negotiating skills constitute an environmental security threat that impedes the implementation of agreements and gives rise to conflict. Universities offer courses on negotiation. We also need to assess the effectiveness of implemented laws.

- *Philip Gwage:* With climate change, populations in areas deficient in water will move into the Lake Victoria area. Is Uganda using its limited resources effectively and getting value for the money invested? Given limited systematic monetary policies and laws, these efforts should be coordinated.

- *Sophie Kutegeta:* There is an information gap and a need for greater transparency and access at the grassroots level.

- *John Wole:* Inequity is the main cause of insecurity. Given the basin statistics on percentages of irrigated land, there is a dire need to use the Nile River. The question of equity comes in, with Egypt being in a position to monitor and to expect to be consulted on utilization. If a societal change in Uganda increases the need for electricity output, is there flexibility in the NBI?

- *Joyce Onyango:* The paper on the Lake Victoria basin did not provide catchment figures so we could see how much water the different countries contribute. Conflict exists in fishing communities. The Kenyan side is arid and can support little other than fishing. Also, people think that going deeper and farther into the Lake is more fruitful, so Kenyan fishermen often are arrested. Sanitation in Kenya is an issue in fishing camps along the Lake, as is the spread of HIV/AIDS. Conflict exists among the local communities, the fisheries, and the fishermen who feel exploited by the middlemen. Harmonization requires political will. Why are Congo, Ethiopia, and Tanzania using only 5 percent of their total combined hydropower potential to generate electricity?

*Response from Mr. Asfaw:*

- Equitable utilization is a difficult concept, but there is agreement that this does not mean "equal." The riparian states should establish criteria for a definition.

Utilization of the Nile waters is obviously neither equitable nor equal, currently, among the Nile riparian countries. Issues of cooperation, dependency, relative contribution to the waters of Nile, comparative advantages of a riparian, availability of alternative resources, upstream and downstream needs should be considered in resolving the controversy surrounding "equitable utilization."

- Hydropower is not water consumptive and does not reduce water flow for the lower stream countries, so this should not be a controversial issue. The Congo basin can serve a substantial proportion of the electricity needs of the whole African continent. In contrast, irrigation is consumptive use; therefore, it needs to be regulated and water use issues have to be negotiated.
- The idea of establishing peace parks is controversial, but one Mr. Asfaw supports. The IUCN (World Conservation Union) identified over 170 potential peace park sites.

*Response from Dr. Aryamanya-Mugisha:*

- The issue of capacity to negotiate is relevant, as are other issues of diplomacy and politics.
- With regard to conflict in the fisheries sector, the Ugandan and Kenyan presidents discussed the arrests, and Ugandan President Yoweri Museveni was part of the customs union and political integration discussion. Nevertheless, the boundaries remain and fishermen are still arrested. HIV/AIDS is definitely an issue of concern in the areas around the Lake.
- A memo of understanding saved Uganda with regard to the water hyacinth problem, because there was agreement on the methods to be used to eradicate or control them. The EIA guidelines for shared ecosystems are in preparation.

## SESSION V: THE ENVIRONMENTAL SECURITY ASSESSMENT FRAMEWORK (ESAF) — RATIONALE, PROCESS, AND SUBSTANCE

**MODERATOR: Mr. Eric Dannenmaier, Director,**
**Institute for Environmental Law and Policy, Tulane University**

**Origins and Evolution of Environmental Security Assessment Framework (ESAF)**
**Ms. Darci Glass-Royal, Co-Executive Director,**
**Foundation for Environmental Security and Sustainability (FESS)**

Ms. Glass-Royal recognized the delegation for their participation in the workshop and thanked Mr. Ejigu and his colleagues at PAES for their leadership and support. Ms. Glass-Royal indicated that the purpose of this session was to give a more detailed explanation of the Environmental Security Assessment Framework (ESAF) that FESS is developing and to solicit advice from workshop participants on this methodology as a

global tool for evaluating environmental security risks in countries and regions around the world.

By way of introduction, Ms. Glass-Royal gave a brief history of the development of the ESAF, in order to provide an understanding of the impetus that gave rise to the Framework, the questions that the Framework is designed to address, and its potential utility in contributing to the development of program and funding strategies at the policy level. Ms. Glass-Royal explained that the ESAF began to take shape during a transformational stage in security theory and practice. As perspectives and interests of the security and the development communities began to converge, each group recognized the need for an integrated approach to understanding environmental risks. An assessment tool was called for that could bridge the languages, missions, and operating principles of these two communities. FESS had for several years been undertaking environmental security assessments, and it was attentive to the need for a consistent, formalized, analytical process that could handle the scope, interdisciplinary nature, and complexity of information necessary to distinguish environmental vulnerabilities from environmental security concerns.

FESS developed the ESAF methodology, which is specifically designed around a traditional risk assessment approach. It is structured to identify risks to nations or regions that arise either directly from environmental pressures or as a result of the confluence of environmental and societal factors and to evaluate the implications of these risks for regional and international security. The ESAF is constructed to answer questions of what implications environmental issues may have for stability, development, and, ultimately, security. The ESAF is intended to provide consistency for comparisons across countries and regions, while being sufficiently adaptive to account for nuances of local economic, political, social, and environmental factors. In the ideal, the ESAF will inform policymakers, facilitate establishment of clear priorities, and guide the development of effective and sustainable programs.

Ms. Glass-Royal requested that participants consider the ESAF methodology to assess whether the ESAF process effectively breaks down and evaluates factors, captures the linkage of these factors to security, and offers clear input for policymakers who must understand how to take action before environmental risks become threats to security.

**The Environmental Security Assessment Framework (ESAF) – Process and Content**
**Mr. Jeffrey Stark, Director of Research and Study, FESS**

As the workshop papers and presentations demonstrate, efforts to understand threats to environmental security have to address environmental problems in their political, social, economic, cultural, and historical contexts. This presents a large analytical challenge, one that cannot be sidestepped, however, if policy responses are to be both appropriate and realistic.

The Environmental Security Assessment Framework (ESAF) developed by FESS is one of the first attempts to create a comprehensive methodology that encompasses the necessary variables in a systematic, yet flexible and adaptive, manner.

The ESAF engages a diverse and rich set of variables relevant to environmental security. (A detailed presentation of the ESAF appears in Annex III). These are examined in their interactions and filtered through a series of analytic phases that lead to the formulation of scenarios and policy recommendations. The ESAF makes use of a definition of environmental security that encompasses the continuum from human security, a point of reference for many development professionals, to violent conflict, the most compelling concern for military professionals. As a working definition, the ESAF posits that:

> *Environmental security* is a condition whereby a nation and/or region, through effective governance, management, and utilization of its natural resources and environment, takes effective steps toward assuring social, economic, and political stability and the common welfare of its population.
>
> *Environmental insecurity* is a condition whereby a nation and/or region fails to effectively govern, manage, and utilize its natural resources and environment, causing social, economic, and/or political disruption to occur at a scale leading over time to heightened tensions, social turmoil, or conflict.

