THE REPUBLIC OF UGANDA

INDICATORS FOR ENVIRONMENTAL ASSESSMENT IN UGANDA

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Executive Summary

There are several types of environmental monitoring indicators applied by various institutions in Uganda. They fall under four broad categories, namely: Sector performance indicators, Cross-cutting issues indicators, and macro-economic indicators.

Environmental monitoring indicators are measurements/statistical parameters that help to present a meaningful picture of what is happening with the environment. They are generally referred to as systems variables that express and communicate the quality of the environment and trends around it to a particular audience. They summarize some aspects of the state of environment, natural resources assets and related human activities. To be useful to the sustainable development context, environmental monitoring indicators should relate environmental aspects to socio-economic factors. Therefore such indicators are able to track environmental changes over time (i.e., identifying trends). They vary depending on the audience and the geographical, political or social context within which they are presented. They are based on several parameters including physical, chemical or biological measures associated with environmental quality or natural resources, processes, outcomes of particular interventions, and, activities or interventions themselves.

Environmental monitoring indicators in place in Uganda to-date do not adequately cover environmental monitoring needs of the Country. They do not measure the environmental quality as a whole; proactively trigger response and actions to environment changes; measure the linkage between Uganda's sustainable development and the environment (tracing links between environmental conditions and quality with Millennium Development Goals (MDG's), Poverty Eradication Action Plan (PEAP), Livelihoods, etc.). Consequently, the National Environment Management Authority (NEMA) has developed environmental monitoring indicators for Uganda that will measure environmental trends and quality and how they relate to sustainable development in Uganda. These indicators are intended to assist the country analyze environmental quality and trends by focusing on the following:

a) **Performance evaluation**: evaluating Uganda's performance towards meeting environmental targets with respect to environmental quality. These targets are broadly stated in the Constitution of the Republic of Uganda, in the Vision 2025 and in the National Environment Action Plan (NEAP).
b) **Sustainability of our environment and development**: analyzing the relationship between the development actions in Uganda and environmental sustainability.
c) **Causal loops**: analyzing the link between causes and effects of environmental conditions.
d) **Prediction**: analyzing current environment situations, predicting trends and future scenarios.
e) **Reporting and compliance**: providing quality and timely information and ensuring fulfillment of institutional obligations to reporting and compliance.
f) **Prioritizing parameters:** measurements providing representative features of Uganda's environmental quality.

Systems and procedures for applying these indicators have been elaborated alongside a monitoring framework. Measurement of these indicators and the resultant information will form the basis for environmental reporting by NEMA to inform the public, decision makers and environmental managers. Therefore, these indicators shall be applied to:

a) Collect information that accurately reports on the state of the environment;
b) Harmonize measurements so that monitoring results can be shared and compared;
c) Improve communication between sub-sectors and the lead environmental agency (NEMA);
d) Minimize uncertainties regarding unconfirmed or contradictory assessments; and
e) Measure sustainable development by linking environmental parameters to socio-economic aspects of development.

Indicators presented in this report were developed through a participatory process that involved:
The process of developing environmental monitoring indicators for Uganda had six distinct steps, namely:

a) Review of existing literature within NEMA, sectoral institutions, academic institutions, the United Nations system, relevant private sector institutions and Civil Society Organizations;
b) Consultations with national level lead institutions and sectors responsible for the management of various components of the environment;
c) Consultations with selected District institutions responsible for the management of various components of the environment;
d) Consultations with relevant academic institutions;
e) Discussions with key scientists and other individuals whose technical input was aimed at strengthening the technical presentation of indicators; and
f) Continuous exchange of ideas and information with NEMA staff.

The report is set in two parts. Part 1 present background information, indicators in place and being applied by various government institutions, analysis of the indicators for the Millennium development Goals and how they relate to indicators in Uganda and the outcomes of the consultations process. Part 2 presents information on the process undertaken to develop the recommend indicators, considerations taken into account while developing these indicators, indicators matrix as well as the mechanism for reporting on these indicators and the compliance. The recommended indicators fall the following categories:

a) Sector or Thematic performance indicators (land/soil, forestry, water, wetlands, rangeland/wildlife, climate/weather, fisheries);
b) Cross cutting issues indicators (biodiversity, population, pollution, poverty, land use/cover); and
c) Macro-economic level indicators that measure impact of development policies and strategies.

All lead institutions shall be required to report on the trends of environmental components under their mandate or those impacted by the management decisions of such institutions.

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Acronyms

ACODE	Advocates Coalition for Development and Environment
AEO	African Environment Outlook
AWF	African Wildlife Foundation
BMU	Beach Management Unit
CAO	Chief Administrative Officer
CBO	Community Based Organization
CFM	Collaborative Forest Management
CPAI	Community Protected Area Initiative
CPI	Community Park Initiative
DDP	District Development Plan
DEAP	District Environment Action Plan
DFS	District Forest Service
DRC	Democratic Republic of Congo
DSOER	District State of Environment Report
DWD	Directorate of Water Development
EMCBP	Environmental Management Capacity Building Project
EIA	Environment Impact Assessment
ENR	Environment and Natural Resources
EO	Environment Officer
FID	Forestry Inspection Division
FIRRI	Fisheries Resources Research Institute
FORRI	Forestry Resources Research Institute
FR	Forest Reserve
FRS	Forest Reserves
FSSP	Fisheries Sector Strategic Plan
GDP	Gross Domestic Product
IDP	Internally Displaced People
IUCN	International Union for Conservation of Nature and Natural Resources
JLOS	Justice, Law and Order Sector
LCs	Local Councils
LFR	Local Forest Reserve
LGB	Local Government Budget
LGS	Local Governments
LSSP	Land Sector Strategic Plan
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDGs	Millennium Development Goals
MEAs	Multi-lateral Environment Agreements
MEMD	Ministry of Energy and Mineral Development
MOFPED	Ministry of Finance, Planning and Economic Development
MTCS	Medium-Term Competitive Strategy
MTEF	Mid-term Expenditure Framework
MTTI	Ministry of Tourism, Trade and Industry
MUIENR	Makerere University Institute of Environment and Natural Resources
MUK	Makerere University, Kampala
MWLE	Ministry of Water, Lands and Environment
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organization
NARS	National Agricultural Research Services
NBS	National Biomass Study
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NFA	National Forest Authority
NFP	National Forest Plan
NGO	Non-governmental Organization
NPA	National Planning Authority
NWSC	National Water and Sewerage Corporation
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernizing Agriculture

QENP	Queen Elizabeth National Park
SER	Sector Environment Report
SOER	State of Environments Report
UBOS	Uganda Bureau of Statistics
UIA	Uganda Investment Authority
UNCSD	United Nations Commission for Sustainable Development
UNFCCC	United Nations Framework for Climate Change Convention
UNHCR	United Nations High Commission for Refugees
UPE	Universal Primary Education
URA	Uganda Revenue Authority
UWA	Uganda Wildlife Authority
UWEC	Uganda Wildlife Education Centre
UWS	Uganda Wildlife Society
WAP	Wetlands Action Plan
WID	Wetlands Inspection Division
WMC	Wetlands Management Committees
WO	Wetlands Officer
WRMD	Water Resources Management Department
WSSP	Wetlands Sector Strategic Plan
WWF	World Wide Fund for Nature

PART ONE: THE ENVIRONMENTAL MONITORING INDICATORS

1. INTRODUCTION

1.1 General

In order to enhance its coordination, supervision and monitoring role, NEMA has developed indicators for monitoring environmental trends in Uganda. Development of environmental monitoring indicators for Uganda is an important undertaking because of the magnitude of the pressures on the environment and natural resources

Uganda's development and people's livelihoods are for now and in the foreseeable future dependant on the natural resources base. Therefore, the country's social and economic development depends on sound environmental management and sustainable utilization of her natural resources. This dependence cannot be guaranteed in the long term because of increasing pressures on the environment and natural resources exerted by a highly natural resource-dependant population and development.

Consequently, NEMA has developed environmental monitoring indicators purposely to:

a) Reduce the number of measurements required to give a representative and meaningful picture of what is happening in the environment; including reporting on Millennium Development Goals (MDGs) and Multi-Lateral Environmental Agreements (MEAs).
b) Simplify the communication process of transmitting information to the user.

By undertaking this process, Uganda now has:

a) Environmental monitoring indicators;
b) Systems and procedures for applying these indicators;
c) A monitoring framework for assessing environmental trends; and,
d) Environmental reporting procedure to inform the public, decision makers and environmental managers.

1.2 Environmental monitoring indicators

Before the development of these indicators, there were several types of environmental monitoring frameworks applied by various institutions in Uganda. They fell under the following broad categories:

a) **Indicators in the National Environment Action Plan:** the National Environment Action Plan (NEAP) for Uganda (1994) identified environmental monitoring indicators as a necessary tool for timely and effective monitoring of changes in the environmental processes in the country *(Section 2.1)*.
b) **Sector performance indicators:** sectors and sub-sectors including Wildlife, Forestry, Wetlands, Land, Water and Climate developed indicators that

measure the impact of their management actions as well as changes in their respective sub-sectors *(Section 2.2)*.

c) **Cross- cutting issues indicators:** cross cutting issues with relevant indicators included: poverty, biodiversity, population, trade and pollution. Cross-cutting issues indicators are measurements of impact of these issues on environmental quality and trends in Uganda *(Section 2.3)*.
d) **Macro-economic indicators:** the Poverty Eradication Action Plan (PEAP; 2004) and associated planning frameworks, notably the Plan for modernization of Agriculture (PMA), proposed indicators for measuring the impact of macro-economic polices on Uganda's environment *(Section 2.4).*

Environmental monitoring indicators can be desribed as measurements/statistical parameters that help us to present a meaningful picture of what is happening with the environment. They are generally referred to as systems variables that express and communicate the quality of environment and trends around it to a particular audience. They summarize some aspect of the state of the environment, natural resources assets and related human activities. To be useful to sustainable development context, environmental monitoring indicators should relate environmental aspects to socio-economic factors. Therefore these indicators are able to track environmental changes over time (i.e., identifying trends). They vary depending on the audience and the geographical, political or social context within which they are presented. Environmental monitoring indicators are based on several parameters including:

a) Physical, chemical or biological measures associated with environmental quality or natural resources e.g., water quality;
b) Processes and changes that have resulted from an intervention (e.g., a down-stream flood disaster);
c) Outcomes of particular interventions (e.g., tree planting on hilly slopes); and
d) Activities or interventions themselves (e.g., wetland drainage).

Given the above qualification, environmental monitoring indicators then in place in Uganda did not adequately cover environmental monitoring needs of the Country. Specifically, they did not:

a) Measure the environmental quality as a whole;
b) Proactively trigger response and actions to environmental changes; and
c) Measure the linkage between Uganda's sustainable development and the environment (tracing links between environmental conditions and quality with MDGs, PEAP, Livelihoods, etc.).

1.3 Proposed environmental monitoring indicators

Part two of this document presents environmental monitoring indicators that will measure environmental trends and quality and how they relate to sustainable development in Uganda. These indicators are intended to assist the country analyze environmental quality and trends by focusing on the following:

a) **Performance evaluation**: evaluating Uganda's performance towards meeting environmental targets with respect to environmental quality. These targets are

broadly stated in the Constitution of the Republic of Uganda (1995), in the Vision 2025 and in the NEAP.

b) **Sustainability of our environment and development:** analyzing the relationship between development actions and environmental sustainability in Uganda.
c) **Causal loops**: analyzing the link between causes and effects of environmental conditions.
d) **Prediction**: analyzing current environmental situations, predicting trends and future scenarios.
e) **Environmental reporting requirement by lead Agencies:** providing quality and timely information and participation by lead institutions.
f) **Prioritizing parameters:** measurements providing representative features of our environmental quality.

Systems and procedures for applying these indicators have been elaborated alongside a monitoring framework. Measurement of these indicators and the resultant information will form the basis for environmental reporting by NEMA to inform the public, decision makers and environmental managers. Therefore, these indicators shall be applied to:

a) **Collect information** that accurately reports on the state of the environment;
b) **Harmonize measurements** so that monitoring results can be shared and compared;
c) **Improve communication** between sub-sectors and the lead environmental agency (NEMA);
d) **Minimize uncertainties** regarding unconfirmed or contradictory assessments; and
e) **Measure sustainable development** by linking environmental parameters to socio-economic aspects of development.

These indicators target the following audiences:

a) Institutions and individuals responsible for meeting the statutory requirements regarding management, regulation and reporting on the environment;
b) Environmental managers;
c) Policy makers at the centre and district levels, in public and private sector;
d) Scientists and natural resources/environmental users;
e) Media institutions and journalists;
f) Researchers and academia.

Target institutions and agencies are indicated in Table I below.

Table I: The Institutional/Indicator Matrix

Institution category	Macro economic	Sectoral	Cross-Cutting	Environmental
Lead Agency – NEMA	X		X	X
Sectoral Agencies	X	X	X	X
Districts		X	X	X
Planning Authorities (MoFPED, NPA)	X		X	X
Private Sector (Academia, Research Institutions, Business, NGOs)	X	X	X	X
General Public	X		X	X

All lead institutions shall be required to report on the trends of environmental components under their mandate or those impacted by their management decisions.

2. ENVIRONMENT, SECTOR PERFORMANCE, CROSS – CUTTING AND MACRO-ECONOMIC INDICATORS APPLIED IN UGANDA.

Indicators described in this section are those in place by the time of preparing this document and were documented based on:

a) A review of environmental monitoring indicators and data/information held by various environment management institutions *(Annex I: Institutions consulted or whose data has been reviewed)*;
b) Consultations with relevant institutions and stakeholders *(Annex I)*;
c) Synthesis of the information collected; and
d) The Consultant's technical input.

Indicators presented in Section 2 cover the following broad categories as captured from records:

d) Environmental monitoring indicators as presented in PEAP;
e) Sector or Thematic performance indicators (land/soil, forestry, water, wetlands, rangeland/wildlife, climate/weather, fisheries);
f) Cross cutting issues (biodiversity, population, pollution, poverty, land use/cover); and
g) Macro-economic level indicators that measure impact of development policies and strategies.

2.1 Environment Monitoring Indicators in the National Environment Action Plan (1994)

The NEAP for Uganda (1994) identifies the following key environmental aspects to be monitored: deforestation, soil degradation, loss of biodiversity, wetland degradation, pollution and climate (Table 2). The NEAP document presents the baseline data and indicators to measure trends in these environmental aspects

Table 2: Environment monitoring indicators

Focal area	Indicators	Methodology/Tool	Lead
Forest and vegetation cover			
Natural forest and man-made forests	⇒ Canopy cover ⇒ Openness ⇒ Frequency and density of fire tolerant species ⇒ Humidity and soil moisture .+ ⇒ Change in regeneration of common species ⇒ Insect build up ⇒ Pathogenic outbreaks ⇒ Demand for forest products ⇒ Utilization /harvesting effectiveness	⇒ Remote sensing ⇒ Periodic inventories ⇒ Field inspections ⇒ Field reports from local administration, communities and forest department staff ⇒ Review of administration files	⇒ Forest Depart ⇒ Local Administration ⇒ Communities

Focal area	Indicators	Methodology/Tool	Lead
Savannah and rangeland ecosystems	⇒ Density /frequency/cover of annual species ⇒ Canopy of woody species ⇒ Frequency and density of fire resistant species ⇒ Decrease of over-all cover ⇒ Frequency/density of indicator species ⇒ Frequency and density of palatable species ⇒ Frequency and density of toxic species	⇒ Remote sensing ⇒ Periodic inventories ⇒ Field inspections ⇒ Field reports from local administration, communities and forest department staff ⇒ Review of administration files	⇒ Not indicated
Invasive & exotic Species	⇒ Extent of spread ⇒ Impact on natural ecosystems	⇒ Not indicated	⇒ Not indicated
Soil Degradation			
Physical degradation	⇒ Changes in depth of top soil ⇒ Bulk densities and temperatures ⇒ Infiltration rates and porosity ⇒ Signs of rill/gully/sheet erosion ⇒ Yield and productivity ⇒ Siltation in neigbouring waters ⇒ Evidence of surface crusts/soil slips/slumps and landslides	⇒ Not indicated	⇒ Not indicated
Chemical degradation	⇒ Changes in soil acidity and exchangeable manganese	⇒ Not indicated	⇒ Not indicated
Biological degradation	⇒ Changes in population of micro-organisms	⇒ Not indicated	⇒ Not indicated
Biomass productivity	⇒ Soil productivity ⇒ Nutrient deficiency symptoms	⇒ Not indicated	⇒ Not indicated
Other	⇒ Leaching levels ⇒ Soils/murram/clay/sand extraction	⇒ Not indicated	⇒ Not indicated
Wetlands			
Habitat	⇒ Water levels ⇒ Inflow/outflow rates ⇒ Sediment transport ⇒ PH levels ⇒ Transparency ⇒ Colour ⇒ Conductivity ⇒ Dissolved oxygen ⇒ Biochemical oxygen demand ⇒ Algae ⇒ Macrophytes ⇒ Invertebrates ⇒ Fish/bird and animal life	⇒ Not indicated	⇒ Not indicated
Pollution			
a) Water Pollution Sewerage discharge (Urban)	⇒ Pollutants ⇒ Volume and composition of discharge	⇒ Not indicated	⇒ Department of Occupational Health ⇒ NWSC
Individual discharge	⇒ Volume and composition of discharge	⇒ Not indicated	⇒ NWSC
Condition of lakes and rivers	⇒ Sediment load ⇒ Volume flow ⇒ Chemical pollutants	⇒ Not indicated	⇒ DWD, Fisheries dept
Domestic water supply	⇒ Water quality (chemical and biological examination)	⇒ Sampling	⇒ Public health, DWD, NBS, Government