As can be seen from these working definitions, the ESAF makes use of various categories of stability and instability (e.g., social, economic, political) as initial barometers of security conditions in a country or region. As with the concept of security itself, these terms are not seen as dichotomous, but rather as a sliding scale, with instability becoming more acute and relevant to security as it moves through stages of heightened tensions, turmoil, and conflict. These stages may be nonlinear, temporary, or reversible, and the wide-ranging variables generated by the ESAF provide the context necessary to make such judgments. In certain contexts (e.g., countries marked by authoritarian rule and poor environmental governance), *stability* itself might be associated with environmental security problems. In essence, the ESAF provides a kind of "thick description," involving the sequential use of layers of interrelated information to refine understandings and distill hypotheses that lead to credible scenarios and, ultimately, actionable recommendations.

*Phase I* of the ESAF sets out the initial profile of the country or region under study. The country profile develops a preliminary assessment of potential political, economic, social, and cultural cleavages and contentions that may contribute to instability and/or insecurity. Thus, for example, the *political* analysis examines power distribution and key points of contention; the *economic* analysis looks into patterns of employment and the distribution of benefits from the current structure of production; and the *social* analysis looks at tensions associated with class, ethnicity, race, and religion.

This phase also collects complete data on U.S. and international aid according to organization and agency. These data are considered later in the ESAF, when assistance

responses are considered in light of all the efforts already undertaken by the relevant governments and organizations.

*Phase II* recognizes that environmental security is grounded in the tangible linkages among economic activities, social conditions, and the environment. This phase, therefore, identifies *critical country concerns* by examining economic and social data linked to the environment and by framing these analyses within the overall concept of environmental sustainability, which is reflected in a third set of data.

The information collected on environmental sustainability provides a profile of the natural setting and environmental trends within which socioeconomic activities take place. This includes such information as land under cultivation, rates of deforestation, and available water resources. Phase II's *econo-environmental* analysis determines significant sectoral contributors (e.g., agriculture, mining, fishing), the relationship between employment and the environment, and the structure of trade based on environmentally derived goods. The *socio-environmental* analysis focuses on livelihoods, food security, education, and health, bringing into view such relationships as demographics and migration, staple crops and nutrition, and sanitation and diseases. The *enviro-sustainability* analysis provides a baseline view of the conditions and usage of key natural resources (e.g., land, water, and energy).

Through these analyses, a clearer view emerges of key socioeconomic sectors (i.e., those important for stability) and their linkages to the environment. *Critical country concerns* (CCC) are defined as issues and/or resources that are directly or indirectly critical to stability, based on their value and significance to the economy and social well-being. These CCCs serve as the relevant input for the next phase of the analysis.

*Phase III* begins by investigating the relative condition and vulnerability of each CCC. Examples of common critical country concerns include: land and water use regimes; the decline of agriculture; migration; sanitation; environmental health problems; and the sustainability of tourism. To understand the scope and underlying factors associated with such concerns, each one is then disaggregated and studied more closely by means of a *vulnerability-threat-stressors-mitigators* (VSTM) analysis. Cross-referenced with a set of contributing factors (e.g., economy, technology, nature, governance), the VSTM breaks apart these key problems and digs deeper into their constitutive dimensions and origins.

This analysis provides a more nuanced basis for assessing the implications for stability and security of each CCC. These implications are then schematized, with a further level of refinement introduced by linking these implications to the interests of relevant stakeholders. How do these problems affect the lives of those groups who are bound up, whether positively or negatively, in the environmental problem under study?

Here, a key distinction is made. *Not all environmental problems are problems of environmental security.* Therefore, a preliminary judgment is rendered about which problems are to be identified as *Environmental Security Factors* (ESF). ESFs are defined

as problems that have significant implications for political, economic, and social stability and welfare, which may pose a security concern or contribute to the creation of one. At this point, by having first expanded the scope and complexity of the analysis and then engaged in a process of differentiation that leads to the ESFs, the ESAF has significantly sharpened the power and focus of the overall environmental security analysis.

*Phase IV* adds another crucial level of refinement to the ESAF through a detailed examination of *environmental governance*, defined as the traditions and institutions by which power, responsibility, and authority are exercised over a nation's natural resources.

At the heart of this phase are questions about the structure and coverage of legal and regulatory frameworks and the level of political will and capacity for enforcement. This phase also recognizes the increasing significance of effective civil society participation within a democratic context, and it asks questions about citizen access to public institutions for airing grievances, perceptions about the responsiveness and integrity of institutions and officials having responsibility for environmental governance, and plans and capacities for responding to shocks, such as natural hazards. Based on these steps, the understanding of the relative significance of the ESFs is further contextualized.

*Phase V* is the stage at which the ESAF is ready to generate and field test preliminary hypotheses. Two types of potential crisis scenarios are developed in relation to the ESFs. The first posits likely outcomes if current destabilizing trends remain constant, while the second anticipates shocks to the system. Each crisis scenario is then evaluated in terms of probability and potential impact.

To weave a further level of in-country expertise into the analysis, this phase envisions a scenario development workshop for governmental and nongovernmental stakeholders to develop and discuss scenarios. The workshop provides participants with a review of the ESAF process that serves as a basis for adding their own expert judgments in relation to the preliminary hypotheses and possible scenarios. At the same time, the workshop is a capacity-building exercise for the participants themselves. Based on the synthesis of the preliminary hypotheses and the scenario development exercise, scenario reports are then prepared.

*Phase VI* is devoted to relating the ESAF findings in specific and concrete ways to U.S. assistance activities in the country or region under study. The bulk of the baseline information is already available from work done in Phase I, but this is given further elaboration and enhancement through field interviews with government officials. This assistance profile is then compared and contrasted to the potential scenarios generated by the ESAF, to identify gaps and target areas for improved U.S. assistance. This phase then results in a set of preliminary recommendations.

*Phase VII* is the culmination of the ESAF, providing a comprehensive assessment of both the principal environmental security threats and alternative remedial actions. These are consolidated as ESAF findings in the form of a draft final report and appendices (e.g., baseline data worksheets, VSTM charts, ESF profiles, and summary scenario reports).

The final recommendations put forth by the ESAF are comprehensive in the sense that they entertain the full range of options available not only to national and international policymakers, but also to stakeholders in civil society and the private sector.