Focal area	Indicators	Methodology/Tool	Lead
			Chemist
Residues in Aquatic Life	⇒ Chemical/residual content	⇒ Laboratory Tests	⇒ Fisheries Dept, FIRRI, LGS, NBS
b) Land Pollution	⇒ Size of affected land ⇒ Levels of hazardous materials ⇒ Level of hazardous material in plant/animal life at affected sites ⇒ Agro-vet pesticides residues	⇒ Laboratory tests ⇒ Field inspection ⇒ Inventory of hazardous chemicals	⇒ MAAIF, LGB, Government Chemist, Public Health
c) Air Pollution	⇒ Sites emissions ⇒ Extent of cover/influence ⇒ Trapped particles	⇒ Sampling ⇒ Laboratory tests	⇒ Urban Authorities, Public Health, Meteorology
Climate Change and general atmospheric condition			
Atmosphere	⇒ Temperature ⇒ Rainfall ⇒ Humidity ⇒ Soil temperature ⇒ Evaporation ⇒ Radiation ⇒ Sunshine	⇒ Field measurements ⇒ Observation and records	⇒ Meteorology ⇒ NEMA

(Source: NEAP (1994)

2.2 Sectoral or sub - Sectoral indicators:

2.2.1 Performance Indicators for Wetlands sub-sector

Strategic Objective	Indicator
1. Knowledge and understanding of ecological processes and socio-economic values of wetlands enhanced	1.1 All district wetlands inventories reassessed, revised and reissued at interval of at most five years 1.2 NWIS updated with inventory data 1.3 Findings, Conclusions and recommendations of research into identified topics available and disseminated
2. Public and stakeholder awareness of wetlands and their beneficial products and service increased	2.1 Increased public awareness of wetlands' functions and benefits, as measured by repeat KAP surveys 2.2 Increased levels of favourable media coverage of wetlands issues 2.3 Wetlands-related topics taught as part of the curriculum in primary and Secondary schools
3. Institutional framework for wetlands management further developed and maintained	3.1 Adequately staffed and equipped national lead agency established 3.2 Districts - level wetlands management structures established, staffed, and equipped in accordance with prescribed standards
4. Appropriate wetlands policy and legislation in place and enforced	4.1 Wetlands Act 4.2 Comprehensive wetlands–related by-laws at district level 4.3 Increased awareness of wetlands policy and legislation among key stakeholders 4.4 Reduced level of wetlands abuse
5. Planning and management of wetlands systems improved	5.1 District Wetlands Action Plans prepared and integrated into District Development Plans 5.2 Overall state of wetlands improved in relation to prescribed criteria and Targets
6. Vital wetlands protected and their characteristics and functions conserved	6.1 Vital critical wetlands gazetted 6.2 Wetlands Management Plans in place for gazetted wetlands 6.3 State of gazetted wetlands matches prescribed criteria and targets
7. Community-based regulation and administration of wetlands resource use	7.1 Wetlands Management plans in place for valuable critical wetlands

Strategic Objective	Indicator
established and strengthened	7.2 Wetlands resource use agreements negotiated and in operation 7.3 Wetlands resources used in accordance with published guidelines
8. Local and international financing mechanisms for wetlands management and conservation in Uganda mobilized	8.1 WSSP budget targets met for each source of income

Source: Wetlands Sector Strategic Plan (2001-2010)

2.2.2 Forestry sub-sector Indicators

PEAP Pillars	Main NFP Strategies	Indicators of impact on PEAP	Source of Information
I. Economic growth and transformation	▪ Removal of constraints (land, tree seed) ▪ Improvement of investment climate (transparency, secure tenure) ▪ Provision of information (markets, prices) ▪ Economic incentives (Forest Fund) ▪ Training (skills and advice)	▪ Value of commercial investment in forestry business ▪ Volumes and values of forest products traded (domestic and international ▪ Number of people and wage rates (by gender, socio-economic group, geographic location) in forestry-related employment ▪ Value and % contribution of forestry to GDP	▪ NFA/UIA ▪ URA/UBOS ▪ MoFPED ▪ UBOS
II. Good governance and security	▪ Community-based participatory planning ▪ Creation of NFA, NAADS and reforms in local government and community institutions ▪ Increasing access to information ▪ Pro-poor regulations and guidelines ▪ Civil society advocacy forum	▪ Local representation on PMA Forestry Committees ▪ Area of FRs under productive forest management by NFA and Local governments ▪ Number of effective CFM agreements in FRs ▪ Number and areas of community forest reserves ▪ Open access to public information on forestry	▪ NFA ▪ NFA/LGs ▪ NFA ▪ LGs ▪ MWLE
III. Ability of the poor to raise incomes	▪ Advisory and training support ▪ Small-business growth ▪ Security of land and tree tenure ▪ Appropriate technologies	***Each indicator measured by gender, socio-economic group, geographic location- to ensure targeting of interventions:*** ▪ % of household income derived from different forestry-related enterprises ▪ Number of NAADS contracts for forestry advisory services ▪ Number of people with tree growing permits in FRs ▪ Number of farmers using improved agro forestry technologies	▪ UBOS ▪ NAADS ▪ NFA ▪ UBOS
IV. Improving the quality of life of the poor	▪ Developing sustainable forest management ▪ Securing cultural values of forests ▪ Use of forests as safety nets to reduce vulnerability ▪ Biomass energy conservation	▪ % of population with secure access to forest resources for subsistence ▪ Improved tree cover, biodiversity and water flows from natural forests in FRs and privates ▪ Reduced time and distance to collect forest produce ▪ Number of households and businesses using improved biomass energy technologies	▪ NFA/UBOS ▪ UBOS ▪ UBOS
Reported case	**Status**	**Indicator**	**Who/Lead**
Decrease in forest cover	▪ Distance traveled to collect resources e.g. fire wood ▪ Deterioration of forest products ▪ Imbalance between demand & supply of forest products ▪ Alien species of trees, pests & diseases ▪ Illegal activities, encroachment & forest clearance	▪ Time spent collecting forest resources ▪ Soil protection and productivity ▪ Reduction in water shed protection ▪ Reduced/loss of biodiversity ▪ Siltation in dams ▪ Over-harvesting of forests ▪ Fuel deficit ▪ Productivity capacity	▪ MWLE ▪ NFA ▪ MAAIF ▪ UWA ▪ Civil Society ▪ Communities ▪ IFPRI ▪ MUIENR

PEAP Pillars	Main NFP Strategies	Indicators of impact on PEAP	Source of Information
	▪ Soil degradation/soil erosion ▪ Open access to forest resources ▪ Commercialization of forest products ▪ Many urban & peri-urban forest reserves under threat of de-gazettement for industrial development ▪ Rate of land clearance ▪ Quality of tropical Forests	▪ Loss of Biodiversity e.g. (primate and mammal) ▪ Increase in agricultural and grazing land ▪ Price of forest products e.g. fuel wood, timber ▪ Rate of population increase ▪ Decrease in water flows to streams ▪ Individual benefits from forest clearance viz –a-viz social losses	

Source: National Forest Plan (2002) and PMA (2002)

2.2.3 Water sub-sector

Theme	Pressure/reported problem/ issue of concern	State/what you witness or Indicator	Indicator	How are indicators measured/Monitored	Who (lead + Collaborators
Water & Water Resources	▪ Access to Safe water ▪ Proximity to safe water ▪ Water coverage	▪ Incidences of water borne diseases ▪ Distance traveled to safe water points ▪ Extreme dry conditions ▪ Increase of population in urban area ▪ Management and technical capacities of municipalities and other government agencies responsible for provision of safe water ▪ Unplanned rapid increase in the size of urban areas ▪ Available data on access that does not tally and sometimes contradicting	▪ Time spent collecting water ▪ House holds using unsafe water ▪ Unit cost per/m	▪ House hold survey ▪ Socio-economic Questionnaires ▪ DWD data ▪ Percentage budget of the Public expenditure on water projects ▪ No of households using safe water	▪ MoFPED ▪ UBOS ▪ DWD

Theme	Pressure/reported problem/ issue of concern	State/what you witness or Indicator	Indicator	How are indicators measured/Monitored	Who (lead + Collaborators
	▪ Water quality ▪ Industrial discharge of waste water into lake Victoria	▪ Water contaminated with *feacal coliforms* due to unplanned settlements of low income earners in areas of high water table ▪ Encroachment on water catchment areas ▪ Poor maintenance/lack of proper operation of water points ▪ Waste water standards for municipal and industrial waste is low due to lack of treatment facilities and poor maintenance of the available ones ▪ Low levels of awareness on waste water regulations ▪ On side of government lack of capacity to enforce waste water regulations ▪ No well defined nation wide strategy or framework to guide water quality monitoring and testing ▪ Resources allocated for water quality monitoring are insufficient ▪ Skills by personnel in local government to handle monitoring and testing are low ▪ Data on quality of industrial waste and general level of pollution is lacking ▪ Policies managing industrial waste disposal	▪ Conditions of environmental sanitation ▪ Usage of unsafe water ▪ Unsafe water ▪ Massive algal growth & unsafe water ▪ Presence of regulations and policies on disposal of waste water ▪ Many industries have not obtained waste water discharge licenses		▪ MWLE ▪ NWSC

(Source: Water Sector Plan - 2002)

2.2.4 Fisheries

Issue	Reported case	Status	Indicators	Measurements	Lead
Fisheries resources	▪ Number & size of fish harvested	▪ Type of nets used ▪ Increase in algae in lakes ▪ Poisoning of fish ▪ Lake pollution from factories ▪ Under-sized fish impounded	▪ Unit of catch per boat-day	▪ Cost per unit of effort (US$ per boat day)	▪ MAAIF

(Source: Fisheries Annual Report)

2.2.5 Wildlife and Rangelands

Issue	Reported case	Status	Indicators	Measurements	Lead
Rangelands/ Wildlife	▪ Poaching ▪ Insecurity in some areas e.g. Karamoja, Northern Uganda ▪ Bush Fires ▪ Human encroachment on wildlife protected areas	▪ Decrease in number of animals e.g. elephants, hippos, zebras etc. ▪ Extinction of some species e.g. rhino, roan antelope ▪ Some animal species are precarious ▪ Destruction of some plant & animal species ▪ Loss of other living organisms ▪ Human settlements in protected areas ▪ Blockage of migratory routes for animals ▪ Competition for resources within protected areas e.g. water, pastures ▪ Killing of carnivorous animals to protect livestock	▪ Number of large animals sighted per day ▪ Some animals not sighted at all	▪ Observation ▪ animals/ recorded	▪ UWA
	▪ Degazetting of parks	▪ Wild life animals getting trapped because animal movement is restricted ▪ Loss of habitat & food for wild animals e.g. *Acacia siberiana*	▪ Settlement patterns around parks ▪ Activities carried out around parks ▪ Evidence of land degradation ▪ Water scarcity ▪ Degeneration of pastures	▪ Km /miles of land freed	▪ UWA ▪ District Authorities ▪ Communities ▪ UWEC
	▪ Wildlife decline in National Parks, wildlife reserves and controlled hunting areas	▪ Over dependence of the local communities on protected area resources ▪ Problem animals and vermin that cause damage to crops and investments ▪ Weak capacity to effect the Wildlife User Rights programme, collaborative management arrangements and revenue sharing scheme with districts ▪ Infrastructure and management of tourism as a source of revenue	▪ Poaching ▪ Hunting ▪ Decline in the number of animals	▪ Surveys of animals ▪ Observations	▪ MTTI ▪ UWA

(Source: UWA Strategic Plan 2001-2005)

2.2.6. Land

Theme	Reported case/Pressure	Condition	Indicator	Measurements	Lead
Land or Soil	▪ Land degradation ▪ Mechanized farming & use of agro-chemicals ▪ Lack of awareness of dangers of soil degradation ▪ High population ▪ Absence of land use policy & guidelines ▪ Good soil management policy and regulations ▪ Insufficient institutional capacity and networking ▪ Systems of land tenure which have encouraged land fragmentation ▪ Global climate warming	▪ Soil erosion and soil compaction ▪ Flooding ▪ Over-utilization of land ▪ Pollution ▪ Salinity ▪ Inadequate numbers of extension workers ▪ Land fragmentation ▪ Lack of soil conservation practices ▪ Fragments of unproductive land ▪ Raise in ambient temperatures ▪ Release of the green house gases ▪ Importation of ozone depleting substances e.g. old domestic refrigerators, air conditioners, aerosols, solvents halogens	▪ Land productivity ▪ Silting of water bodies ▪ Leaching of Soil ▪ Soil conservation practices no longer maintained ▪ Soil exhaustion ▪ Decrease in soil productivity	▪ Regulations & policies should be present ▪ Expenditure on public awareness on soil use ▪ Per capita energy consumed/ metric tones	▪ Not indicated

(Source: LSSP 2003)

2. 3. Cross-cutting issues indicators

Indicators presented in this section cover components of Uganda's environment that appear in macro-economic as well as sectoral levels. These components include Biodiversity, Pollution, Population and Poverty.

2.3.1 Biodiversity

State/what you witness	Indicator	How are indicators measured/ Monitored
▪ High population exerted great pressure ▪ Confinement of certain threatened species of certain animals e.g. mountain gorilla, yellow-backed duiker, mountain reedbuck ▪ Habitat loss has led to increase in threatened and rare bird species ▪ Drastic reduction of animals species e.g., the topi ▪ Extinction of some animals' e.g. white & black rhinoceros, African wild dog etc. ▪ Numbers of reptiles have reduced seriously ▪ Increased predation of other fish e.g. Nile perch; Extinctions of some fish species ▪ Loss of endemic species ▪ Extensive exploitation of biodiversity for food, commercial and agriculture purposes ▪ Depletion of large areas of tree vegetation, wild animals and wild plants in major habitats (forests, wetlands, etc.) ▪ Some introduced species have turned into invasive species ▪ The introduced exotic animals are unable to withstand the tropical harsh conditions; such as diseases & pests ▪ Overexploitation or depletion levels unknown ▪ Agricultural modernization resulting into decrease in diversity and richness due to use of agro-chemicals, monoculture, introduction of exotics and improved varieties ▪ Increase in acreage of modified habitats (wetlands, forests, rangelands, water)	▪ Size of Forest Cover ▪ Illegal fishing ▪ Low fish stocks ▪ Most mature trees have been creamed out of forests ▪ Competing for resources between wildlife and people ▪ Settlement of people outside the delineated borders ▪ Loss of sub-soil leaving bare rocks ▪ Alien and invasive species ▪ Species diversity ▪ Soil biodiversity richness ▪ Exotics plants and hybrids	▪ Changes in habitat

2.3.2 Trade

State/What you witness	Indicator	How indicators(s) is measured or monitored
▪ Poaching ▪ Smuggling/trade in biodiversity	▪ Level of trade	▪ Confiscations

2.3.3 Pollution

State	Indicators	Means of measurement
▪ Mushrooming industries ▪ Promotion of monoculture ▪ Discharges in lakes and rivers has led to death of aquatic life such as fish and some other invertebrates ▪ Increase in the use of agro-chemicals & fertilizers	▪ Species diversity in affected habitats ▪ Metal concentration in water ▪ Vegetation changes ▪ Soil quality	▪ Observation ▪ Water quality ▪ Reduced numbers ▪ Extinction of some species

2.3.4 Population

State	Pressure	Condition	Indicator
▪ Increasing over-use of natural resources ▪ Expansion of agriculture on previously forested steep terrain ▪ Overgrazing & poor agricultural practices ▪ Environmental degradation ▪ Sales of small portions of land by poor people ▪ Evictions by government to make way for forest & game reserves ▪ Rural –urban migration ▪ Land fragmentation ▪ Increase in land disputes	▪ Population growth ▪ Poor land management & Land use planning ▪ Protected areas ▪ Unemployment ▪ Inadequate land use planning	▪ Degradation of the environment ▪ Clearing of woody vegetation ▪ Loss of agricultural productivity ▪ De-gazetting of urban & peri- urban forest reserves ▪ Increased demand for construction of houses, factories etc. ▪ Increased demand for fuel wood ▪ Water pollution ▪ Declining resource stock ▪ Poverty ▪ Small land plots	▪ Siltation in lakes & rivers ▪ Soil erosion ▪ Costs involved ▪ Time involved/distance traveled ▪ Acreage ▪ Plots

2.3.5 Poverty

State	Pressure	Condition
▪ Ability to supply water to different people by the Water User groups or Associations as they are not corporate bodies and cannot legally own land or water facilities	▪ Increase in population densities ▪ The interpretation of the new Land Act not clear to communities ▪ Capacity constraints at the urban, district and lower level needed to implement water sector activities	

2.4. Macro-economic Indicators

2.4.1 General

Theme	Pressure/reported problem/issue of concern	State/what you witness or Indicator	Strategy	Lead
Environment	▪ Declining soil fertility ▪ Deforestation	▪ Unclear land ownership ▪ Conversion of forests for other uses ▪ An increase in the distances walked to fetch fuel wood (0.06km in 1992to 0.73 km in 2000) ▪ Rising age of tree stock ▪ Decrease in soil fertility ▪ Rudimentary land use practices ▪ Decline in quality & quantity of resources		▪ MWLE, NEMA, NFA, UWA, MAAIF, Districts
Economic Growth	▪ Dependency on land and water resources ▪ Stress on ENR base ▪ Environnent dégradation	▪ Urbanization ▪ Industrialization		▪ MoFPED

Theme	Pressure/reported problem/issue of concern	State/what you witness or Indicator	Strategy	Lead
Land	▪ Size of land held by poor diminishing ▪ Land increasingly becoming concentrated in the hands of a few people ▪ Overcrowding of housing in urban areas		▪ Improving on land registry ▪ Systematic demarcation of Land ▪ Clarifying land rights	▪ MWLE
Fisheries	▪ Illegal and harmful fishing practices ▪ fish landing sites are poorly serviced ▪ Social problems	▪ A threatened sustainability of the resource base ▪ High rate of HIV infections ▪ Thefts of fish nets constrains investment		▪ Fisheries Dept ▪ FSSP
Wetlands	▪ Encroachment	▪ Rice cultivation ▪ Wetland conversion ▪ Waste disposal		▪ MWLE
Climate	▪ Deterioration of the infrastructure of the meteorology dept. ▪ Climate changes	▪ Unexpected weather developments ▪ Need for improvement in accuracy& spatial coverage of forecasts and advisories		▪ MWLE, Meteorology Departments

(Source PEAP 2001)

2.4.2 PEAP results and policy matrix

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
PILLAR ONE ECONOMIC MANAGEMENT							
1.0 Macroeconomic stability consistent with rapid private-sector led growth	▪ Low revenue-GDP ratio ▪ Rising non-poverty related spending	**1.1 Reduced fiscal deficit** ▪ Fiscal deficit (% of GDP) ▪ Revenues (% of GDP) ▪ Expenditures (% of GDP)	 11.3 12.6 23.9	 8 13.5 21.5	 6.5 15.8 22.5	▪ Strengthened revenue collections including through tax administration and new tax policy measures ▪ Rigorous public expenditure prioritization to fund poverty reducing programs and ensure value for money within constrained resource envelope.	▪ MoFPED
							▪ UBOS

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
	▪ Controlling inflation in spite of Liquidity pressures from large fiscal deficit	**1.2 Low inflation maintained** ▪ CPI inflation (excluding foodstuffs, average period)	2.4	<5.0	<5.0	▪ Monetary policy to continue to focus on delivering low and stable inflation ▪ Government to ease liquidity pressures by reducing deficit	
	▪ Lending to private sector low by international standards	**1.3 Increased private sector access to finance** • Private sector credit (% of GDP) Savings to GDP ratio	7.1 6.6	10.4 10.7	17.5 13.6	▪ Reduce government's fiscal deficit to reduce issuance of Treasury Bills, thus freeing up resources for private sector lending. ▪ Reform pension system	BoU, UBOS
	▪ External debt ratio high, despite recent debt relief	**1.4 Reduce external debt to sustainable levels** ▪ NPV of external debt (% of export earnings)	305%	238%	187%	▪ Rescue fiscal deficit and seek donors financing through grants rather than loan ▪ Implement programmes to boost export performance ▪ New loans only for productivity enhancement not consumption.	MoFPED
	▪ Maintain Balance of Payments stability	**1.5 International reserves at a minimum m of 5 months of imports**	6.2	5.0	5.0	▪ BoU to pursue prudent reserve management policy and maintain a free-floating exchange rate	BoU
PILLAR TWO, ENHANCING PRODUCTION, COMPETITIVENESS & INCOMES							
Increased and more efficient private sector production	**See below**	2.1 Increased private sector competitiveness ▪ Private Investment as % of GDP ▪ Total export as % of GDP	17% 12.1%	21% 16,1%		▪ Government maintains stable macro-economic policies minimize risks of investments ▪ Maintain liberal trade policy ▪ Minimize domestic and international barriers to trade ▪ Harmonize activities under Strategic Exports program with PMA & MTCS programs	UBOS
Increased and more efficient	▪ Limited agricultural growth	2.2.1 Increased				▪ Enact and implement provisions of National Agricultural Research System	MAAIF

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
agricultural production	▪ Limited access by farmers to technology ▪ Limited access by farmers to advisory services ▪ Limited operationalisation of crop, livestock and fisheries regulations and standards ▪ Inadequate and unimplemented soil management strategies ▪ Limited agricultural Information ▪ Inappropriate irrigation strategy and program ▪ Tariff and non-tariff barriers to Uganda's exports	agricultural Productions ▪ Growth rate of agriculture sector 2.2.2 Increased marketing of agriculture products ▪ Agriculture product marketed as % of total agriculture production ▪ Agriculture export as % of total value of agriculture output	3.8% 20%		70%	(NARS) ▪ Extend National Agriculture Advisory Services (NAADS) ▪ Strengthen meteorological services to support farmers' decision making ▪ Prepare livestock policy to help livestock sector ▪ Finalize and implement policy to strengthen agricultural education in schools ▪ Finalize and implement the water for production study ▪ Operationalise crop, livestock and fisheries regulations and standards ▪ Implement sole management strategies and programs ▪ Establish and implement agricultural data-base and information systems ▪ Develop and implement irrigation strategy ▪ Harmonize some of the current Strategic Export Programms (SEP) with the PMA and MTCS programs and activities, co-ordinate by the MTCS Secretariat. ▪ Focus SEP activities along the commodity value chain ▪ Encourage private sector leadership (through commodity associations and other stakeholders) in the identification and implementation of interventions.	
	▪ Limited access to ownership of land	2.2.3Increased access to land Titling ▪ % of households with land titles for agriculture production ▪ % of titled land	<1% <12%	1.5% 17%	3% 25%	Implement Land Sector Strategy, which include: ▪ Provision of more equitable land rights ▪ Revitalization of land registries to facilitate functioning of land market ▪ Operationalize Land Tribunal in order to strengthen conflict resolutions mechanisms	MWLE

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
						▪ Finalize National Land Use Policy ▪ Operationalize Land Fund for funding resettlement and Land adjustment	
Increased and sustainable fisheries production	▪ Extensive unrecorded and unregulated fishing and trading fishing and trading activities ▪ Poor infrastructure of Fish landing Sites ▪ Inadequate private investment in the fishery sector	2.3.1 Increased annual capture of fish ▪ Growth rate of fishery sector ▪ Value of fish exports (US$ million)	88			Implement the 2003 Fisheries Sector Strategic Plan (FSSP), which include: ▪ Establishment and capacity-building of community institutions to manage beaches and lakes ▪ Monitoring and control of illegal practices ▪ Development of quality guarantees for fish export ▪ Development of a central information system ▪ Stock enhancement for dams and small lakes ▪ Evaluation of options for fish technologies.	MAAIF
	▪ Limited participation of local people in fishery management	2.3.2 Improved sustainable management of fishery ▪ Number of functioning Beach Management Units	100	700		▪ Formation of legally empowered Community Beach Management Units	
Increased and Sustainable Forestry Production	▪ Degradation of forest land due to Unsustainable harvesting of forest products	2.4.1 Increased forest cover ▪ % of land under forest cover ▪ Distance traveled by villagers to firewood source.	24% 0.73%	27% 0.5km	30% <0.5%	Enhance implementation of the National Forest Plan, which include: ▪ Promote the establishment of community woodlots through DFS extension and advisory services to private and community members ▪ Develop National Tree Seed Centre and establish National Tree Fund	
Increased and	▪ MSMEs luck of	2.5.1 Increased growth of				▪ Continue to enhance linkages and	**MoFPED**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
more efficient production of non-agriculture goods and services	entre-preneurial skills and access to business development services ▪ Inadequate business regulatory environment	MSMEs ▪ Value of production of MSMEs (MSMEs as % of GDP) ▪ Time spent by MSMEs in obtaining				information flow between the government and MSMEs, particularly with regards to new trading regulations and nay changes to international standard requirements ▪ Work with local governments to streamline taxation systems of MSMEs in both rural and urban areas. ▪ Improve the investment climate by creating a conducive regulatory framework, enhancing the efficiency of the registration and trade related services. ▪ Provide entrepreneurial skills and business development services in partnership with the private sector.	
	▪ Limited infrastructure and security around tourism sites	2.5.2. Increased tourism Revenues ▪ Number of tourists, visiting Uganda				▪ Promote abroad of Uganda as a tourist destination ▪ Promote diversification of tourism products including rural tourism, cultural routes, etc., ▪ Training of staff in the tourism industry ▪ Provide business development services for tourism, in cooperation with the private sector.	**MTTI**
	▪ Undeveloped & under-exploited mining sector	2.5.3. Increased growth of mining industry ▪ Value of production of mining industry (by sub-sector)				▪ Develop and implement Mining Regulations to operationalize the new mining law ▪ Provide improved information to investors and artisanal miners ▪ Establish an environmental and social management framework for mining activities	**MEMD**
Strengthened infrastructure in support of increased production of goods and	▪ Under-developed road network ▪ Poor condition of the road network	2.6.1 Improved road network ▪ Roads in good condition (by	75%	100%		▪ Continue to invest in road rehabilitation and maintenance in accordance with the RSDP ▪ Enforce the axle load restrictions ▪ Develop a price index for construction	**MoWTT**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
services		category)				to enable the unit cost of construction to be monitored more accurately ▪ Establish the National Road Authority ▪ Provide financial resources through conditional grants for ducar-roads maintenance ▪ Give priority to those rural roads which could unlock areas with potentially high agricultural surplus and also enable the rural populace to access basic social services as well as product and input markets ▪ Increase private sector participation in management, investment and maintenance projects within the transport sector as well as strengthening the national construction industry.	
	▪ Limited energy supplies to rural areas	2.6.2 Improved rural household access to electricity ▪ % of rural households accessing electricity	3%		1%	▪ Implement the rural electrification strategy ▪ Facilitate private sector participation ▪ Promote technologies to reduce the use of fuel wood	**MEMD**
	▪ Undeveloped infrastructure and services	2.6.3 Increased railway haulage capacity ▪ Annual tones of freight carried by rail				▪ Finalize negotiations for the concessioning of the railway system in Uganda in a joint operation with Kenya ▪ Improve private sector incentives to invest in the rehabilitation of operational lines, in the re-opening of closed lines and in connecting the Uganda Railways network including the marine wagon service on Lake Victoria with that of the neighbouring countries.	**MoWTT**
	▪ Inefficient airport handling ▪ Undeveloped airport	2.6.4. Increased airport Utilization ▪ Annual cargo export rate				▪ Consider the best way of funding necessary infrastructure at Entebbe including a new run-way, taxi way, lighting system and apron ▪ Upgrade the navigational system at	**MoWTT**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
	infrastructure	▪ Annual passenger traffic rate				Entebbe Airport	
	▪ Limited water supply to supplement rainfall	2.6.5 Increased water for Production ▪ Cumulative storage capacity for WFP ▪ Increase in irrigation areas	131m³ 7,600ha	150m³ 8,500ha	187m³ 10,500ha	▪ Finalize water for production strategy ▪ Establish a coordination mechanism	MWLE/DWD
Strengthened environment and natural resource (ENR) management regime in support of sustainable production of good services	▪ Degraded forest resources ▪ Environmental impact assessment regulations not enforced	2.7.1 Improved forest resources management ▪ % of forest land covered by sustainable forest management plan				▪ Prepare a ENR strategy to ensure that economic activities consistent with sustainable use of natural resources and protection of the environment ▪ NEMA rationalized in interests of cost effectiveness ▪ Prepare National Environmental regulations, standards and guidelines.	MWLE, NEMA
	▪ Significant degradation of wetlands	Improved Wetland Management ▪ % of wetlands with sustainable management plan	7.5%	20%	35%	▪ Develop and disseminate guidelines for wise use of wetland resources ▪ Improve community skills and diversification of wetland products in order to add value to wetland products ▪ Enforce appropriate policies, laws, procedures and regulations to curtail degradation of wetland resources ▪ Assess wetland resources to determine resource availability and trends ▪ Support community initiates that promote wise use of wetlands	MWLE/WID/NEMA
PILLAR THREE. SECURITY, CONFLICT RESOLUTION AND DISASTER MANAGEMENT							
Protection of persons and their property through elimination of conflicts and	▪ Rebel insurgency in the North	3.1 Reduced insurgency conflict ▪ No civilian causalities from conflict (dis-aggregated by killed, wounded, abducted)				▪ Work to end the rebel insurgency ▪ Work with faith based groups and traditional leaders through a regular forum of national discussion on conflict-resolution ▪ Implementation of defense review	MOD, UHRC

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
cattle rustling, resettlement of IDPs, and strengthened disaster management						recommendations, which include removing ghost workers from defense pay.	
	▪ Cattle rustling and proliferation of small arms especially in Karamojong region	3.2 Reduced proliferation of illegal arms ▪ No. of cattle rustling incidents ▪ No. of small arms decommissioned				▪ Proceed disarmament programme in Karamoja, while ensuring that it does not lead to abuses of the rights of the Karamojong or expose them to attack from neighbouring tribes ▪ Continue to support the peace building initiatives involving the Karamojong, including recovery of stolen cattle ▪ Support livelihood development in pastoral areas.	**MoD, UHRC**
	▪ Over 1.6 million people are internally displaced with poor condition of life	3.3. Reduced number of people internally displace ▪ Number of people internally displace (million)	1.6	0		▪ Develop concrete plans to implement IDP policy, in cooperation with key stakeholders including donors and civil society ▪ Better monitoring and improvement of conditions in the IDP camps is a key priority, with a particular focus on health and sanitation.	
	▪ Uganda hosts over 200,000 refugees, which add pressure to the use of local resources.	3.4 Enhanced refugees self-reliance ▪ % of MTEF budgetary resources allocated to Refugee programs in targeted districts				▪ Integrate humanitarian need and existing resources into the national plans ▪ Implement the policy of self-reliance in cooperation with other partners ▪ Encourage donors supporting refugees to cooperate with local authorities in refugees service delivery	
4.1 Strengthened political Governance	▪ Absence of participation of multi parties in the political process during the previous elections	4.1.1 Strengthened system of representation ▪ % public satisfaction with the extent of democracy ▪ % of votes turnout in the national elections.	54%	90%		▪ The Government to ensure that the elections to be held in 2006 are completely free and fair, and that the emerging political system will have the following features: ▪ A credible system of representation, with well functioning political parties/organizations and interest associations;	