In sum, the ESAF is an analytical tool to advance environmental security studies along several different fronts. First, it moves the conceptual debates about environmental security past largely deductive assessments of the relationship between the environment and conflict. Second, it provides a common analytic vocabulary usable by practitioners in both the development and security communities. Lastly, it generates practical policy recommendations for the use of government officials and other stakeholders, with a view toward promoting economic well-being, social peace, political stability, and environmental sustainability in the countries and regions it examines.

**Discussion after the presentation by Mr. Stark:**

**I. Clarification of the ESAF.**

- *Philip Gwage:* Why does climate not appear as a factor in the framework?

- *Joy Tukahirwa:* Has the model been tested and is FESS validating it here? Since most models depend on very sophisticated data, and there are significant data gaps in developing countries, does the model have resilience to use data that is not yet refined, and does it allow for predictions and scenario building?

- *Mersie Ejigu:* In response to Ms. Tukahirwa's question, I would point out that in the workshop we have examined conditions in Uganda and in the region of land degradation, environmental changes, economic and social changes, and energy resources in the Lake Victoria and Nile basins. The presentations and discussions have identified environmental security issues and generated a set of indicators. The objective of the workshop has been to use this information as a starting point, to see to what extent the factors that have been identified can be reflected in the model and to see how to make the model relevant to Africa.

- *Sileshi Tsegaye:* Does the model consider existing case studies and, if so, how does it utilize these?

- *Gedion Asfaw:* Who would be the end users of the ESAF and how would FESS propose that countries subscribe to the ESAF process and share the end product on the national, regional, and international levels?

- *John Katunga:* The model appears to be complex, sophisticated, and multidisciplinary. Therefore, it seems that its implementation would require enormous capacity, resources, and skills at various levels. We do need to determine who would be the end users and at what points in the process. I am concerned that the model be customized to fit specific countries in Africa.

- *Fred Onduri Machulu:* With regard to the applicability of the model, there are considerations of the geographical nature of activities and resources in the respective areas that must be taken into account in studies of environmental security and the factors that affect it.

*Response from Mr. Stark:*

- With respect to climate, this is a factor that is analyzed in relation to the existing literature on each country. Indicators are not embedded in the model, although their systematic inclusion might be possible. FESS welcomes assistance here from workshop members.
- The ESAF does include the use of existing case studies and literature.
- Data availability is a significant issue. FESS works to collect data in a consistent manner and to identify manageable sets of data that are accessible most of the time. However, gaps or inadequacies in the data are always a problem in relation to developing countries.

*Response from Ms. Glass-Royal:*

- As for the end users, the intent is for total transparency throughout the process, with buy-in, participation, and local expertise. It is clear that USAID, as a funder of FESS, is also a consumer. In the case of Hurricane Mitch in Honduras, it was after the crisis developed that the U.S. sent a huge amount of aid. The theory behind the ESAF is that an ounce of prevention is worth a pound of cure. In situations where the U.S. may be called upon for assistance, the ESAF can be a tool to address evolving situations before crises develop.

*Response from Mr. Stark:*

- The ESAF can predict and build scenarios, but toward the end of serving as an early warning system. It highlights, in relative priority order, various factors associated with limited resources that may lead to crises. The conceptual point is that not all conditions constitute environmental security issues. ESAF helps identify and focus on the key ones. In the Dominican Republic, for example, where FESS is currently working, there is a heavy reliance on tourism as the most dynamic economic sector. But when the one sector most promising for the economy is being undermined by environmental problems, as is happening in this case, this is an environmental security issue that needs immediate attention. It is a question not of the whole panorama, but of the key points that are most decisive for a country.
- An objective of the workshop was to customize the ESAF with feedback from the participants. With regard to how to obtain buy-in, *Mr. Dannenmaier* noted that this workshop process is such a method.
- The ESAF is being developed with consideration of existing ESA models and the recognition that it is not the sole methodological answer. FESS is engaged with PAES in a collective conversation to make analytical tools more powerful and influential. The ESAF is an organizational process that involves contacts with many different stakeholders.

*Response from Ms. Glass-Royal:*

- The ESAF process is very multidisciplinary and involves going to the field and going through the framework. In South Africa, for example, FESS recently went through the process of reaching out across sectors to begin to bring people into dialogue and to put in regional standards for the extraction of natural resources. The process itself will bring people to the table.

*Response from Mr. Simmons:*

- The ESAF has elements of climate change embedded in it. However, the criterion for inclusion in the ESAF is that FESS can verify the element with facts, so as to avert any challenge to the element's validity and accuracy. Climate change is perhaps the most sensitive issue, because of scientific uncertainty surrounding causes and predictions of climatic events. Wrong predictions are detrimental to public perception. *Philip Gwage* reiterated that he would prefer to see climate treated specifically as an element whose input is important to the model.

*Response from Mr. Ejigu:*

- As an analytical tool to inform decision-making, the ESAF represents a result of the evolution of environmental security as a concept and approach in the fields of development, policy, and academia. The history of recent years has established a link between environmental security and environmental risk assessment. This is the background that helps the ESAF to access the impacts of changes that have already taken place and to anticipate problems, risks, and threats to sustainable development.
- Five characteristics of the ESAF are that it is:
  1. *Elastic:* to accommodate the circumstances. Its flexibility allows for many factors to be brought in even when some of the data is not complete.
  2. *Adaptable:* to any country regardless of the stage of economic and social development.
  3. *Dynamic:* in reflecting the inter-temporal dimension of environmental security for the short, medium, and long terms, depending on the quantity of data.
  4. *Transparent:* at all levels of decision-making. This is one of its essential features.
  5. *Neutral:* in that it can be used with different objectives in different ways and at different levels.

**II. Feedback on the ESAF and further discussion.**

- *Gedion Asfaw:* As a human development report, the ESAF would need updating every year because the threats to environmental security are creeping threats. Thresholds should be established so that when change occurs there can be a red flag raised, for example, on deforestation. Time frames must be considered in a continuous manner over years, or over periods of five to ten years.
- *Festus Bagoora:* The ESAF must pass through a process of peer review on a national level, using existing data from the country. Where discrepancies occur, the experts must come to agree on the national level.

- *Frank Muhereza:* I have a list of questions: In a predictive model such as the ESAF, is it possible to see the processes and generate the answers? What happens when diverse elements do not fit, for example, where environmental degradation does not lead to conflict in one area but it does in another? Does the model help only between nations, or for localized conflicts? For example, where districts fight over land, can the ESAF help flag the point there and see how environmental risk will degenerate to a security risk? Does it help us know when to intervene? For example, can the ESAF help the Ministry of Foreign Affairs know where something is likely to flare up, such as on the Kenya and Uganda border?