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
						▪ An electoral system that guarantees regular free and fair elections as well as universal suffrage ▪ A system of checks and balances based on separation of powers, with independent judicial and legislative branches; ▪ A vibrant civil society, able to monitor government and private business and to provide alternative forms of political participation; ▪ Free, strong and independent media, including alternative people's media; and ▪ Effective civilian control over the military and other security forces	
4.2 Improved human rights	▪ Illegal detentions and use of torture in some detention centers were identified by UHRC	4.2.1 Improved human rights ▪ No. of human rights abuses reported by UHRC				▪ Government will take action to prevent any of the violations reported by UHRC from continuing in particular, the JLO sector will treat the humane treatment of prisoners as a priority and the security sector will ensure that its agencies do not exceed their legal powers, for instance by illegal detention ▪ UHRC will continue coordinating a national civic education framework with other human rights organization for the next three years to increase awareness among Ugandans about their human rights and obligations ▪ In line with the UN Convention on Rights of the Child and the Children's Statue, UHRC will support and coordinate data collection on abuse, neglect and exploitation of children	**UHRC**
4.3. Strengthened legal and justice system	▪ Justice system is slow, inefficient ▪ Some laws are absolute, absent or discriminatory ▪ Access to JLOS	▪ Reduced crime ▪ Crime rate (incidents per 10,000 people) ▪ Increased Efficiency	30	20		▪ Continue with programme to strengthen other justice agencies including the increase of their services at local levels and skilled planning units ▪ Enact pending bills (criminal laws, local council courts, magistrates court, and	**MoJLO**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
	institutions is limited ▪ Inadequate capacity in JLOS institutions	in the Justice System: Average length of stay on remand: ▪ Increased quality of Justice: % of public confidence in legal and justice system	30%	70%	95%	domestic relations & sexual offences bills) ▪ Extend alternative dispute resolution mechanisms ▪ Develop and implement National Strategy for Gender and Juvenile Justice including oprationalisation of Family and Children's courts and rehabilitation of regional juvenile remand centres ▪ Strengthen and extend legal aid procedures through establishment of Legal Aid Fund and better enforcement of the Advocates Act provisions on pro bono services.	
	▪ Complex regulatory framework ▪ Inefficiency of commercial registers ▪ Limited access to efficient commercial dispute resolution institutions	4.3.4 Increased efficiency in the Commercial Justice ▪ Commercial court case backlog growth rate (per month) and satisfaction of business with commercial system	30 30	10 70	0 95	▪ Institutionalize chain link and case backlog initiatives ▪ Continue implementing commercial Justice Reform Programme ▪ Strengthen the Commercial Court, Inspector of Courts, Company and Land Registries ▪ Reform commercial laws and regulations (including strengthening of claims against insolvent debtors) and enact pending bills ▪ Simplify court procedures and strengthen alternative dispute resolution procedures	**MoJL**
4.4 Strengthened Public Sector Management and accountability	▪ Weak public financial management and accountability systems ▪ Complex Local governments transfer system	4.4.1 Public Financial Management Strengthened ▪ % of clean audit reports ▪ % of Ministries/Local Authorities preparing regular financial statements in				▪ Implementation of agreed CIFA action plan ▪ Timely preparation, submission an auditing of financial statement ▪ Roll out IFMS to all central and local government ▪ Roll out Fiscal Decentralisation Strategy to all local governments ▪ Finalization and Enactment of revised Audit Bill Compliance with international public sector auditing standards	**MoJLO**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
		accordance with financial regulations				▪ Establish Internal Audit function in all ministries ▪ New procurement laws and regulations (at central and local levels) fully operational, with procurement units in ministries/agencies and regulatory procurement body fully functional	
	▪ Uganda is still considered among the countries with wide spread corruption ▪ Lack of transparency in the procurement systems and accountings	4.4.2 Reduced Corruption ▪ % perceived incidence of corruption measured by the National Integrity Survey ▪ % satisfaction with Local Government services	23	12		▪ Implement National Anti-corruption Strategy ▪ IGG verifies annual asset declarations and takes appropriate action ▪ Government will act as appropriate on the findings of commissions of inquiry ▪ Complete updating and table legislation (Prevention of Corruption Act) Revised) Whistleblower Bill; Freedom of Access to Information Bill; Leadership Code Amendment Bill ▪ Implement central and local government procurement regulations and systems ▪ Promote best practice models of codes of conduct and client charters.	
	Inadequate quality and effectiveness of public services	4..4.3 Improved public sector performance % satisfaction with public service delivery				▪ Timely implementation of Public Service Reform Program ▪ Enhance public service pay with more rapid increase for technical, professional and managerial cadres and monitor impact on rates of turnover, qualifications of staff, absenteeism and performance ▪ Extend Results Oriented Management and link with budgetary process ▪ Increase cost effectiveness of public administration and political governance agencies ▪ Undertake a comprehensive pension reform program	

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
	Limited local government autonomy in fiscal allocation, due to inadequate revenue collection and limited unconditional transfers Poor participation in planning and budgeting at the local government level	4.4.4 Strengthened Local Government System for service delivery ▪ % of LG revenue as share of LG Budget ▪ % of transfers as a share of LG Budgets that is un-conditional	6	9	12	▪ Implement the Harmonized participatory planning guidelines ▪ Role out the fiscal decentralization strategy to all districts ▪ Restructure LG's to make them affordable, appropriate and responsiveness to the needs of the population ▪ Reform LG tax system	
PILLAR FIVE, HUMAN DEVELOPMENT							
5.1 Better Educated Ugandans	Not all primary school age are attending school	5.1.1. Increased primary enrolment ▪ Net primary enrolment rate (disaggregated by gender)	86.7%	90%	100%	▪ Provision of basic education in emergency situations e.g. psychosocial support, construction of temporary infrastructure in cases of disaster among others.	
		Male Female	87% 86.4%	90% 89%	100% 100%	▪ Provision of incentives for teachers in hard-to-reach areas to improve the performance of teachers and impact on learning outcomes ▪ Continued provision of classroom facilities ▪ Construction of schools/provision of resource rooms and ▪ Training and retraining of teachers in specific areas of SNE, SWT, guidance and counseling to take care of children with learning disabilities	**EMIS**
	Limited availability of instructional material Lack of appropriate facilities in schools	▪ Improved quality of Primary Education ▪ Primary completion rate (Disaggregated by gender)	56%	69%		▪ To improve the quality of education Government will take the following measures: ▪ Improvement of teacher quality through eh Primary Teacher Training Colleges	**EMIS**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
		Male Female	66% 44%	74% 64%		(PTCs) and through the Teacher Development and Management Systems (TDMS) ▪ Implementing the use of mother tongues in parallel to English in instruction in lower primary school ▪ Increasing the relevance of the curriculum by including aspects of education related to sustainable development ▪ Adjusting the assessment and examination system in order to match changing needs and realities of Ugandan society ▪ Recruitment and retention of high quality teachers by putting in place attractive terms and conditions of service for teachers ▪ Better support and supervision for teachers ▪ Ensure all pupils have access to better sanitary facilities.	
	Secondary school education is skewed toward the higher income groups and urban and semi-urban families	5.1.3 Increased post-Primary Education enrolment Post-Primary Gross enrolment % (Disaggregated by gender) Male Female	18% 20% 17%	27% 30% 25%		▪ In response to UPE bulge, increase access to secondary schools and BTVET institutions through: (i) constructing seed secondary schools in sub-counties without any; (ii) increasing grant aid funding for secondary schools; (iii) constructing community polytechnics in 56 sub-counties and vocational zing secondary schools; ▪ Improve equity of access to secondary schools and thereby effectiveness of system through providing bursaries to poor, bright students (increase to 8 students per LC3 by 06/07 from 2 in 02/03	**EMIS**
	▪ Limited quality of Post-primary Education	5.1.4 Improved quality of Post-Primary Education				▪ Improve effectiveness of secondary school/BTVET curriculum through developing vocational qualifications and	**EMIS**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
	curriculum	▪ Completion rate of senior 4 (Disaggregated by gender) Male Female	18% 20% 17%	25% 26% 23%		assessment framework, and a competency-based curriculum and strengthening the Uganda Examinations Board and Education Standards Agency ▪ Finalize and implement strategy for expanding sports curriculum	
	▪ Tertiary student enrolment rate is among the lowest rate among the sub-Saharan Africa (2%)	5.1.5 Improved tertiary enrolment ▪ Tertiary Gross enrolment rate	4%	5.5%		▪ Improve curriculum to emphasis science and technology and use the credit system ▪ Introduction of mechanisms to improve access to the poor students (i.e. loan system, bursary schemes) ▪ Provide for increased physical access to tertiary educational institutions through expanded and rehabilitated facilities ▪ Establishment of a Labour market Information System and Network linked to UBOS to facilitate planning of curriculum in secondary and tertiary institutions.	**EMIS**
5.2 Healthier Ugandans		5.2.0 Improved Key Strategic Health objectives ▪ Infant mortality rate ▪ Maternal mortality rate ▪ % population undernourished ▪ HIV/AID Prevalence rate	88 (x 1,000) 505 (x 100,000) 6.2%	68 (1,000) 354 (x 100,000) 5%		▪ Promote better health care seeking behaviour. ▪ Improve and expand delivery of quality health care services. ▪ Promote multi-sectoral response to health targeting nutrition, population and reproductive health , sanitation and community participation	**EMIS**
	▪ Low access and utilization of health care services in remote and rural areas	5.2.1 Improved utilization of health care ▪ OPD utilization	0.79%	1.0%		▪ Increase access and utilization of health care through rehabilitating, staffing and equipping Health Centres and ensuring regular supplies of medical supplies	**EMIS**
							EMIS

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
	▪ Shortage of skilled health care staff	5.2.2 Improved quality of health care ▪ % of facilities without any stock outs of chloroquine, Fansidar, measles vaccine, Depo Prevera, ORS and contrimoxazole ▪ % of approved filled posts filled by formally trained health workers	 40% 68%	 60% 90%		▪ Improve the qualification levels of Health Care staff through rehabilitation and recruitment of trained staff. ▪ Improve availability of essential drugs ▪ Improve the qualification levels of Health Care staff through rehabilitation and recruitment of trained staff	
	▪ Poor maternal health	5.2.3 Improved access to maternity services ▪ % of deliveries in health care centres	 24.4%	 50%		▪ Ensure HCIVs are functional ▪ Maintain adequate supplies of reproductive health care commodities and drugs ▪ Staff and equip maternity units	**EMIS**
	▪ High fertility rate	5.2.4 Improved family planning ▪ % met demand for family planning services				▪ Stronger promotion of family planning in health care centres in order both to strengthen health and to reduce the current burdensomely high population growth rate	**EMIS**
	Sustain immunization service	5.2.5 Improve children access to immunization care ▪ % of children immunized (DPT 3)	 83%	 90%		▪ Ensure adequate supplies for vaccines ▪ Mobilize communities	**EMIS**
5.3 Improved Water and Sanitation Systems	▪ Limited access to safe water in rural areas	Improved access to safe water supply and sanitation % population using safe water (disaggregated by rural and urban)	55% 65% 56% 65%			▪ Continued implementation of plans to install/upgrade water and sanitation facilities in rural and urban areas. ▪ Implement cost-effectiveness improving measures: DWD reorganization and strengthening, private sector partnership	**EMIS**

Strategic Objectives	Challenges/ Constraints	PEAP Outcomes/ indicators	Baseline 2002/3	Target 2007/8	Target 2013/14	PEAP Policy Actions	Data Source
		% Population using sanitation facilities		90% 100% 80% 100%		▪ Review water sector policy, particularly subsidy policy ▪ Implement plan for dam construction in areas of variable/limited rainfall for multiple users.	
	▪ Inadequate maintenance water facilities	5.3.2 Improved water facilities maintenance • % of rural W & S facilities functional	70%	85%	90%	▪ Ensure sustainability through operations and maintenance strategies, including through payment of user fees (by strengthening Water Use Committees) ▪ Review water sector policy, particularly tariffs and private sector involvement	**MoGLD**

2.4.3 Sectoral level – macro-economic performance indicators

2.4.3.1 Land – Macro-economic

Source: LSSP 2004

	Issues	Indicator
1	LSSP Vision: Uganda land resources used productively and sustainable for security of livelihoods and poverty reduction	
1.1	PEAP Goal I: Rapid economic growth: Land sector contribution through efficient markets and increased rate of land utilization	• Proportion (%) of agric land utilized • Number of land transactions
1.2	PEAP Goal 2:	• % households with land disputes in previous 12 months • % of public experiencing corruption in land sector services
1.3	PEAP Goal 3	• % of land suitable/unsuitable for agric utilized • Output/hectare is systematic demarcation areas • Output/hectare in agric production in non=demarcated areas • Soil erosion/degradation in demarcation systematic areas • Soil erosion/degradation in demarcated areas
1.4	PEAP Goal 4	• % registered land or recorded land owned by women (either independently or joint) • % urban areas covered by detailed physical plan

2.4.3.2 Land SSP – Sectoral Issues

Source: LSSP 2004

LSSP MISSION: To create an enabling environment for the participation of all stakeholders in effective use and management of Uganda's land resources		
2.1	Knowledge of land sector issues	• % of public able to name and describe accurately: a) 4tenure types) Freehold, Mailo, Customary, Leasehold); b) 3 institutions (District Land Boards, District Land office, MWLE)
2.2	Acceptance/consensus on land sector policy and laws	• Perception of land sector policy and laws
2.3	Security of land access and ownership	• % land holdings with a land Title, Certificate of Customary Ownership or Certificate of Occupancy
2.4	Availability and quality of land services	• Number of land sector institutions operating • % users satisfied with land sector services
2.5	Land distribution	• Total number of land holdings • Average size of land holding • Median size of land holding
2.6	Incidence of landlessness with no alternative livelihood options	• % of poor households with no access to land
3	**STRATEGIC OBJECTIVES**	
3.1	**STRATEGIC OBJECTIVE 1: To create an inclusive and pro-poor policy and legal framework for the land sector**	
3.1.1	Whether policy and laws reflect poor people's views; whether poor people have been consulted	• Phase 1: Land policy and land use policy developed in participatory manner • Phase 2: Number of districts developed participatory land policies and land use plans
3.1.2	Whether policy and laws reflect needs of women and vulnerable groups	• Absence of gender or other discriminatory in policy and laws (maintain as qualitative indicator?)
3.1.3	Whether policy and laws reflect have been communicated effectively to stakeholders esp. the poor	• % people/women/leaders/poor aware of, and in agreement with, basic policy principles

3.2	**STRATEGIC OBJECTIVE 2: To put land resources to sustainable productive use**	
3.2.1	Prevalence of soil conservation/land husbandry	• % household using soil conservation technologies
3.2.2	Coverage of various types of land use	• % land forest/wetland/cultivated/urban settlements/national park
3.2.3	Compliance with environmental laws	• Compliance trends
3.2.4	How many people supported by the land	• Population/hectare cultivated land (or land in agricultural use i.e.,: including fallow)
3.2.5	Knowledge of sustainable land use practices	• % hh aware of good and harmful environment practices
3.3	**STRATEGIC OBJECTIVE 3: To improve livelihoods of poor people through a more equitable distribution of land access and ownership and greater tenure security for vulnerable groups**	
3.3.1	Extent of issue of certificates and who included	• Number land certificates issued overall; • % land certificates including names of women/children/disabled/community groups/occupants • % land certificates issued to women alone
3.3.2	Average land used per household	• Average size of land used per hh overall/per poor hh/per female headed hh ** this refers to land access not ownership and is different from average size of land holding
3.3.3	Cost of dispute resolution	• Average cost of resolving disputes at LC2&3/District Land Tribunal/mediator or traditional
3.3.4	Incidence land disputes	• Number of land disputes overall/involving women and vulnerable groups (per annum)
3.3.5	Resolution of land disputes	• % reported cases resolved at LC2/LC3/District Land Tribunal
3.3.6	Fairness of judgments	• % cases appealed to higher courts
3.3.7	Use of land for credit and loss of land as collateral	• Number of defaults (loss of land)/number of Titles and certificate used as collateral
3.3.8	Effectiveness of compensation for resettlement	• % compensation claims outstanding for 6 months/1 year • Average waiting time for payment of compensation
3.3.9	Availability of land rights information	• Number of trained providers of land rights information
3.4	**STRATEGIC OBJECTIVE 4:To increase availability, accessibility, affordability and use of land information for planning and implementing development programmes**	
3.4.1	Number land information requests	• Number land information requests at sub-county/district/centre/form private sector
3.4.2	Sale of land information and revenue generated	• $ revenue from sale of LI
3.4.3	Use of LIS information in national statistics	• Types of national surveys and statistics making use of LI (qualitative indicator
3.4.4	Accuracy of land information and updating	• % titles accurate and updated % records (demarcation) accurate and updated
3.4.5	User-friendliness, relevance and client-orientation of LIS	• % clients satisfied with LIS • Reasons for use of LIS (qualitative)
3.4.6	Use of LIS information in development planning	• Types of use of LI in district, sub county and national development plans (qualitative)
3.5	**STRATEGIC OBJECTIVE 5: To have transparent, accountable and easily accessible institutions and systems for decentralized delivery of land services**	
3.5.1	Number and quality of land sector human resource	• % LS posts filled with qualified personnel
3.5.2	Allocation of resources to land sector by districts	• % districts allocating resources to land sector in line with their development plans
3.5.3	District work plans for the sector	• % districts with approved land sector development plans
3.5.4	Performance of land sector staff	• Overall performance of land sector staff (index)
3.5.5	Community perceptions of land sector institutions	• Number of complaints or disputes involving land sector institutions/$ spent in land sector services

3.5.6	Demand for land sector services	• Number of applications for certificates/survey/valuation/registration
3.5.7	Client satisfaction	• % people satisfied with land sector services
3.6	**STRATEGIC OBJECTIVE 6:To mobilize and utilize public and private sector resources efficiently and effectively for the development of the land sector**	
3.6.1	Availability and regulation of private sector human resources	• Number of private surveyors and valuers registered and licensed
3.6.2	Land sector revenue	• Actual land sector revenue
3.6.3	Self reliance/sustainability of land sector services esp. those with privatization potential	• Land sector revenue/Land sector budget
3.6.4	Decentralization and land sector expenditure	• % land sector funds spent at sub-county/district/centre
3.6.5	Efficiency of use of land sector	• $ spent per employee in land sector

2.4.4 Environment and Natural Resources performance indicators

Source: PQAD

Sub-sector	Key performance indicators to be reported in the Annual Performance Report	Description	Calculation
FORESTRY			
1.	% of Forested Local Forest Reserve Area	The extent to which LFR are covered by trees	Forested area/total area of LFR X100
2.	% of total district land area covered by trees	The extent to which the entire district land area is covered by trees	Area covered by trees/Total district land area X 100
3.	Acreage planted during the year in LFR	Annual increment in planting in LFRs	Add total planting in various LFRs
4.	Acreage planted by private sector on their land during the year	Annual increment in plantation by private sector	Add total planting by private sector & individuals
5.	Average distance to firewood sources for households	The distance traveled by households to collect firewood	Over-all distance traveled by all/No. of household
6.	% LFR boundaries surveyed and demarcated	Establishment of the correct boundaries of LFRs	Survey & demarcated mileage/Total mileage X 100
7.	% of LFR with management plans	LFRs are managed in accordance with approved management plans by LGs	No. of LFR with management plans/Total No of LFRs X 100
WETLAND			
1.	No of wetlands surveyed and demarcated	Establish the total area of wetlands in the district	Add the various categories of wetlands
2.	% of wetlands with high village level action plans (WAPs)	Wise use of wetlands to be agreed with the LG	No with WAPs/Total No. X 100
3.	% of wetlands with management committees	Community involvement in wetlands management	No with WMCs/Total No X 100
4.	% of women in the wetland committees	Gender considerations	No of women/total no on members of all wetlands X 100
5.	% level of encroachment in wetlands	Conflict free wetlands	Acreage encroached/total acreage X 100

LAND MANAGEMENT AND ADMINISTRATION			
1.	% of registered/titled land in the district	Land with certificate title	Registered land/total land area X 100
2.	No of meetings by the DLB	DLBs are expected to be functioning	N of times the DLBs have met
3.	No of cases/disputes received in LG	Disputes are resolved at lower levels & some referred to districts	Add the No of cases
4.	% of disputes resolved	Disputes resolved	Resolved/Total X 100
5.	No of new applicants for land registration	Measures the levels of sensitization on land registration	Add the total number of applicants in the year
6.	% of land covered by urban centres	Level of urbanization in the district	Area under urban or trading centre/total area X 100
7.	% of urban land with approved structure plans	Structures plans approved by the relevant authorities	Land are under approved plans/total urban area X 100
ENVIRONMENTAL MANAGEMENT			
1.	% establishment in the ENR sector	All posts in the sector	No. of staff in place/Total posts in structure X100
2.	District Environment Action plan developed	Plans in place or not?	Availability of plans
3.	No of EIAs conducted in the district	EIA approved by the relevant authorities	Add all approved EIAs
4.	No of polluting industries/institutions identified in the districts	Industries categorized according to the pollution levels	Add the totals for the whole district
5.	Frequency of visits to polluting industries	Visits are for inspection purposes	No of visits

2.4.5 Poverty – Environment indicators

(SOURCE: Poverty Relevant Environmental Indicators (Status report for Uganda-2003))

Issue	Driving Force	State	Response
LAND (changes in land conditions)	• Population density in fragile/mountainous areas (Population density in fragile wetland areas (↔ or ↓) ▪ Number of house holds cultivating fragile river banks and lake shores (↓)	• % of population cultivating I ha or less of land (↔ or ↓, or tend to desirable?) ▪ area of degraded wetland as % of total wetland area (note: area of wetlands in PMS)	• expenditure on public awareness on soil and water conservation as a % of the budget increase but measure of effectiveness?) ▪ % of hh applying soil conservation
Water	• Annual withdrawals of safe ground and surface water as a % of total available water (↔ or ↓) • Domestic consumption of water per capita (→ 20 lt per day)	• Average time and distance spent to collect safe drinking water (↓) • Concentration of *faecal coliform* in fresh water (↓)	• Public expenditure on water projects as a % of the budget(↔↑ - again no measure of effectiveness) • Waste treatment coverage (↑)
Fisheries	• Size of fishing effort by water body (number of fishermen, boats, nets) (↓ or tend to maximum?) • Catch per unit of effort (↔↑) • Area of water hyacinth mat	• Average fish size in the catch (↑) • Consumer price index (CPI) for fish and fish products	• Number of community based fisheries management institutions (↑) • Investment in aquaculture

	• Total hh consumption of fish (within the country)		
Forests	• Total harvest of wood or non-wood forest products as a % of annual increment (↓ or tending to estimated) • Share of cooking fuel based on wood biomass (charcoal and firewood)	• Amount of natural and plantation forest area tracked overtime (↔↑) • Average distance traveled to collect firewood for domestic consumption (kms)	• % of hh with energy efficient stoves (↑) • Forest area under joint forest management (CFM) • % of the budget dedicated to research and development on forestry
Environmental health and sanitation	• Rate of growth of slum (informal settlements) population (↓)	• % of population with adequate excreta disposal facilities (↑) • Incidence of water borne diseases (↓) • Concentration of *faecal coliforms* in drinking water (↓) • Incidences of respiratory diseases (↑)	• % of national expenditure dedicated to environmental health and sanitation
Natural disasters	• Number of refugees /IDP per ha of land allocated to camps (↓)	• % of the population residing in disaster prone areas (earth quakes, floods, landslides)	• % of planned public expenditure set aside for disaster relief • Expenditure on research, public awareness and forecasting of natural disasters
Human settlements	• Rate of growth of slums (informal settlements) (area and population) (↓)	• Floor area per person (↑) • hh members per room	• Number of illegal housing development per monitoring unit (↓)
Environmental quality	• Per capita generation of industrial, municipal and domestic solid waste (↓).	• Biological oxygen Demand in water bodies (↓) • Concentration of *faecal coliforms* in fresh water bodies (↓) • Concentration of effluent and agrochemical discharged into water and soil • Ambient concentrations of pollutants in urban areas/ work places (ppb, mg/m³) (↓) for suspended solids and particulate matter • Waste collected and disposed as a % of total waste generated	• Environmental protection expenditure as a % of the budget • Waste water treatment coverage (↑) • Expenditure on solid waste management (US$ per unit of waste treated (↓) • % of people served by private garbage collectors

3. COMPARISON BETWEEN DEVELOPMENT INDICATORS AND MILLENNIUM DEVELOPMENT GOALS IN UGANDA.

Millennium Development Goals indicators are parameters used to measure attainment of agreed MDG targets by 2015. They are included in this report for purposes of providing a basis for comparing Uganda's sustainable development goals and performance indicators so as to ascertain the country's progress towards meeting the MDGs as required. It has been established that Uganda's development goals and targets are consistent with MDGs, although targets and indicators differ to a certain extent.

GOAL	MDG INDICATOR	UGANDA PEAP INDICATOR	OBSERVATION
Goal 1. Eradicate Extreme Poverty and Hunger			
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	▪ Proportion of population below $1 (1993 PPP) per day ▪ Poverty gap ratio (incidence X depth of poverty) ▪ Share of poorest quintile in national consumption	% of population below poverty line reduced from 38% in 2003 to 28% by 2013/14	Focus on global poverty measure
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from Hunger	▪ Prevalence of underweight children under fiver years of age ▪ Proportion of population below minimum level of dietary energy consumption	% Population of undernourished X100,000	Emphasize food security, food diversity, agricultural productivity
Goal 2. Achieve universal primary education			
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	▪ Net enrolment ratio in primary education ▪ Proportion of pupils staring grade I who reach grade 5 ▪ Literacy rate of 15-24 years-olds	100% by 2013/14	Target higher Focus on school enrolment
Goal 3. Promote gender equality and empower women			
Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015	▪ Ratio of girls to boys in primary, secondary and tertiary education ▪ Ratio of literate women to men, 15-24 years old ▪ Share of women in wage employment in the non-agricultural sector ▪ Proportion of seats held by women in national parliament	64% females 74% males By 2007/8	Focus on school education
Goal 4: Reduce Child Mortality			
Target 5: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate	▪ Under-five mortality rate ▪ Infant mortality rate ▪ Proportion of 1 year-old children immunized against measles	Reduce infant mortality from 88% to 68%	Does not include immunizations
Goal 5: Improve maternal health			
Target 6: Reduce by three quarters, between 1990 and 2015, the maternity mortality ration	▪ Maternal mortality ratio ▪ Proportion of birth attended by skilled health personnel	50% by 2008	Does not provide for training
Goal 6: Combat HIV/AIDS, malaria and other diseases			
Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS	▪ HIV prevalence among pregnant women aged between 15-24 years	5% prevalent rate by 2013/14	Focus on infection rates only

GOAL	MDG INDICATOR	UGANDA PEAP INDICATOR	OBSERVATION
	▪ Condom us rate of the contraceptive prevalence rate ▪ Condom use at last high-risk sex ▪ Percentage of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS ▪ Contraceptive prevalence rate ▪ Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years		
Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	▪ Prevalence and death rates associated with malaria ▪ Proportion of population in malaria risk areas using effective malaria prevention and treatment measures ▪ Prevalence and death rates associated with tuberculosis ▪ Proportion of tuberculosis cases detected and cured under DOTS (internationally recommended TB control strategy)	60% of health facilities with adequate facilities by 2008	Emphasizes infrastructure
Goal 7: Ensure environmental sustainability			
Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environment resources	• Proportion of land area covered by forest • Ratio of area protected to maintain biological diversity to surface area • Energy use (kg oil equivalent) per $1,000 GDP • Carbon dioxide emissions per capita (UNFCCC, UNSD) and consumption of ozone depleting CFCs (ODP tons) • Proportion of population using solid fuels	% of degraded forest area % of wetland drained 35% of wetlands with management plans	Focus on wetlands and Forests
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation	• Proportion of population with sustainable access to an improved water source, urban and rural • Proportion of population with access to improved sanitation, urban and rural	% of population using safe water % of sanitation – target 90% by 2007/8	
Target 11: by 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	• Proportion of households with access to secure tenure	No indicator	N/A
Goal 8: Develop a global partnership for development			
Target 12: Target 13: Target 14 Target 15:	**Official development assistance:** • Net ODA, total and to LDCs, as percentage of OECD/Development assistance Committee (DAC) donors' gross national income • Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation) • Proportion of bilateral ODA/DAC donors united • ODA received in landlocked developing countries as proportion of their GNIs • ODA received in small island developing states as proportion to their GNIs	N/A	N/A

GOAL	MDG INDICATOR	UGANDA PEAP INDICATOR	OBSERVATION
	Market access: ▪ Proportion of total developed country imports (by value and excluding arms) from developing countries and from LDCs, admitted free of duty ▪ Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries ▪ Agricultural support estimate for OECD countries as percentage of their GDP ▪ Proportion of ODA provided to help build trade capacity **Debt sustainability:** ▪ Total number of countries that have reached their Heavily Indebted Poor Countries Initiative (HIPC) decision points and numbers that have reached HIPC ▪ Debt relief committed under HIPC initiative ▪ Debt service as a percentage of exports of goods and services		
Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth	▪ Unemployment rate of young people aged 15-24 years, each sex and total	N/A	N/A
Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries	▪ Proportion of population with access to affordable essential drugs on a sustainable basis	N/A	N/A
Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communication	▪ Telephone lines and cellular subscribes per 100 population ▪ Personal computers and in use per 100 population and internet users per 100 population	N/A	N/A

4. OUTCOME OF THE CONSULTATIONS – NATIONAL LEVEL

4.1 Methodology

The Study involved Consultations at national and district levels (Annex I: List of institutions /people consulted; Annex II (a) and (b): Questionnaire applied) and literature review (Annex III: Documents reviewed)

4.2 Outcomes

The outcome of consultations and literature reviews reveal the following:

a) Uganda has in place indicators for measuring the state of the environment (Section 2).These indicators fall into three categories. namely: Sectoral, Macro-economic and Cross-cutting.

b) Several institutions monitor the environment or impacts of their management actions on it. They apply their own monitoring frameworks and tools suited to meet their performance-related reporting and obligations.

c) Varying Definitions: Environmental monitoring indicators in Uganda are variously defined, ranging from conflicting definitions to lack of understanding what these are. This is a very big challenge as it undermines the potential for collective reporting on environmental trends and quality in the country by the various actors.

d) Indicators documented from records and consultations present a mixture of measurement parameters. Some are quantitative indicators (e.g., Volume and quality of water discharge from industries to water bodies), qualitative indicators (e.g., distance taken to collect water), descriptive indicators (e.g., water levels during dry seasons), performance indicators (e.g., Number of districts having District Environment Action Plans), impact indicators (e.g., condition of natural forest estates). While these indicators show that measurements of the environment are undertaken by different sectors and at different levels, it remains difficult to pool the information collected by these institutions together in order to capture the over-all environmental trends and quality. This is largely attributed to the fact that the parameters used , the analysis applied and the regularity of measurements, etc are not uniform hence the information synthesized out of these measurements is not harmonious.

e) Indicators for cross cutting issues (poverty, pollution, quality of life, biodiversity, etc.) are documented under various sectors or themes. These indicators are not presented as cross cutting but rather are tied to each sub sector or theme where they are presented. This poses a challenge of collecting common data from various sub sectors or themes so as to assess the overall trends and impacts of the environmental condition on these cross-cutting issues and vice versa.

f) The majority of the indicators are not measurable and hence not applied at all. e.g., degradation of environment. This is due to the fact that they do not have measurable parameters (refer to NEAP indicators of 1994).

g) A significant number of the intended indicators and monitoring plans are not specific on who bears the responsibility for their measurement. Therefore, they are neglected or measured on an ad hoc basis, thus rendering information collected less useful for the purpose of reporting on the environment.

h) There is vague provision for compliance by different institutions to measurement of environmental trends and for reporting on environmental issues. Legal and policy provisions are ineffective as they have failed to compel compliance. This is worsened by the fact that majority of the indicators are performance indicators and hence reporting is done to fulfill administrative/mandate requirements and not necessarily to report on impacts or effects on management action/commission or omission on the environment.

i) There is little evidence that environmental reporting is based on pre-determined indicators. Reporting follows the conventional public service reporting requirements and not objectively identified indicators.

j) The majority of the indicators are performance indicators intended to measure performance of sector/sub sector work plans, strategies and investment plans (e.g., WSSP. NFP, etc.).

k) Indicators on the relationship between the environment and social economic factors are weak and generally insufficient.

l) The link between indicators applied to Central government level and Districts is very weak save for only performance indicators for those projects and programmes implemented by districts and supervised by the centre. This means that the contribution by districts to overall national monitoring and reporting on the environment is undermined.

m) The majority of the indicators are reactive. i.e. to monitor and measure effects when they have occurred. There is need for indicators that are proactive i.e. those that monitor trends and detect likely problems and provide a basis for corrective action.

n) Key indicators are presented in official documents and hence rendered inaccessible to the wider audience. This denies the public and other institutions an opportunity to volunteer support, information or participate in the application of such indicators.

Note: Specific responses from selected institutions are presented in Annex IV:

PART 2:

INDICATORS FOR MONITORING ENVIRONMENTAL QUALITY AND TRENDS IN UGANDA

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
(March 2006)

5. THE PROCESS OF DEVELOPING UGANDA'S ENVIRONMENTAL MONITORING INDICATORS

The process of developing environmental monitoring indicators for Uganda had six distinct steps, namely:

g) Review of existing literature within NEMA, sectoral institutions, academic institutions, the United Nations system, relevant private sector institutions and Civil Society Organizations.
h) Consultations with national level lead institutions and sectors responsible for the management of various components of the environment.
i) Consultations with selected District institutions responsible for the management of various components of the environment.
j) Consultations with relevant academic institutions.
k) Discussions with key scientists and other individuals whose technical input was aimed at strengthening the technical presentation of indicators.
l) Continuous exchange of ideas and information with NEMA staff.

6. DEVELOPING ENVIRONMENTAL INDICATORS

The following issues were taken into consideration while developing environmental monitoring indicators for Uganda presented in section 7 below)

6.1 Data and credibility

The following were considered here:

a) Baseline data and/ or information needs for decision making on key policy issues or interventions. This means that these indicators shall be used to convey or express information in ways that are directly relevant to the decision making process.

b) Credibility criteria for selection of most the appropriate indicators. In this respect, the following criteria have been used:

i. **Data reliability:** scientific soundness, availability for use, adequacy, affordability in terms of cost to collect and analyze such data.
ii. **Relevance: Whether relevant to the environmental condition under investigation.**
iii. **Fair representativeness** – geographical or thematic coverage
iv. **Usage of data:** relevance to task at hand, understandable by target audience, comparable to a historical reference, lends itself to scenarios development, useful in trend analysis.

6.2 Pressures-State-Impact-Response Analysis

Indicators presented have been analyzed by applying the Pressures-State-Impact-Response Analytical Framework (P-S-I-R). This framework has largely been adopted for National Integrated Environmental Reporting in most countries in

Africa, and for the United Nations Environment Programme - led African Environment Outlook (AEO). In addition, a National Integrated Environment Report (otherwise referred to as a State of the Environment Report) is one of the major products through which the results of environmental monitoring are reported. This framework has enabled tracing the interaction between the environment and society. This interaction, sometimes categorized as **Drivers** is responsible for the state of the environment. At national level, such drivers taken into account include: policy environment (or regime), socio- economics and population dynamics.

In this analytical framework**, Pressures** have been captured as activities or processes that have acted on our environment and brought about some change. The process has looked at these pressures either as root causes or driving forces, such as population growth, industrial expansion and emission of pollutants, consumption patterns, and poverty. These pressures have been viewed from a policy perspective as the starting point for tackling environmental issues, and from an indicator point of view, where they seem to be readily available and are derived from socio-economic databases. The Pressures have been grouped under the following categories:

i. **Societal developments:** such as changes in demographics, introduction of new technologies, civil unrest, refugees, rural-urban migration,
ii. **Policies with unforeseen, unintended and negative consequences for the environment:** for example Agriculture/PMA, PEAP, Trade policies, Macro-economic policies, Land policy, Decentralization policy;
iii. **Natural processes:** such as climate change/weather variability, drought, land slides, natural disasters.
iv. **Environmental Policies**: the ones that exert positive pressure on environmental change.