- *James Wole:* I see the ESAF as conflict vulnerability analysis that has applicability in three areas: in the context of emergency preparedness and the work of organizations such as CARE; as a tool for country analysis for long-range security planning; and in the context of advocacy where issues can be raised in civil society as well as vis-à-vis donors, because the ESAF provides parameters for where to put resources. The ESAF is not applicable in a dictatorship. In Uganda, the ministry and civil society can both be brought in for critique of the issues.

- *Eric Dannenmaier:* Mr. Wole's remarks advance the discussion of who may be the end users of the ESAF.

- *Joy Tukahirwa:* The ESAF will help identify environmental conflict; involve many stakeholders, government institutions, and communities; require national-level consultations to reach a consensus; and involve many conditionalities. Some of the data elicited for the ESAF will be very sensitive, which brings up the question of whether and to what extent will there be national sovereignty over the data and the issues that are brought to light.

- *John Katunga:* I am thinking of what should be requirements for the ESAF, including a designated time frame for the application, good will, consensus, a mechanism for moving from the ESAF that provides an early warning to an early response system, and a process by which recommendations are made to policy-makers. Additionally, I would ask whether there is need for an index, a system of red, yellow, and green lights, or a Richter scale for the country of study.

- *Philip Gwage:* The ESAF is in a developmental stage that calls for workshop members to build their understanding of the framework and its assumptions to see if it is valid in their own applications, apply the framework and track any problems, and give feedback that will help build the stability of the model.

- *Joy Tukahirwa:* I propose that there should be a cost-benefit analysis, especially in developing countries, to assess the positive aspects of the framework and its challenges. I would like to have more information about how time is incorporated, the costs involved, how issues of capacity are addressed, the predictive benefits, and the academic aspect of the framework. Looking around at

the ages of those of us at the workshop, I strongly urge that we involve young people right from the start in the ESAF process.

- *Sileshi Tsegaye:* In order for it to be useful, the framework first must be exercised with a pilot project that tests and refines the process.

- *Gedion Asfaw:* I see scenario-building as the most important, albeit somewhat subjective, aspect of the ESAF because it involves much thinking, especially about external factors related directly to environmental threats and the adaptive capacity of the society to respond. To decide how to build and choose the right or best scenario, what about the possibility of indexing of factors in a mathematical formula?

- *Gerard Nyabutsitsi:* The time frame requirements of the second and third phases look to be significant, as does the complexity involved in selecting critical country concerns.

*Response from Ms. Glass-Royal:*

- The scenario building is a critical piece. FESS spent time with the UK Department for International Development and learned from their approach, which was to turn to the private sector to identify the top concerns, to bind the range of options or cases, and finally to test the capacity for response against each case. These were not scenarios in the usual sense, where if the expected does not happen then the projection is not useful.

*Response from Mr. Stark:*

- The idea is to trace trajectories and find critical points and ways to intervene before there are negative outcomes. The analysis is time based. The effectiveness of the framework can be evaluated fully only after it is used and then measured for how well it meets the challenge of providing analysis that can guide action and decision-making. In response to Mr. Katunga's comment, I would argue that the ESAF does require skill and the involvement of different sectors for good analysis, but not large amounts of resources.

*Response from Mr. Ray Simmons:*

- With regard to thresholds, FESS is looking at security in a broad sense and viewing a threshold as on a continuum that takes into account coping capacities. When a similar event occurs in two places, it may be catastrophic for one community and not for another. FESS is looking to standardize the units of measure for coping capacity and threshold, recognizing that the level of exactness is a trade-off. *Mr. Muhereza* said that the ESAF calls for more information than can be given in detail at this point and that data must be generated and tailored to the specific country. *Mr. Dannenmaier* reiterated that the ESAF depends upon the input of local experts such as Mr. Muhereza.

*Response from Mr. Ejigu:*

- The workshop participants and other professionals are key sources of data and expertise needed to shape the ESAF so it can integrate factors in a coherent analytical framework that will allow for prediction and assist in decision-making. The ESAF should not be perceived as conclusive, but as a process. A threshold highlights the cumulative possibilities for intervention at each step. Compared to the economic growth model that is now a complex structure with multiple, intertwined factors intertwined, the ESAF is a structure in its nascent stage that requires tests and retests until it accommodates the multiplicity of factors.

## SESSION VI: WORKING GROUPS

### WORKING GROUP I: Coping with Environmental Insecurity

**MODERATOR: Mr. John Katunga, Programme Manager,**
**Nairobi Peace Initiative — Africa**

This working group considered the pastoral livelihood with regard to four areas of environmental insecurity: drought, agriculture, land scarcity, and deforestation. For each area, the group produced a list of coping strategies that pastoral groups are known to use as response mechanisms. The group identified each strategy as to its institutional level: individual/household, community, state, private sector, civil society, and international community.

The exercise highlighted the importance of contextualization with regard to the following questions: 1) who are the actors in the various processes and stages of initiation, implementation, and sustainability of disparate coping strategies; 2) how effective are the strategies at each of the institutional levels; and 3) how can cost-benefit evaluations take into account all of the relevant human and environmental variables. The exercise also highlighted the role of human capacity in environmental security.

In addition, the working group identified regional environmental security problems, including land scarcity, land use and policies, migration, deforestation, illegal mineral exploitation, and the expansion of improperly managed commercial farms.

Coping With Environmental Insecurity

| Environmental Insecurities | Coping Strategies | Institutional Level(s) |
|---|---|---|
| Drought | Sell small animals, especially goats | I |
| | Be mobile, follow transhumance practices | I |
| | Send small animals to neighbors | I |
| | Sell natural resources (e.g. firewood) to other communities | I |
| Agriculture | Rely on micro-credit schemes | I |
| | Sell small animals | I |
| | Place land for rent | I |
| | Grow drought-resistant crops | I |
| | Establish aid distribution centers | S, IC |
| | Sell seed intended for next growth cycle | I |
| | Sell household or individual (casual) labor | I |
| | Develop modernization and/or new policies (both a coping strategy & a problem) | S |
| | Develop strategic mechanisms for disaster preparedness and mitigation (e.g. EWS) | S |
| Land scarcity | Sell natural resources to other communities | I |
| | Engage in off-farm activities | I |
| | Engage in sharecropping, land sharing | I |
| | Grow high value crops (e.g., coffee, tea) | I |
| | Intensify agriculture and herding practices | I |
| | Rent land in a different location | I |
| | Resettle populations | S |
| Deforestation | Reforest | I, C, S, P, CS, IC |
| | Protect culturally significant areas | C |
| | Improve land use policies | S |
| | Establish, protect forest reserves | S |
| | Engage in community forestry | S, CS |
| | Improve livelihood of the community | C, IC |
| | Find alternative energy sources | S, CS, IC |
| | Assert international pressure | IC |

I = Individual/Household
C = Community
S = State
P = Private Sector
CS = Civil Society
IC = International Community

**WORKING GROUP II: Capacity Strengthening and Development for Environmental Security Assessment**

**MODERATOR: Mr. Gedion Asfaw, Regional Project Manager, Nile Basin Initiative — Nile Transboundary Environmental Action Project**

This working group discussed wide ranging issues related to capacity development for environmental security assessments (ESA), making the following recommendations:

Approaches to building capacity and development:

- Promote environmental security through regional organizations such as NEPAD, AU, NBI, IGAD, and UNEP, etc.
- Plow back resources into environmental security through government and the private sector.
- Make environmental security an agenda of governments.
- Use multifaceted approaches to promoting the environmental security agenda through: an environmental security Ambassador, workshops, media, environmental journalism training.
- Bring security and environment institutions together to discuss ESAs.
- Convince policymakers by capturing the monetary value of environmental resources.

Types of capacity to build:

- Core of experts, multidisciplinary.
- Local knowledge.
- Institutional partnerships.
- Networks, environmental security knowledge network, an international association of environmental security assessment.
- Policymaker capacity strengthened through awareness, study tours.
- Education related to environmental security.
- Decision making and development programs with integrated environmental security components.

## SESSION VII: BUILDING ALLIANCES AND PARTNERSHIPS FOR ENVIRONMENTAL SECURITY ASSESSMENT

**MODERATOR: Mr. Jeffrey Stark, Director of Research and Studies, FESS**

**Building alliances and partnerships**. The attainment of environmental security requires the effective involvement of all sectors: the government, private sector, NGOs, the academic and research community, and regional, bilateral, and multilateral organizations. The building of alliances and partnerships need to be both horizontal (among sectors and

development actors — government, private sector, and civil society) and vertical (local, national, regional, and global organizations).

The state sector retains a prominent place in the attainment of environmental security. However, the private sector, civil society, and the international development community have equally vital roles, as they are affected by political instability and governance failures, and they have the capacity to contribute to the realization of sustainable development and security. It is important to ensure that all sectors understand their respective roles and responsibilities, and that they contribute to environmental security assessment as well as to the integration of environmental security in development.

The international development community has made massive investments in peacekeeping and peace-making, and also in conflict prevention and resolution. Anchoring these processes in environmental security will give unprecedented impetus to the realization of sustainable development and peace. The international development community has multiple tasks to: (1) bring environmental security to the forefront of the development agenda, more specifically to the poverty reduction strategies which it espouses; (2) mainstream environmental security in peace-keeping and conflict prevention programs; and (3) provide financial and technical support to the promotion of environmental security assessments and follow-up activities.

**Discussion on building alliances and partnerships:**

- *Joy Tukahirwa:* We have seen the value of the issue of environmental security, and we see how we can further the objective of sustainable development. One idea is a host institution that can steer the process beyond this workshop. I am also looking at the idea of mobilizing to improve and promote the model. This is an opportunity for collaborative efforts for those institutions working on the environment. I see a contribution in looking at how we can work with FESS beyond this event.

- *Fadhila Ali:* One of the approaches is for PAES/FESS to meet with more people in the organizations represented here. It would give the concept more weight within our institutions.

- *Savino Katsigaire:* There should be follow-up by PAES, since they are locally based. As Africare, we will try to adapt some of the issues in the ESAF into the conflict variability analysis. In February, the organization is conducting its long-range strategic plan and since our goal is to support impoverished Ugandans, we stand to gain from this. It is also linked to USAID's conflict mitigation efforts — the two should be coordinated. I suggest government colleagues let us know where policies are going and how we could benefit.

- *Ben Kamugasha:* In responding to the issue of next steps after the workshop, the informal networking is very important, and we have contact information. It would be a good idea to go home and think about some of our views and respond

by email later. We could also encourage informal one-to-one e-mail, spinning off conversations held here.

- *Kimberly Sais:* USAID has a wonderful resource for dialogue on a series of issues, and it is primarily focused on Africa. FRAME is a project supported by USAID, which is a networking, knowledge management tool. The website is wwww.frameweb.org. This could be an excellent place to distribute the report, and is a great place to continue networking and dialoging.

- *Mersie Ejigu:* PAES will send you the final list of participants and the workshop report in the near future.

- *Gedion Asfaw:* To develop a compelling language and description of ES would be helpful. More workshops and awareness-raising are needed to gain critical mass on the subject.

- *Joyce Onyango:* We need more resources for consultation on this issue. An ambassador on environmental security is good. We should slowly test the water with our colleagues to sell this issue. Make this workshop an annual event. The report should show the link between the papers and the threat to the future in a brief and concise manner so that policymakers will read it.

- *Eric Dannenmaier:* As FESS and others work to build assessment capacity and literature, there are vehicles such as the country-level State of the Environment (SOE) reports that have been mentioned that can include language on environmental security and mainstream environmental security into reporting and collecting relevant data for environmental security analysis. We should also look to share and demand better data that help us get at security issues.

- *Darci Glass-Royal:* Our plan is to conduct a pilot study in Uganda by relying on people to help us improve our framework.

- *Jeffrey Stark:* We are also open to considering conducting the ESAF in other countries interested in this possibility.

## CONCLUSIONS AND RECOMMENDATIONS

Among the workshop participants, there was general agreement that environmental security was an issue of great concern in Uganda, as well as in the larger region of eastern Africa, where a majority of the population depends on agriculture as a source of livelihood. Factors that contribute to social grievances and political instability include: high population growth rates, recurrent droughts, low farm productivity, limited access to technology, and scarcity of agricultural and grazing land, combined with institutional

weaknesses. Many participants embraced the view that environmental insecurity was, indeed, a reality and that the evidence was compelling. Discussions underscored the position that environmental insecurity can cause, amplify, or trigger political instability and conflict, while environmental security may contribute significantly to sustainable peace and development.