The **State** has been captured as the condition of the environment resulting from the pressures; for example, level of air pollution, land degradation, deforestation, wetland drainage, etc. Environmental ***trends*** are changes in the state of the environment over time. Understanding the state helps analyze whether the environment is improving or not, and how fast the changes are happening.

The **Impact** has been applied to refer to the effect of the state of the environment or condition of the environmental issue under consideration on human health and well-being, the economy, the ecosystems as well as other environmental sectors. For example, increase in land degradation results into food insecurity, or increased food imports or increased fertilizer use or malnutrition or clearance of more land for agriculture, silting of water bodies or a combination of these.

Response has been taken to imply those actions taken collectively or individually to ease or prevent negative impacts, correct environmental damage or conserve natural resources or improve on the state. Responses have been taken to include regulatory action, research, public opinion, consumer preferences, change in management strategies and information management.

6.3 Considerations for selecting environmental indicators

Indicators presented hereunder have been selected taking into account the fact that NEMA as a lead environmental agency in Uganda is guided in its activities by various legal and policy statements. NEMA draws its mandate to develop indicators and conduct environmental monitoring from both the Constitutional provisions as well as the National Environment Act, CAP 153. Likewise, sectoral institutions are responsible for the sustainable management of specific components of the environment. Collectively, both contribute to guaranteeing a clean and healthy environment, a fundamental right that is enshrined in the Constitution of the Republic of Uganda. This right cannot be upheld unless environmental monitoring is undertaken on a regular basis using carefully selected indicators. Therefore, the choice of indicators has taken into account these mandates.

Environmental monitoring is defined as "the continuous or repeated measurement of agents in the environment to evaluate environmental exposure and possible damage to living organisms". Measurements obtained are compared with appropriate reference values based on knowledge of probable relationships between "ambient exposure and the resultant adverse effects"

The Table below presents the considerations and rationale for selecting environmental monitoring indicators for Uganda. In the table, **rationale for environmental monitoring** implies the mandate to be fulfilled by NEMA and lead agencies at National and Local levels. **Environmental agent or Issue** refers to the key agents in the environment that need to be taken into account in fulfilling the said mandates. Finally, **driving forces** refers to the key interactions between society and the environment, and represent those environmental elements that NEMA and lead agencies should be monitoring and reporting on regularly.

Key Considerations and Rationale for Indicator Selection

Rationale for Environmental Monitoring	Environmental agent/Issue	Driving Forces
Constitution of the Republic of Uganda: ***Entitlement to a Clean and healthy Environment***	Air quality	▪ Industrialization, urbanization ▪ Vegetation changes (affecting natural air cycle) ▪ Climate change/Land degradation ▪ Household air environment (kitchen)
	Water	▪ Watershed/catchments degradation ▪ Pollution & Sedimentation ▪ Modes of utilization (abstraction & extraction) ▪ Population increase (water stress)
	Land	▪ Population pressure ▪ Land/soil productivity ▪ Tenure and Access ▪ Land use planning
Environment Act ***(Ensuring sound environmental management for sustainable development)***	Sustainable development	▪ Consumption pattern and levels (utilization technologies, value adding, levels of dependence, equity of access and use) ▪ Development Policies and strategies (PEAP, Export led economic growth) ▪ Level of production and production patterns
	Environmental governance	▪ Policy and legislation frameworks ▪ Institutional capacities and mandates ▪ Public participation and empowerment ▪ Decentralized governance to local authorities and communities
	Maintaining environmental (and Natural resources) quality	▪ Population pressure/demand levels for natural resources. ▪ Capacity for planning and management of ENR ▪ Information about the status and condition ▪ Natural processes and phenomenon ▪ Introductions/exotics/invasive species
International and Regional cooperation	Conventions/Multi-lateral environmental Agreements	▪ Capacity to implement and negotiate ▪ Legislation framework for their implementation ▪ Incentives for accenting to MEAs
	Shared Resources	▪ Equitable use of cross-border or trans-boundary resources ▪ Capacity for planning and management ▪ Conflicts relating to use and ownership ▪ Disharmony in policies, legislation and management practices ▪ Spill over effects
	Global Development Goals (MDGs)	▪ Commitments to sustainable development targets ▪ Conditionality for global cooperation and aid ▪ Honouring obligations to the MDGs
Affordability and relevance	Technical capacity	▪ Technology advancement and needs ▪ Human resources – skills ▪ Institutional Facilities
	Costs/budgets	▪ Budget for ENR management ▪ Priorities for investments
	Data/information	▪ Availability and relevance of data and information ▪ Frequency of measurements ▪ Information management systems and procedures ▪ Information application to decisions and policy formulation
	Representative	▪ National representation (geographical coverage)

Rationale for Environmental Monitoring	Environmental agent/Issue	Driving Forces
	ness	▪ Uniqueness ▪ Thematic coverage ▪ Level of impacts
Sectoral mandates	Forests	▪ Utilization (over/under exploitation levels, technologies, value adding) ▪ Competing land use ▪ Policies and management practices and approaches (including access and ownership) ▪ Invasive species and exotics
	Wetlands	▪ Competing land use ▪ Upstream/upland effects ▪ Development planning and policies ▪ Invasive and exotic species
	Land and soils	▪ Land use patterns and levels ▪ Land use plans and policies ▪ Agricultural technologies ▪ Population pressure ▪ Land/soil productivity ▪ Tenure and Access ▪ Land use planning
	Wildlife and Rangelands	▪ Utilization (consumptive uses) ▪ Trade ▪ Knowledge and information ▪ Tourism ▪ Introductions/exotics and invasive ▪ Migrant species
	Fisheries	▪ Utilization and trade ▪ Fishing and marketing technologies ▪ Fisheries resource ownership and related conflicts ▪ Management capacity ▪ Introductions/exotics and invasive species
	Climate	▪ Vegetation changes ▪ Land degradation ▪ Climate change (external spill over) ▪ Information and data (acquisition, processing, access and sharing)

7. CHECKLIST OF ENVIRONMENTAL INDICATORS

Key environmental monitoring indicators are fall under three categories: macro-economic, sectoral and cross-cutting indicators.

a) **Macroeconomic indicators** are those that provide us with a demonstration of Uganda's determination to meet its national and international sustainable development goals. They also provide a quantitative focus for measuring results achieved in progressing towards the major development goals, the PEAP, and in realizing rights stated in national and international instruments.
b) **Thematic indicators** are attributes for assessing environmental trends by sectors and sub-sectors, but which collectively contribute to maintaining the integrity of the environment if sustainably managed.
c) **Cross-cutting** indicators are attributes for assessing performance of common issues that cut across sectors. They are not the domain of one single institution or sector, and are usually applied in any analysis of trends or performance by all institutions and sectors that report on their performance.

7.1 Macro- economic

a) Water Quality for consumption
b) Water Quantity for production
c) Access to natural resources capital and sustainable use – forests, land, water, and their products
d) Food security and food availability
e) Energy availability and affordability – categories of energy use
f) Population structure and dynamics, housing and settlements, refugees and IDPs
g) Cost of environmental management
h) Disease epidemics
i) MDG compliance
j) Environmental legislation and policies
k) Industry and construction
l) Transport – land, water, air

7.2 Thematic

a) Environmental Policies and legislation
b) Environmental governance: stakeholders participation, access to information, guidelines and regulation, incentives/disincentives
c) Environmental Stress
d) Land productivity – agricultural productivity, soil fertility/quality
e) Land tenure
f) Vegetation cover changes
g) Forest condition
h) Biomass production – fuel, construction, trade,
i) Climate and weather patterns
j) Rainfall distribution, reliability
k) Natural and human-induced disasters – droughts, floods, earthquakes, landslides, invasive species, natural extinction of species, disease epidemics, industrial and transport accidents.
l) Wildlife diversity and distribution
m) Mineral wealth production
n) Wetlands size and quality

7.3 Cross cutting

a) Biodiversity – species coverage, numbers, invasives, exotics, movements
b) Human population dynamics - population health, number, migrations, manpower development, employment, distribution and gender
c) Pollution – air, water, land,
d) Health and disease – epidemics, incidences and occurrences of major outbreaks, transmissions, emerging diseases of epidemic potential.
e) Poverty
f) Trade in environmental goods and services
g) Knowledge and science about the environment

8. INDICATORS MATRIX

Issue-based consideration of indicators track environmental degradation based on how an environmental issue is described. Environmental indicators hereunder are based on a theme and then sub-theme, and for each environmental issue, the Pressure – State - Impact – Response (P-S-I-R) analysis is presented, indicator(s) and their descriptors are identified.

The proposed indicators are presented in the following format that provides:

a) Trends
b) A figure to symbolize trend – i.e., decline, improvement, no change, etc.
c) Targets for the future.
d) A clear unit of measure.

9. PSIR Analysis of Environmental issues in Uganda

THEME: MACRO – ECONOMIC **SUB-THEME: DEVELOPMENT GOALS (MDG's & PEAP)** **PSIR Analysis**			
PRESSURES	**STATE**	**IMPACT**	**RESPONSE**
Proportion of land area covered by forest	➢ Decline in natural forest cover	➢ Reduced availability of natural forest goods and services	➢ Maintain Permanent Forest Estate ➢ Restore degraded natural forest areas
Ratio of area protected to maintain biological diversity to surface area	➢ Proportion of Uganda's protected areas (> 20% of total land surface)	➢ Habitat for biodiversity conservation maintained	➢ Biodiversity conservation policies
Energy use (kg oil equivalent) per $1,000 GDP	➢ ….% of population using fossil energy (oils)	➢ High import bill ➢ Over-dependence on biomass energy	➢ Diversification energy options e.g., hydro, solar, energy efficient use/saving schemes
Carbon dioxide emissions per capita (UNFCCC, UNSD) and consumption of ozone depleting CFCs (ODP tons)	➢ Increase in CO2 emissions from Fossil energy, land degradation ➢ Increase in use of CFCs producing equipments	➢ Suspected increase in CO2 and CFCs emissions	➢ Regulations on CFCs
Proportion of population using solid fuels	➢ ….% of population using biomass energy	➢ Biomass depletion	➢ Energy saving schemes ➢ Energy options diversification ➢ Rural electrification
Proportion of population with sustainable access to an improved water source, urban and rural	➢ >60% of people in rural areas access improved water ➢ >..% urban population access improved water	➢ Improved quality of life ➢ Increase in cost to treat and distribute clean water	➢ Improved water quality access programmes
Proportion of population with sustainable access to an improved sanitation(urban and rural)	➢ >…% rural population with access to improved sanitation ➢ >…% urban population with access improved sanitations	➢ Reduced sanitation related diseases	➢ Improved sanitation programmes, e.g., VIP latrines, Eco-San toilets
Proportion of households with access to secure land tenure	➢ Increase in populations/households slum dwellers in urban areas	➢ Congestion in the cities/urban areas ➢ Poor living conditions	➢ Slum improvement projects in urban areas
Water use for hydropower generation	➢ Increased demand for use of power for hydropower generation	➢ Damming /impeding water flow ➢ Creation of Water reservoirs	➢ Environmental Impact Assessments for the dams development
Water utilization	➢ Poor water utilization (abstraction) ➢ Competition for water access and use ➢ Poor water harvesting technologies	➢ Water stress ➢ Water wastage	➢ Water harvesting technologies ➢ Water access and sharing agreements/schemes ➢ Water extraction (boreholes)
Water use and demand	➢ Inadequate water to meet growing demand in concentrated settlements	➢ Decline in water resources ➢ Water use related conflicts	➢ Water conservation measures ➢ Water use planning

	and for livestock ➢ Depletion of open water sources ➢ Increase in water extraction (boreholes)	➢ Water stress ➢ Loss of life (livestock) and investments	➢ Migrations of people and livestock
Occurrence of water-borne diseases	➢ Concentration of waterborne disease in fishing villages and slum dwellers in urban centers	➢ Unhealthy population	➢ Improved sanitation (e.g., VIP latrines) ➢ Distribution of Piped water
Water quality and quantity	➢ Increased cases of water stress due to shortage of water	➢ Exhaustion of water sources/decline in water tables	➢ Shifting water sources ➢ Sinking water boreholes
Demand for fishery resource	➢ Increase in establishment of Beach management Units to improve fisheries management ➢ Increase in fish processing plants	➢ Better fisheries resources management ➢ Over-fishing/over-concentration of fishing activity on certain locations	➢ Formation of Beach Management Units ➢ Strengthening enforcement of fisheries policy and fishing regulations

MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
% change in coverage of natural forest cover	➢ Hectares	➢ Aerial photography	➢ 5 year cycle	➢ NFA, UWA
% of Uganda under Protected areas for biodiversity conservation/ecological values	➢ Hectares	➢ Aerial photography ➢ Boundary surveys	➢ 5 year cycle	➢ NFA, UWA, WID
% of Uganda's population utilizing fossil energy	➢ Fossil energy consumption /household	➢ Baseline surveys	➢ Annual	➢ NEMA, UBOS, MEMD
% of Uganda, population utilizing alternative energy sources (solar)	➢ Households with Solar installations	➢ Baseline surveys	➢ Annual	➢ UBOS, MEMD, EIU
Number of thermal power generating plants	➢ Units of thermal plants	➢ Baseline	➢ Annual	➢ MEMD
% of Uganda population using wood biomass energy	➢ Households	➢ Baseline surveys	➢ Annual	➢ UBOS
% of Uganda rural population accessing clean safe water	➢ Households	➢ Baseline surveys	➢ Annual	➢ UBOS, DWD
% of urban population accessing improved water supply (piped water)	➢ Households, Water connections	➢ Baseline surveys, files	➢ Annual	➢ UBOS, NWSC
% of rural population accessing improved sanitation (Latrines)	➢ Household surveys	➢ Baselines	➢ Annual	➢ UBOS
% of urban population accessing improved sanitations (Septic tank/public sewer)	➢ Households/Housing Units	➢ Baselines	➢ Annual	➢ UBOS
% of urban populations living in slums compared to other parts of urban settings	➢ Households	➢ Baselines	➢ Annual	➢ UBOS
% of Households adopting water	➢ Households units	➢ Baselines	➢ Annual	➢ UBOS

harvesting technologies (roof tanks,)				
Incidences of migrations (water/livestock) during dry weather in search of water	➢ Occurrences	➢ Baselines	➢ Periodic	➢ UBOS, MAAIF
Water extraction/storage facilities surviving dry weather (valley dams)	➢ Sites	➢ Baselines	➢ Periodic coinciding with dry seasons	➢ UBOS, MAAIF
Water rationing in urban centres	➢ Sites/locations	➢ Baselines	➢ Periodic to coincide with dry seasons	➢ UBOS, NWSC
Increase in hydropower generation	➢ Voltage	➢ Records	➢ Periodic	➢ UERA
Percentage of population suffering from Water borne diseases	➢ Household Units ➢ Medical records	➢ Records	➢ Periodic	➢ MoH
Cost of water treatment and distribution	➢ Cost/cubic meter	➢ Records	➢ Periodic	➢ NWSC
Water Stress	➢ Water table levels	➢ Sample plots	➢ Periodic	➢ DWD
Compliance to Fishing regulations	➢ Reported cases on non-compliance	➢ Records	➢ Periodic	➢ Fisheries dept ➢ URA
SUB THEME – Poverty Eradication Action Plan **PSIR Analysis**				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Forest degradation	➢ Increase in forest degradation due to competing land use, poor utilization methods as well as overdependence	➢ Decline in vegetation cover ➢ Decline on forest goods and services ➢ Increase in soil degradation/soil erosion ➢ Increase in vulnerability of forest dependent people ➢ Biodiversity loss	➢ Forest Policy ➢ Forest and Tree Planting Act ➢ National Forest Plan	➢ NFA ➢ DFS
Wetlands Drainage	➢ Loss in wetland ➢ Decline in wetlands goods and services	➢ Increased vulnerability of wetlands resources dependent people ➢ Floods and wetlands acidification ➢ Biodiversity loss ➢ Water scarcity ➢ Micro-climate changes ➢ Costs of treating water in urban centers	➢ Wetlands Policy ➢ Wetlands Management Plans and strategies ➢ Wetlands restoration ➢ Gazettements/protection initiatives	➢ WID ➢ NEMA ➢ Districts
Management capacity for	➢ Wetlands poorly managed and utilized	➢ Wetlands resources	➢ Wetlands management	➢ WID

wetlands		degradation	guidelines ➢ Wise use guidelines ➢ Community based wetlands resources management schemes ➢ Value addition to wetland resources	➢ Districts
Access to safe water	➢ Low proportion of the population accessing clean water	➢ Water borne diseases	➢ Clean water access schemes – boreholes, Gravity water, urban water works	➢ DWD
Access to sanitation	➢ Low proportion of the population accessing sanitation	➢ Sanitation related diseases	➢ Sanitation access schemes- boreholes, protected springs, gravity water, piped water, sewerage treatment plants	➢ DWD
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGULALITY**	**LEAD/WHO**
% change in forest covers resulting from forest clearance for agriculture, human settlement or economic activities	➢ Hectares	➢ Aerial surveys ➢ Satellite imagery	➢ Bi-annual	➢ NFA, UWA
% change is wetland size due to wetlands conversion for agriculture, human settlement or economic activity	➢ Hectares	➢ Satellite imagery, Field observations/measurements	➢ BI-annual	➢ WID, Districts
% change in value of wetland products as a result of “value addition”	➢ Prices	➢ Market surveys	➢ Annual	➢ UBOS
Incidences and occurrences of water borne diseases outbreaks (Cholera, dysentery) in rural, urban, and concentrated settlements such as fishing villages	➢ Medical records	➢ Medical reports	➢ Annual	➢ UBOS, MoH
Concentration of faecal coliforms in drinking water	➢ Laboratory tests	➢ Laboratory kits	➢ Annual	➢ UBOS, NWSC
THEME SECTORAL **SUBTHEME: FORESTS**				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Forest resources utilization	➢ Over-utilization ➢ Under or poor utilization due to poor technologies ➢ Poor marketing	➢ Resources waste ➢ Poor economic returns from produce ➢ Ecological impacts	➢ Improvements in utilization technologies ➢ Improvements in marketing ➢ Improvements in value additions	➢ NFA ➢ Districts