The following summarizes viewpoints shared by workshop participants with regard to the environmental security assessment (ESA) in general and the Environmental Security Assessment Framework (ESAF) developed by FESS. Participants generally agreed with the need to:

a. Recognize environmental security assessment (ESA) as a timely and important initiative, and establish a series of coordinated programs of awareness-raising and capacity-building to promote cross-sectoral understanding of ESA and to encourage its application as a tool for informed decision-making.

b. Adapt ESAF to a country's prevailing economic, political, social, geographical, cultural, and climatic situations; use the workshop papers, the discussion, and this report as building blocks for adapting ESAF to eastern Africa, and in particular to Uganda; and to ensure that ESAF is comprehensive and adaptable.

c. Approach the promotion, adaptation, adoption, and application of the ESAF as a medium- to long-term undertaking, and to consider pilot studies and refinements of ESAF as vital components of the process.

d. Support testing of the adapted ESAF through pilot studies in neighboring countries, either in parallel with or subsequent to the Uganda Pilot Study. Workshop participants from Ethiopia, Kenya, Rwanda, and Tanzania expressed interest in ESA and ESAF and proposed making contact with the appropriate officials.

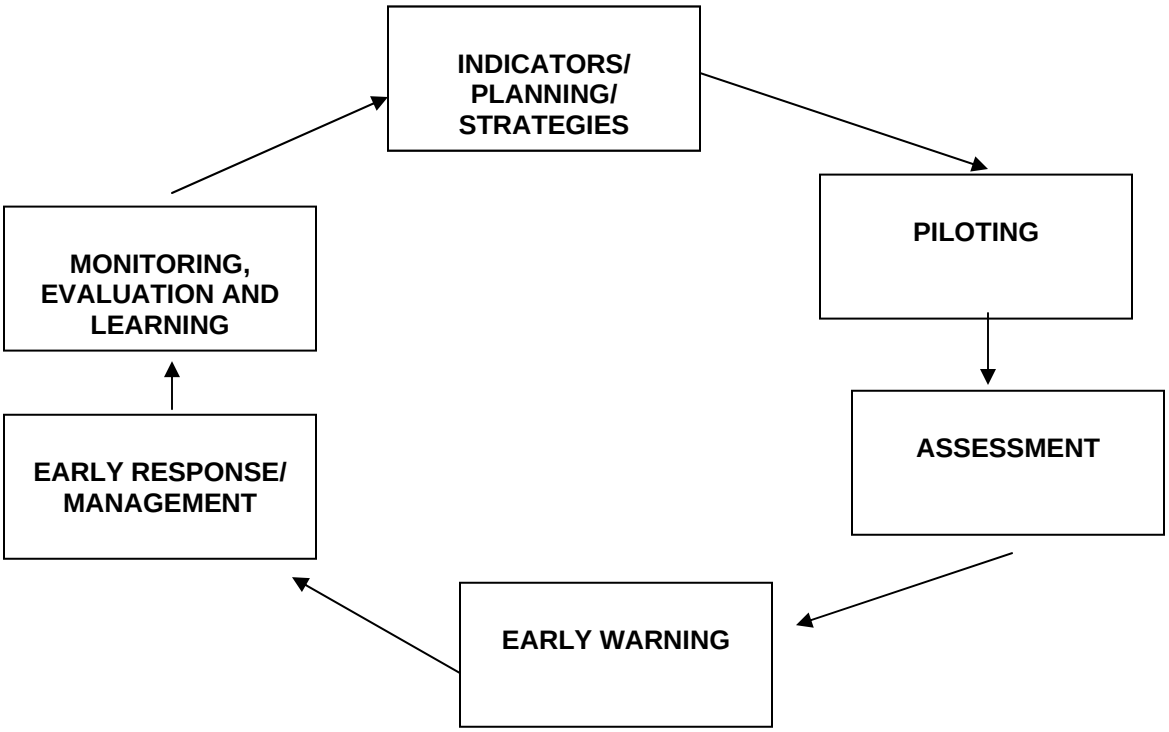
e. Explore the possibility of streamlining the ESAF in view of its complexity and large data requirements, with the aim of enhancing its utility in countries where there are data limitations. In this regard, participants inquired whether a partial ESAF could be considered.

f. Increase the relevance of ESA as a policy tool by establishing threshold points to inform judgments as to when and where an environmental insecurity may result in conflict or significant political or socioeconomic insecurity.

g. Build the knowledge base and develop clear linkages between environmental degradation and environmental insecurity as fundamental steps in promoting the acceptability of ESA in the eastern Africa region.

h. Integrate ESA in the development policy decision-making process**,** and consider a way to link early warning with early response. The diagram below illustrates the

cycle from indicators of environmental insecurity to pilot study, to assessment, to early warning, to early response, and to monitoring and evaluation.




30. Based on all of the above, workshop participants made recommendations to:

a. Promote the understanding of ESA as a cross-sectoral, multi-layer, and complex undertaking. While the ESAF is a useful tool and methodology for operationalizing ESA and for integrating these complex processes, there is a need to promote broad awareness and understanding of the framework by capitalizing on this Kampala workshop and organizing others at the regional and continental levels.

b. Support the implementation of ESA on both the country and transboundary levels. FESS offers what appears to be a sound approach to pursue: begin with a workshop that promotes understanding of ESA, undertake a pilot study, and then refine and implement the ESAF.

c. Build alliances and partnerships for ESA. Additional resources and the involvement of a variety of institutions, both regional and global, are crucial for undertaking ESA and implementing the ESAF. Thus, FESS and PAES should do their utmost to expand the consortium.

d. Promote ESAF in annual environment reports. FESS and PAES could contact national environment agencies responsible for these annual environment reports and also organize a regional consultation of these agencies at an appropriate time.

e. Raise ESAF to the level of NEPAD and with United Nations organizations such as UNDP and UNEP. Explore the possibilities of promoting the concept of ESA in the Human Development Report.

f. Use existing institutions, activities, and processes for promoting ESAF. In addition to organizing workshops both at the country and regional levels, promote ESAF and enhance knowledge-sharing through the use of existing networks, such as USAID's FRAME, and establish new ones, such as an African knowledge network for ES, which can be housed within PAES or FESS.

g. Find champions for environmental security assessment and its integration in development. FESS and PAES should continue to promote ESAF at the global, regional and country levels. As a way forward, FESS could consider hosting a global network of experts and practitioners linked to an Africa regional network of experts that PAES hosts. There is also a need to establish country focal points and contacts.

h. Effectively use existing human and institutional capacity and, where necessary, strengthen and build such capacity for promoting, elaborating, and integrating ESAF, and undertaking ESA.

i. Disseminate the workshop report as widely as possible and, to the extent that budgetary resources permit for FESS and PAES, make the report available both in hard copies and through the Internet.

In collaboration with Ugandan authorities and as one of the first steps towards implementing the above, PAES and FESS will jointly launch the Uganda Environmental Security Assessment Pilot Study in early 2005. Based on the results of the Pilot Study, detailed country and sector-based (e.g., land use) assessments are envisaged.