			➢ Sustainable Forest resource use schemes	
Competing land use	➢ Forest vegetation loss due to conversions, degazettments/change in land uses ➢ Increase in commercial tree growing	➢ Decline in forest resources ➢ Lands/soil degradation ➢ Loss in tree diversity ➢ Ecological impacts	➢ Tree planting ➢ Agro-forestry practices ➢ Policy advocacy	➢ NFA ➢ Districts
Management Policies and practices	➢ Poor access to forest resources , especially those in Forest Reserves or protected areas ➢ Tenure and ownership of forest and tree resources uncertain ➢ Inadequate empowerment of people to develop forest resources	➢ Illegal activities ➢ Slow forest resources development ➢ High operational costs ➢ Resentment to forestry due to evictions	➢ Pro-people management approaches ➢ Incentives for tree planting ➢ Collaborative forestry management initiatives	➢ NFA ➢ Districts
Introductions/invasive species and exotics	➢ Increase in exotic species, especially for agro forestry and plantation developments ➢ Increase in area covered by invasive species ➢ Increase in invasive species	➢ Declining in indigenous tree diversity ➢ Decline in goods and services of indigenous trees ➢ Ecological impacts	➢ Management Planning ➢ Regulations and guidelines for control of exotic and invasive species ➢ Plant quarantines ➢ Research and monitoring	➢ NFA
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
% wood waste against valuable products at harvesting stage	➢ Biomass units	➢ Field measurements/observations	➢ Ongoing	➢ NFA, DFS
Size of reserved forest land whose land use changes from forestry resources management	➢ Hectares	➢ Field observations ➢ Forest Management Plans ➢ Legal (de)gazettement instruments ➢ Remote sensing	➢ Ongoing	➢ NFA, NEMA
Size of reserved forest land planted with commercial trees	➢ Hectares	➢ Concession agreements ➢ Lease agreements ➢ Field measurements	➢ Ongoing	➢ NFA
Incidences and occurrences of evictions from Forests Reserves	➢ Events/number of occurrences	➢ Field reports ➢ Remote Sensing	➢ Ongoing	➢ NFA, Districts
Collaborative forestry resources management initiatives	➢ Number of agreements enforce	➢ Field observation ➢ Field reports	➢ Ongoing/Annual	➢ NFA, Districts
Size of Central forest reserves infested with invasive/exotic species	➢ Hectares	➢ Field surveys	➢ Annual	➢ NFA, FORRI
THEME SECTORAL				

SUBTHEME: WATER				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Watershed/water catchments management	➢ Watershed/water catchments areas degradation ➢ Size of watershed/water Catchment areas declining ➢ Declining quantities of water flowing	➢ Water reliability low, seasonal dry rivers high ➢ Water quantities low in streams ➢ Poor land productivity in watershed areas ➢ Drying natural springs	➢ Watershed management initiatives ➢ River damming ➢ Boreholes	➢ DWD ➢ WRMD ➢ NEMA
Pollution and sedimentation	➢ Increased sedimentation leading in water bodies and streams from soils and other organic matter ➢ Industrial and urban wastes in water bodies ➢ Agricultural pesticides in water bodies	➢ Poor water quality ➢ Increase in water treatment costs	➢ Soil and water conservation measures ➢ River bank management and guidelines ➢ Wetlands conservation ➢ Protected springs	➢ NEMA ➢ Districts
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
Changes in water volume flow from designated water catchments	➢ Water Volume	➢ Field water measurements kits	➢ Regular	➢ WRM
Number of natural springs dried up	➢ Number of springs	➢ Baseline surveys	➢ Periodic. during dry seasons	➢ Districts, WRM, NEMA
Levels of water sedimentation in open water bodies	➢ Water turbidity	➢ Laboratory kits	➢ Periodic according to dry/wet seasons	➢ WRMD
Level of faecal material in water	➢ Coliforms	➢ Laboratory	➢ Regular	➢ NWSC, DWD
THEME SECTORAL **SUBTHEME: WETLANDS**				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Competing land use/wetland resource use	➢ Wetlands conversion to other uses ➢ Wetlands drainage	➢ Loss of wetlands goods and services ➢ Change in micro-climate ➢ Hydrological changes	➢ Wetlands management planning ➢ Wise use guidelines ➢ Wetlands Policy ➢ Wetlands protection (gazettements) ➢ Evictions	➢ WID ➢ Districts
Development Planning and Policies	➢ Increase in Wetlands degradation, especially around urban areas (housing, industrial developments, waste dumping) ➢ Wetland zoned for other uses ➢ Increase drainage for agriculture developments (crop and livestock)	➢ Loss of wetlands goods and services ➢ Hydrological changes ➢ Flooding and infrastructure loss ➢ Water borne diseases	➢ Management planning and zoning ➢ Policy ➢ Guidelines ➢ Evictions	➢ WID ➢ Districts

Invasive species and exotics	➢ Increase in area covered by exotic plants ➢ Increase in wetland dependent exotic species	➢ Wetland degradation ➢ Decline in biodiversity of indigenous species	➢ Wetland use regulations ➢ Wetland resources use monitoring	➢ WID
Upstream/upland effects	➢ Sedimentation and soil loading into valley wetlands ➢ Wetlands drying up where upstream water has been disrupted	➢ Loss of wetlands resources (goods and services) ➢ Wetlands acidification	➢ River basin management planning ➢ Integrated wetlands management and planning	➢ WID ➢ NEMA
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGULALITY**	**LEAD/WHO**
Size of wetlands converted to other land uses	➢ Hectares	➢ Field observations, Satellite imagery	➢ BI-annual	WID, NEMA
Condition of wetlands nearby major urban centres	➢ Status/ecological condition	➢ Field observations	➢ Periodic	➢ WID
Incidence and coverage of wetlands habitats with plant exotics	➢ Sample plots	➢ Field surveys	➢ Periodic	➢ WID
Seasonal wetlands resilience during dry season	➢ Sample plots	➢ Field observations	➢ Periodic	➢ WID
THEME SECTORAL **SUBTHEME: LAND & SOILS**				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Land use (patterns and levels)	➢ Poor land use ➢ Over use	➢ Land degradation ➢ Low land productivity	➢ Land use planning	➢ NEMA ➢ MWLE
Land use policies and plans	➢ Conflicting land use policies and practices ➢ No land use plans ➢ Insecure land tenure	➢ Land degradation ➢ Low land productivity ➢ Land related conflicts	➢ Land use policies ➢ Land Sector Strategic Plan ➢ Land Act	➢ MWLE ➢ NEMA
Agricultural technologies and practices	➢ Poor agricultural technologies ➢ Poor agricultural practices	➢ Low Land productivity ➢ Soil degradation ➢ Soil loss and erosion	➢ PMA ➢ Land Policy ➢ Agricultural inputs	➢ MAAIF ➢ MWLE
Tenure and Access	➢ Inequitable access ➢ Proportion of population with no land/insecure access (squatters) ➢ Land related conflicts	➢ Poor land utilization ➢ Inadequate investments in land development ➢ Low land productivity ➢ Migrations	➢ Land tenure studies ➢ Improvements in Land registry ➢ Land Tribunals ➢ Land Act	➢ MWLE
Land demands	➢ Land fragmentation/less consolidation ➢ Land and soil exhaustion ➢ Opening up marginal lands and encroach-ment on wetlands, forests, wildlife areas ➢ Poor settlement patterns ➢ Conflicts over land rights	➢ Migrations ➢ Conflicts ➢ Loss of marginal areas ➢ Land degradation ➢ Poor land use patterns	➢ Housing and settlement planning ➢ Protection of reserves land ➢ Evictions and compensations ➢ Population growth control	➢ MWLE ➢ Population Secretariat ➢ UWA ➢ NFA ➢ WID

MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGULALITY**	**LEAD/WHO**
Agricultural intensification in high density areas	➢ Size of old land under fallow	➢ Field observation	➢ Periodic	➢ MAAIF, NEMA
Land use patterns	➢ Different forms of land use per unit areas	➢ Field observation	➢ Periodic	➢ MAAIF/NEMA
Levels of agriculture mechanizations (ex-ploughs, tractors, garden tools-rakes, wheel barrows)	➢ Units/household	➢ Baselines	➢ Annual	➢ UBOS
% of rural population with land rights/land titles or certificates	➢ Households	➢ Baseline, Records	➢ Annual	➢ Land Boards
Size of Protected areas encroached	➢ Hectares ➢ Evictions	➢ Surveys	➢ Annual	➢ NFA, UWA, WID
THEME SECTORAL **SUBTHEME: WILDLIFE AND RANGELANDS**				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Wildlife Utilization (consumptive utilization)	➢ Unregulated access to big game as evidenced by cases on poaching, illegal game meat on the market, etc.)	➢ Reduction in populations of target species	➢ Anti-poaching drive ➢ Collaborative management ➢ Monitoring and surveillance of markets	➢ UWA
Trade in Wildlife (animal & animal products)	➢ Increased confiscations of illegal cargo of wildlife ➢ Upsurge of applications for permits to trade in wildlife	➢ Reduction of population numbers of target species	➢ Wildlife trade regulations ➢ Monitoring	➢ UWA
Management capacity	➢ Inadequate human and logistical capacity to contain the management needs	➢ Well being of the wildlife estates not good	➢ Training ➢ Field equipment procurements ➢ Infrastructure development ➢ Management planning	➢ UWA
Knowledge and information	➢ Ecological processes (e.g., population dynamics) not well documented ➢ Interactions between wildlife and society not well documented	➢ Management decision not based on credible science and data	➢ Training ➢ Ecological surveys ➢ Database establishments	➢ UWA
Tourism	➢ Increase in arrivals ➢ Concentrations of tourism activity on specific destinations (Bwindi) ➢ Insecurity in some areas affecting arrivals to those destinations ➢ Inadequate infrastructure and services	➢ More revenue earned ➢ Pressure on specific destinations (Bwindi) ➢ Underutilized tourism potential in specific areas	➢ Tourism diversification ➢ Concessions for lodges and accommodation ➢ Mobile security force ➢ Wildlife/tourism training	➢ UWA
Introductions/Exotics and Invasive species	➢ Increase in area covered by invasive due to changes in ecology or introductions	➢ Habitat degradation	➢ Management plans ➢ Regulations and policies ➢ Monitoring	➢ UWA
Migrant species	➢ Wildlife habitats provide home of migrants, especially the palearctic bird migrants	➢ Tourist attractions to the palearctic migrants	➢ Designated new attraction sites	➢ UWA

MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGULALITY**	**LEAD/WHO**
Game meat on market	➢ Confiscations/arrests/sightings	➢ Field surveys and monitoring	➢ Periodic/ongoing	➢ UWA, Police
Cargo of animals and plants in international trade	➢ Licenses/permits/quotas issues ➢ Confiscations	➢ Field observations, records	➢ Periodic/on-going	➢ UWA, Police, URA
Tourism activity	➢ Arrivals/visitors to protected areas	➢ Records	➢ On-going	➢ UWA, Internal Affairs
THEME SECTORAL **SUBTHEME: FISHERIES**				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Utilization/harvesting methods	➢ Less cost efficient fishing gear and fish processing	➢ Depletion of fish resources ➢ Under-fished resources, e.g. in deep waters	➢ Improvements in fishing gear	➢ MAAIF
Trade and marketing strategies	➢ Over concentration of fishing activity on L. Victoria ➢ Emphasis of standard size and quality for export market	➢ Resource depletion ➢ Quality fish inaccessible by common person in Uganda ➢ Local fisher folk out competed	➢ Formation of fishing associations	➢ MAAIF
Fisheries resources ownership	➢ Conflicts between and among fishing communities	➢ Loss of life ➢ Destruction of property	➢ BMU	➢ MAAIF
Management capacity	➢ Management fish landing weak ➢ Knowledge on socio-economics dynamics inadequate	➢ Poor management regimes	➢ BMU ➢ Research and training	➢ MAAIF
Introductions/exotics/invasive species	➢ Increase in introductions /exotics ➢ Reduction in populations of indigenous species	➢ Reduction in diversity of species	➢ Regulations ➢ Policies	➢ MAAIF
Dependence on fisheries resource	➢ Levels of dependence concentrated in some locations ➢ Decline in fish stocks ➢ Decline in fish conditions	➢ Less returns form fishing activity ➢ Decline in fish size ➢ Effect fish species diversity and distribution	➢ Enforcing Fishing policy and fishing regulations	➢ MAAIF
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGULALITY**	LEAD/WHO
Fish stocks in major fishing grounds (L. Victoria, L. George, L. Albert)	➢ Fish population ➢ Fish catch size ➢ Fish condition	➢ Field observations ➢ Catch measurements	➢ Periodic	➢ MAAIF
Volume of fish exports	➢ Export records	➢ Records from URA	➢ Periodic	➢ UBOS, URA, UFREA

Number of functioning BMUs	➢ Geographical coverage	➢ Records	➢ Periodic	➢ MAAIF
Effectiveness of fish landing sites management	➢ Systems and procedures	➢ Records	➢ Annual	➢ MAAIF
Fish species diversity in fish catch	➢ Diversity of exotic species	➢ Field taxonomy	➢ Regular	➢ MAAIF
THEME: SECTORAL SUB-THEME: CLIMATE				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Vegetation changes	➢ Rate of loss of natural vegetation accelerating ➢ Increase in wind and wind speed	➢ Loss of environment service provided by natural vegetation towards purification of air ➢ Increase in surface temperatures ➢ Increase evapo-transpiration and water loss	➢ Tree Planting ➢ Phasing out CFCs	➢ NEMA ➢ NFA
Land degradation	➢ Increased open surfaces on land due to agricultural intensification, transport road networks, urban construction	➢ Increase in surface temperature ➢ Increase in dust and air pollution ➢ Increase in surface water run-off	➢ Wind breaks	➢ Meteorology Department ➢ NEMA
Global climate change	➢ Increase in temperatures ➢ Changes in weather and rainfall patterns	➢ Vulnerability to drought ➢ High incidences of dry weather ➢ Erratic and unpredictable rainfall	➢ Tree planting	➢ NEAM ➢ NFA ➢ Districts
Information management	➢ Information sharing is poor among the users	➢ Uncoordinated planning and actions	➢ Improvements in information management	➢ NFA
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGULALITY**	**LEAD/WHO**
Wind strength is sample areas	➢ Speed units	➢ Field equipments/wind vanes	➢ Regular	➢ Meteorology
Air pollution	➢ Solid particle load in atmosphere	➢ Field equipment	➢ Regular	➢ Meteorology
Air temperatures	➢ Degrees	➢ Field equipment	➢ Regular	➢ Meteorology
Level of information sharing between Meteorology and MAAIF, Aviation authority	➢ Records	➢ Records in offices	➢ Regular	➢ Meteorology, Aviation Authority
THEME CROSS-CUTTING: Sub Theme: Environment management				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Sustainable development & Environmental stress	➢ Consumption patterns and levels for environmental goods and services unsustainable	➢ Environmental degradation ➢ Depletion of resources	➢ Environmental Planning (NEAP, DEAPS,) ➢ Main streaming	➢ NEMA ➢ DEA