# ANNEX I: WORKSHOP AGENDA

**SESSION I: OFFICIAL OPENING**

*Moderator:* Mr. Bwango Apuuli, Ministry of Water, Lands and Environment, Uganda

*Presenters:* Mr. Mersie Ejigu, PAES
Mr. Ray Simmons, FESS
Mr. Jody Stallings, USAID, Uganda
Mr. Ben Kamugasha, PAES
The Honorable Colonel Kahinda Otafiire, Minister of Water, Lands and Environment, Uganda

**SESSION II: ENVIRONMENTAL SECURITY — A GLOBAL PERSPECTIVE AND THE NEED FOR ASSESSMENT**

*Moderator:* Mr. Ben Kamugasha, Former Permanent Secretary, Ministry of Environment, Uganda

*Presenters:* Mr. Jeffrey Stark, FESS: *Environmental Security Assessment in Perspective*
Mr. Mersie Ejigu, PAES: *Environmental Security: Its Growing Importance on the Development Agenda and as a Policy Response*

**SESSION III: ENVIRONMENTAL SECURITY ASSESSMENT — THE BUILDING BLOCKS**

*Moderator:* Mr. Ray Simmons, FESS
*Presenter:* Mr. Ben N. Kamugasha, Former Permanent Secretary, Ministry of Environment, Uganda: *Governance, Participatory Development, and Environmental Security*

*Moderator:* Dr. Henry Aryamanya-Mugisha, NEMA-Uganda
*Presenter:* Mr. Eric Dannenmaier, Institute for Environmental Law and Policy, Tulane University: *Assessing Environmental Governance: A Comparative Overview*

*Moderator:* Mr. Hamid Rohilai, FESS
*Presenter:* Dr. Esezu Kateregga, Department of Economic Policy and Planning, Makerere University: *Agriculture, Poverty Eradication, and the Environment*

*Moderator:* Dr. Ellen Suthers, FESS
*Presenter:* Mr. Frank Muhereza, CBR-Uganda: *Environmental Insecurity, Poverty, and Conflict in Karamoja, Uganda*

*Moderator:* Dr. Jody Stallings, USAID
*Presenter:* Mr. Bwango Apuuli, Ministry of Water, Lands and Environment, Uganda: *Environmental Security, Sustainable Energy, and Climate Change*

**SESSION IV: REGIONAL ENVIRONMENTAL SECURITY — THE CASES OF THE NILE RIVER AND LAKE VICTORIA**

*Moderator:* Ms. Kimberly Sais, USAID
*Presenters:* Mr. Gedion Asfaw, NBI-NTEAP: *Environmental Security: Issues and Options in the Nile River Basin*
Dr. Henry Aryamanya-Mugisha, NEMA-Uganda: *Transboundary Environmental Security: The Case of Lake Victoria Basin*

**SESSION V: THE ENVIRONMENTAL SECURITY ASSESSMENT FRAMEWORK (ESAF) — RATIONALE, PROCESS, AND SUBSTANCE**

*Moderator:* Mr. Eric Dannenmaier, Institute for Environmental Law and Policy, Tulane University
*Presenters:* Ms. Darci Glass-Royal, FESS: *Origins and Evolution of Environmental Security Assessment Framework (ESAF)*
Mr. Jeffrey Stark, FESS: *The Environmental Security Assessment Framework (ESAF)*

**SESSION VI: WORKING GROUPS**

*Moderators:* Mr. John Katunga, NPI-Africa
Mr. Gedion Asfaw, NBI-NTEAP

**SESSION VII: BUILDING ALLIANCES AND PARTNERSHIPS FOR ENVIRONMENTAL SECURITY ASSESSMENT**

*Moderator:* Mr. Jeffrey Stark, FESS

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# ANNEX III: ENVIRONMENTAL SECURITY ASSESSMENT FRAMEWORK (ESAF)

**Foundation for Environmental Security & Sustainability**

## Environmental Security Assessment Framework

## PHASE I: Country Profile

**OBJECTIVES**

Generate an initial overview of the country to provide background and context for the assessment.

Develop a preliminary assessment of potential political, economic, and social cleavages that may contribute to instability and/or insecurity.

Begin developing an assessment team briefing book to serve as a basis for further research and analysis.

**METHOD**

Conduct preliminary research through data collection and literature reviews.

**TASKS**

a. Draft preliminary country profile, surveying the following areas:
   i. History
   ii. Polity (including World Bank governance indicators)
   iii. Economy
   iv. Society
   v. International/Regional Context
b. Compile an overview of U.S. and international aid (technical and material) by organization/agency.

**PRODUCTS**

(1) Briefing book containing the following:
Preliminary country profile
Matrix of international aid

**For the purposes of its work, FESS uses the following definitions as a guide:**

*Environmental security* is a condition whereby a nation and/or region, through sound governance, accountable 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.

*Environmental insecurity* is a condition whereby a nation and/or region fails to effectively govern, manage, and utilize its natural resources and environment, causing social, economic, and/or political disruption to occur at a scale leading over time to heightened tensions, social turmoil, or conflict.

# PHASE II: Identify Critical Country Concerns

**OBJECTIVES**

Identify *Critical Country Concerns*[*] (CCCs) to focus the scope of the assessment.

*Critical Country Concerns:* Underlying issues, sectors, and/or resources that may be directly or indirectly integral to stability, based on their value and significance to the economy and social well-being.

Understand the linkages among economic, social, and environmental factors. This phase addresses: What underlying issues, sectors, and resources are critical to stability? How are they critical? Who is affected when these are threatened? What are the potential consequences?

**METHOD**

1. DATA COLLECTION: Complete *environmental sustainability*, *econo-environmental*, and *socio-environmental* baseline data worksheets, by collecting baseline and trend data through data compilation, literature reviews, and interviews.

2. ANALYSIS: Perform environmental, econo-environmental, and socio-environmental analyses to determine key aspects integral to economic and social stability. In conjunction with literature reviews and interviews, these analyses will result in the identification of CCCs.

*Environmental Sustainability:* A condition in which a nation and/or region, through effective governance, accountable management, and sustainable utilization of its natural resources and environment meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Environmental sustainability does not imply absolute limits. It includes those limitations imposed by the present state of technology and social organization on natural resources and the ability of the environment to absorb the effects of human activity.

*Econo-environmental Analysis*: An evaluation of economic activities that are dependent on the natural resource base of a country, such as agriculture and its use of land and water, extraction and refinement of minerals and fuels, exports of raw materials and other environmentally derived goods, power generation, production of finished commodities, and the use of the natural environment for subsistence living.

*Socio-environmental Analysis:* An evaluation of a population's sustained and secure access to the necessary requirements for life. These factors are encompassed within livelihood security, food security, health, and education.

[*] For the purposes of this exercise, FESS has defined key terms in highlighted text boxes.

**TASKS**

a. Complete environmental sustainability data baseline (e.g., land, energy, water).
b. Complete econo-environmental data baseline (e.g., PPP per capita, sectors, trade, labor).
c. Complete socio-environmental data baseline (e.g., food security, livelihoods, health).
d. Draft environmental sustainability analysis.
e. Draft econo-environmental analysis.
f. Draft socio-environmental analysis.
g. Identify critical country concerns and associated contributing factors and environmental linkages.

**PRODUCTS**

( 1 ) Environmental sustainability baseline
( 2 ) Socio-environmental baseline and analysis
( 3 ) Econo-environmental baseline and analysis
( 4 ) CCC analysis

# PHASE III: Identify Environmental Security Factors

**OBJECTIVES**

Further refine and focus the assessment by examining each Critical Country Concern to identify *Environmental Security Factors* (ESF) – those environmental problems and issues that pose a concern for stability or contribute to the creation of one.

*Environmental Security Factor:* An environmental problem that has significant implications for economic and social stability and welfare, which may pose a threat to security or contribute to the creation of one.

Identify potential intervention points and preventive strategies.

**METHOD**

1. Determine the CCCs' relative condition and degree of vulnerability, and identify contributing factors affecting each CCC.

2. Break down each contributing factor by performing a *VSTM (Vulnerabilities/Stressors/Threats/Mitigators) analysis*. This will identify and disaggregate contributing factors and underlying issues associated with key problems to understand their scope and better target intervention points and strategies.

3. Assess security implications of the contributing factors to determine if the CCC qualifies as an Environmental Security Factor.

4. Identify potential intervention points.

***VSTM ANALYSIS:*** Chart key problems affecting the CCC by examining each contributing factor and determining its nature and origin. For the purposes of this exercise, a ***vulnerability*** is a condition inherent to the problem and not likely to be mitigated in the short- to medium-term by external actions (e.g., geographic location, average precipitation, economic dependence on natural resource base). A ***stressor*** is an existing condition that causes stress or pressure (e.g., harmful agricultural practices, high unemployment, poor governance). A ***threat*** is a potential event or shock that may occur in the future (e.g., natural hazard, economic collapse, labor strike). A ***mitigator*** is a condition or event that alleviates the negative impact of these factors to some degree (e.g., economic or government programs to address an issue, improved technologies, migration). Each component will be placed in a column that best describes its nature (Economic, Technological, Governance, Natural, Social, or others to be determined).

| CONTRIBUTING FACTOR: | | | | | | |
|---|---|---|---|---|---|---|
| **VSTM** | **ECONOMY** | **TECHNOLOGY** | **GOVERNANCE** | **NATURAL** | **SOCIAL** | **OTHER** |
| **VULNERABILITIES (inherent/existing)** | | | | | | |
| **STRESSORS (existing)** | | | | | | |
| **THREATS (potential)** | | | | | | |
| **MITIGATORS (existing & potential)** | | | | | | |

**TASKS**

a. Identify contributing factors related to CCCs.
b. Perform VSTM analyses.
c. Assess security implications of contributing factors to identify which CCCs are ESFs.
d. Profile problems and ESFs according to issues, primary causes, impacts/security implications, and affected stakeholders.

**PRODUCTS**

( 1 ) VSTM analysis charts
( 2 ) ESF profile

# PHASE IV: Environmental Governance Analysis

**OBJECTIVE**

Assess environmental governance to examine its impact on ESFs in the context of natural resource management.

*Environmental Governance*: The traditions and institutions by which power, responsibility, and authority over a nation's natural resources are exercised.

**METHOD**

Assess the strength and effectiveness of environmental governance through an examination of:

- Existing legal and regulatory frameworks
- Socio-cultural and political legitimacy
- Capacity and integrity of environmental agencies and institutions
- Level of participation, public access, and decentralization
- Disaster preparedness and response capacity/mechanisms

**TASKS**

a. Conduct data collection and literature reviews
b. Compile interview lists
c. Draft targeted question sets
d. Interview authorities, private sector, and civil society groups
e. Incorporate findings into analysis as necessary
f. Assess performance of environmental governance

**PRODUCTS**

( 1 ) Analysis of environmental governance
( 2 ) Refined analyses

# PHASE V: Field Test Hypotheses & Generate Scenarios

**OBJECTIVE**

Establish the relative significance of each Environmental Security Factor by developing potential crisis scenarios and possible outcomes

**METHOD**

Test preliminary findings and hypotheses through field research

Two general typologies of scenarios will be developed. One will project likely outcomes if trends (vulnerabilities, stressors, and mitigators) remain constant; the second will posit shocks to the system and project likely outcomes given the present capacity to respond. Each scenario will be evaluated in terms of probability and potential impact.

**TASKS**

a. Conduct in-country interviews
b. Test preliminary hypotheses
c. Formulate preliminary scenarios

In consultation with the USAID mission, FESS will design and facilitate a *scenario development exercise*, when feasible, for U.S. government field staffs, implementers, and in-country counterparts to tap in-country experience and expertise to develop and test scenarios. The exercise would seek to provide benefits for all participants, including creating a participatory forum for expanding dialogue and opportunities to leverage available resources.

**PRODUCTS**

( 1 ) 2-page scenario reports

# PHASE VI: Review of U.S. Assistance

**OBJECTIVE**

Identify gaps and target areas to improve U.S. coordination and/or assistance

**METHOD**

In the context of international assistance and local initiatives, review U.S. assistance strategies across agencies and assess their role and value in addressing environmental security problems.

**TASKS**

a. Review international aid matrix and local initiatives.
b. Compare U.S. assistance against potential scenarios and assess results.

**PRODUCTS**

( 1 ) Evaluation of U.S. assistance with preliminary recommendations for improved coordination and/or targeted assistance.

# PHASE VII: Response Options & Recommendations

**OBJECTIVE**

Review and evaluate appropriate responses to the principal environmental security problems and propose alternate remedial actions.

Provide a comprehensive assessment and recommended actions to present options for policymakers and stakeholders to make informed decisions on environmental and resource problems.

**METHOD**

Consolidate ESAF findings and draft final report.

Develop recommendations that consider policy options, entertaining the full range of actions available to policymakers and stakeholders.

**TASKS**

a. Develop recommendations and draft final report
b. Draft action memoranda and identify possible distribution formats and channels

**PRODUCTS**

( 1 ) Final report with annexes
( 2 ) 1-2 page action memoranda

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 in the developing 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.

FESS Foundation for Environmental Security & Sustainability

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 social capital through 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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