	➢ Development Policies and strategies do not adequately cater for environmental quality and sustainability	➢ Conflicts between environmental polices and development policies	Environment into Development strategies and action plans (PEAP, PMA) ➢ EIA /SEA	
Environmental governance (policies, legislation, institutions, regulations, etc.)	➢ Strong Legal and policy frameworks for environmental management in place ➢ Capacity to implement environmental policies and enforce the law weak ➢ Institutional frameworks adequate ➢ Provisions in support of public participation and empowerment of the public for environmental governance in place ➢ Decentralized environmental management to districts and local authorities	➢ Fair performance of the environment	➢ Environmental regulations ➢ Capacity building/strengthening ➢ Ordnances/by-law development and formulation ➢ Access to environmental information by public ➢ Public forums for environmental debates ➢ EIA system	➢ NEAM ➢ DEA
Ensuring environmental quality	➢ Capacity building ongoing ➢ Institutional strengthening on going ➢ Gazetting core areas for protection	➢ Environmental management ongoing	➢ Environmental standards ➢ Environmental quality monitoring ➢ Gazetting environmental inspectors	➢ NEMA
International cooperation (MEAs, Regional protocols, etc.)	➢ Uganda commitments to several MEAs not fully met ➢ Opportunities provided through MEAs not fully exploited	➢ Poor compliance to global processes and commitments ➢ Capacity building hindered	➢ Synergies projects ➢ Capacity building ➢ Prioritizing commitments	➢ NEMA ➢ DEA
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
Development policies reflecting environmental concerns adequately	➢ Policy documents	➢ Observations	➢ Periodic	➢ NEMA
Public participation in environmental governance	➢ Public dialogues	➢ Records	➢ Regular	➢ NEMA
	➢ EIA studies for major developments	➢ Records	➢ Periodic	➢ NEMA
	➢ Policy reforms/proposals for strengthening policies	➢ Records	➢ Periodic	➢ NEMA
Instruments for environmental management e.g., guidelines developed /issued	➢ Compliance levels	➢ Field observations	➢ Periodic	➢ NEMA
International cooperation	➢ Compliance to commitments	➢ Records	➢ Periodic	➢ NEMA

THEME CROSS-CUTTING: Sub Theme: Biodiversity				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Habitat loss	➢ Declining in abundance of key stone species ➢ Loss of critical habitats e.g. natural forests, wetlands which house biodiversity	➢ Declining biodiversity values (goods and services)	➢ Conservation of natural habitats (terrestrial, aquatic)	➢ NEMA, NFA,UWA,WID
Over consumption/over-use	➢ Local extinctions ➢ Rare species increase	➢ Loss of species	➢ Sustainable use initiatives	➢ NEMA, NFA, UWA, WID
Trade in natural products/biodiversity products	➢ Vulnerability of target species	➢ Decline in numbers of target species	➢ Trade regulation and enforcements of conservation laws	➢ NEMA ➢ MTTI
Introductions – exotics, hybrids, invasive species	➢ Increase in exotics ➢ Increase in competition for space and use ➢ Decline in indigenous species diversity	➢ Decline in biodiversity goods and services	➢ Germ sperms??? Germplasm?, Seed banks	➢ NEMA
MONITORING FRAMEWORK				
PRESSURE INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGULALITY**	**LEAD/WHO**
Trends in populations dynamics of key stone species (terrestrial, aquatic, subterranean)	➢ Population trends	➢ Field surveys	➢ Bi-annual	➢ Lead Agencies ➢ Research/Academic institutions
Trends in abundance/rarity of key stone species	➢ Population trends ➢ Changes in species composition ➢ Los of biodiversity species	➢ Species lists	➢ Bi-annual	➢ Lead agencies, ➢ Research/Academic institutions
Trade in target species	➢ Volume/numbers licensed or confiscated	➢ Trade records	➢ Regular	➢ URA, UBOS
Invasive species – diversity and coverage	➢ Diversity ➢ Area of coverage	➢ Field surveys	➢ Periodic	➢ Lead Agencies/Academic Institutions
Changes in diversity of food crops	➢ New species, hybrids introduced	➢ Research records	➢ Regular	➢ MAAIF, NARO
THEME CROSS-CUTTING: Sub Theme: Pollution				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	**LEAD/WHO**
Agricultural Modernization	➢ Increase in use of agricultural inputs (pesticides, acaricides, fertilizers) with residual effect	➢ Accumulation of residue in the soil, water systems ➢ Increase accumulation of residues in food chain ➢ Physical and psychological disorders	➢ Monitoring pesticide and fertilizers use ➢ Consumer awareness ➢ Ban on use of target chemicals	➢ NEMA
Industrial and urban growth	➢ Industrial development growing at >15% p.a. over the past decade	➢ Accumulation of industrial wastes in the	➢ Regulations and standards ➢ Monitoring and	➢ NEMA

	➢ Increase of urban population to 8-10% of Uganda population leading to congestions ➢ Gas and other waste emissions associated with urban facilities	environment ➢ Air and noise pollution ➢ Physical deformities and pollution related illnesses (respiratory, sight, skin)	assessments of levels of pollution ➢ Consumer/public awareness ➢ Standards for emissions and compliance measures	
CFCs releasing equipments	➢ Increase in use of old equipments and accessories emitting ozone-depleting gases e.g., refrigerators, air conditioning)	➢ Increase in release of ozone-depleting gases in the atmosphere	➢ Regulations and standards ➢ Monitoring ➢ Public awareness	➢ NEMA
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
Load level of agro-pesticides in soils	➢ Soil samples	➢ Field equipment ➢ Laboratory facilities	➢ On-going	➢ NARO,
Physical disorders and deformities in human beings	➢ Medical conditions	➢ Medical records	➢ On-going	➢ Government Chemist
Level of industrial waste in water systems	➢ Water quality	➢ Laboratory facilities	➢ On-going	➢ Government Chemist
Volume of ozone depleting gases in urban areas	➢ Air quality	➢ Laboratory facilities	➢ On-going	➢ Government Chemist
THEME CROSSCUTTING: Sub Theme: Poverty				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Population density in fragile ecosystems (mountains, wetlands, lake shores, rangelands)	➢ % of population cultivating I ha or less of land is increasing ➢ Size Degraded fragile areas is increasing	➢ Degradation of the ecosystem ➢ Poor resources productivity ➢ Poor quality livelihoods	➢ Public awareness on soil and water conservation ➢ River bank/shore management guidelines ➢ Soil and water conservation	➢ NEMA
Availability and access to basic life necessities (safe water, fuel, food)	➢ Domestic consumption of water per capita is decreasing ➢ Distance traveled to access fuel wood is increasing due to scarcity ➢ Food security parameters declining	➢ Time wastes collecting water, fuel wood ➢ Hunger and malnutrition	➢ PMA ➢ Access to safe water initiatives ➢ Post harvest technologies	➢ NEMA
Access to good housing/shelter	➢ Increase in slum dwellers in urban areas ➢ Increase in rural housing with corrugated iron sheets	➢ Poor living conditions	➢ Low cost housing schemes ➢ Urban slums upgrading	➢ NEMA
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
Size of degraded fragile areas (river banks, Steep slopes, wetlands)	➢ Hectares	➢ Field observations	➢ Bi-annual	➢ Lead Agencies, NEMA
Distance covered to collect adequate resources (fuel wood, water)	➢ Kilometers	➢ Baselines	➢ Annual	➢ UBOS
Food security – HH with stored	➢ Households	➢ Baselines	➢ Annual	➢ UBOS

food				
% of urban population living in slums	➢ Households	➢ HH surveys	➢ Annual	➢ UBOS
% of rural population living in permanent housing structures (metal roofed, tile roofed)	➢ Households	➢ HH Surveys	➢ Annual	➢ UBOS
THEME CROSSCUTTING: Sub Theme: Populations				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Population growth	➢ Current population growth levels unsustainable in long run	➢ Congestions and stress on natural resources base	➢ Family planning ➢ Increase in natural resources base	➢ UBOS
Un productive population	➢ Literacy levels ➢ Unemployment high	➢ Crime increase associated with unemployment	➢ Rural-urban migrations ➢ Universal Primary education	➢ POLICE
Un healthy population	➢ High prevalence of killer diseases (HIV/AIDS, Malaria and T.B) ➢ Low nutrition levels	➢ Weak population – high incidence of sick ➢ High mortality rates associated with nutrition	➢ PMA ➢ Public awareness ➢ Campaigns against killer diseases	➢ NEMA ➢ MOH
MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
Population growth rates	➢ Numbers	➢ Population Census ➢ Registered deaths and births	➢ Annual	➢ UBOS
Literacy level	➢ Numbers	➢ HH survey ➢ UPE Enrollment	➢ Annual	➢ UBOS
Employment in private sector	➢ Numbers	➢ Employment surveys	➢ Annual	➢ UBOS
Prevalence or Infection rates for three killer diseases (HIV/AIDS, Malaria, TB)	➢ Numbers	➢ Medical records	➢ Annual	➢ UBOS
Mortality rate for under 5 yrs due to nutritional related cases	➢ Numbers	➢ Medical records	➢ Annual	➢ UBOS
THEME CROSSCUTTING: Sub Theme: Trade				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Export trade in non-traditional cash crops and animal products	➢ Trade in natural products on increase ➢ Over-exploitation of certain products e.g., rattan cane	➢ Demand for natural products increased ➢ Depletion of resources	➢ Domestication of tree resources ➢ Development of alternatives	➢ UBOS
Importation of hybrids and exotics	➢ More hybrid crops and animal varieties	➢ Increase in acreage for hybrid species ➢ Decline in indigenous species diversity	➢ Establishment of seed banks and germplasms	➢ NEMA

MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
Levels o f exports on natural products	➢ Export/trade volumes	➢ Records	➢ Periodic	➢ UBOS
Hybrid species diversity	➢ Species diversity	➢ Field surveys	➢ Periodic	➢ NARO

THEME CROSSCUTTING: Sub Theme: Health and diseases				
PRESSURE	**STATE**	**IMPACT**	**RESPONSE**	
Environmental quality/conditions	Decline in environmental quality	➢ Environmental related diseases e.g., respiratory diseases	➢ Improvements in living conditions and sanitation	➢ NEMA

MONITORING FRAMEWORK				
INDICATORS	**MEASUREMENTS**	**REQUIREMENTS**	**REGURALITY**	**LEAD/WHO**
Environmental condition	➢ Ventilation levels in living houses	➢ Household surveys	➢ Periodic	➢ NEMA
	➢ Ventilation in kitchens	➢ Household surveys	➢ Periodic	➢ NEMA

9. REPORTING AND COMPLIANCE

Indicators presented in this section of this document shall form the basis for environmental reporting in Uganda. Presently, the following reporting procedures are being applied:

a) State of Environment Report (SEO): a systematic process of timely collection, documentation and compilation of data and information on the environment. NEMA produces a bi-ennial State Environment Report for Uganda. Likewise, Districts are required to prepare bi-ennial District State of Environment Report (DSOER).
b) National Reports on Multi-lateral environmental Agreements: produced by Focal points of various MEAs in Uganda. These reports follow a format provided by the MEAs Secretariats.
c) Sectoral Performance Reports: Governments departments and Agencies prepare annual performance reports on their sectoral/departmental targets for the reporting period.

The following sections provide guidance on reporting requirements and procedures on environmental trends and quality in Uganda.

9.1 Reporting – Mandates and Obligations

9.1.1 NEMA

Government, through an Act of Parliament, established the National Environment Management Authority (NEMA) as the principal agency in Uganda for the management of the environment and charged with the mandate to coordinate, monitor and supervise all activities in the field of environment management. NEMA performs several functions which include:

a) Coordinating implementation of Government Policy and decisions of the Policy Committee;

b) Ensuring integration of environmental concerns in over-all national planning through coordination with relevant ministries, departments and agencies of government;

c) Liaising with the Private sector, inter-governmental organizations, non-government agencies, governmental agencies of other states on issues relating to environment;

d) Proposing environmental policies and strategies to the Policy Committee;

e) Initiating legislative proposals, standards and guidelines on the environment in accordance with the Environment Statute;

f) Reviewing and approving environmental impact assessments and environmental impact assessment statements submitted in accordance with the Environment Statute or any other law;

g) Promoting public awareness through formal, non-formal and informal education about environment issues;

h) Undertakings such studies and submit such reports and recommendations with respect to the environment as the Government to the Policy Committee may consider necessary;

i) Ensuring observance of proper safeguards in the planning and execution of all development projects, including those already in existence that have or are likely to have significant impact on environment determined in accordance with part V of the Environment Statute;

j) Undertaking research and dissemination of information about the environment;

k) Preparing and disseminating a state of environment report once in every two years;

l) Mobilizing and expediting and monitoring resources for environmental management;

m) Performing such other functions as the Government may assign to the authority of any or all of the functions provided for under the Environment Statute.

Therefore, in accordance with sections part (j) and (k) of Section 9.1.1 above, NEMA has the mandate and obligation to report on environmental trends and quality in Uganda. To-date, NEMA has prepared State of Environment Reports in 1994, 1996, 1998, 2000, 2002 and the one for 2004 is under preparation.

It has been established that preparation of previous SOERs has not been based on established environmental monitoring procedures. Therefore, the indicators provided in this document shall form the basis for future SOERs.

9.1.2 Lead Agencies

The National Environment Act Cap 153 mandates and requires Sectoral or Lead Agencies to report to NEMA annually on environmental aspects of their portfolio. At the same time, Sectoral or Lead Agencies are required to prepare annual performance reports to government.

In practice, the compliance to reporting on environmental aspects of their portfolio has not been forthcoming. This has been attributed to insufficient incentives to compel lead agencies to report. Such incentives include, among others, reporting formats, indicators, feedback mechanisms, and resources to prepare reports.

9.1.3 Districts

The National Environment Act Cap 153 mandates and requires Districts to prepare District State of Environment Reports. Further, they are required to prepare District Environment Action Plans (DEAPS) which would in turn, form basis for environmental reporting. Whilst development of DEAPs has taken place in the majority of the districts (save for the newly created ones), preparation of DSOER has lagged behind. The reasons for this poor performance are similar to those of lead agencies mentioned above (Section 9.1.2).

9.2 Reporting requirements

The procedures prescribed hereunder are based on the institutional mandates highlighted in section 10.1 above.

9.2.1 Procedure

Type of Report	Periodicity	Reporting Institution	Procedure
State of Environment Report for Uganda (SOER)	2 yrs	NEMA	▪ Serving as Lead Agency, NEMA to consult and involve lead agencies and other stakeholders in the preparation of the SOER. ▪ Environment monitoring indicators to form basis for SOE report ▪ SOER to take into account Lead Agency reports submitted to NEMA on agreed indicators ▪ SOER publicity to nation and other interested parties within and beyond Uganda. ▪ SOE report to be applied as tool for influencing development and other Sectoral policies; hence contents and format should be focused on achieving this target.
State of Environment Report for Districts (DSOER)	(1 yr)	Districts	▪ DSOER to be based on established indicators ▪ DSOER to follow DSOER Guidelines issued by NEMA (2004) ▪ DSOER report to be applied as a tool for influencing development and other Sectoral policies at District level; hence contents and format should be focused on achieving this target.
Sector Environment Reports (SER)	(1 yr)	Lead Agency	▪ Lead Agencies prepare SER based on established indicators and format. ▪ SER compliments the regular Annual performance reports

9.2.2 Requirements

The following resources, facilities and capacities are required to support environmental reporting among the various institutions.

a) Reporting formats for SOER and SER: development of these formats should link the two together so as to ease consolidation of SERs into SOER
b) Indicators for environmental monitoring: indicators have been provided in this document. Lead Agencies and Districts should incorporate the relevant indicators into their Monitoring and reporting systems so as to be applied with ease.
c) Capacity to apply these indicators and reporting formats: Lead agencies and districts require institutional capacity (skills and resources) to apply these indicators and report accurately on the environment.

9.3 Compliance

Full compliance to institutional mandates and obligations is essential for accurate and timely reporting on environmental trends and quality. In order to facilitate this process, Guidelines on Environmental Reporting shall be prepared by NEMA to guide lead agencies and the districts on how to prepare environmental reports and including the time frame within which to make such reports

NEMA will also carry out the following as incentives to ensure compliance to reporting on environmental trends and quality by lead agencies and districts:

a) Training lead agencies and districts on environmental monitoring and reporting
b) Building capacity of lead agencies and districts to mobilize resources for environmental monitoring and reporting
c) Strengthen the flow and exchange of information between NEMA, the lead agencies and the districts
d) Assist lead agencies and districts in integrating environmental reporting as one of the key reporting requirements

Annex I: List of Institutions / people consulted

1. Sectoral issues;

Uganda Wildlife Authority
National Forestry Authority
Fisheries Department
Department of Lands and surveys
Division of Physical Planning
Meteorology Department
Wetlands Inspection Division
Environment Affairs Department
Department of Water Resources Management
Directorate of Water Development

2. Cross-cutting:

Ministry of Finance, Planning and Economic Development
National Planning Authority,
Poverty Assessment and Monitoring Unit,
Population Secretariat.
NEMA

3. Research and Academic institutions/databases

Makerere University Institute of Environment and Natural Resources - databank
National Biomass Study Centre/NFA
Economic Policy Research Center
Makerere Institute of Social Research
Center for Basic Research

4. Districts

Masaka
Bushenyi
Kasese
Masindi
Mukono

5. NGOs

IUCN
AWF
WWF
NatureUganda
UWS
ACODE
Nile Basin Initiative

Annex II (a): Questionnaire applied at Central level

Over 20 institutions, stakeholders and or individuals were consulted in and around Kampala and Entebbe areas. The Consultant used a questionnaire to solicit response from the relevant individuals and institutions. The key issues of interest during the consultations were grouped under two categories:

Category I: NEMA mandate over environmental reporting

The questionnaire aimed to capture:

a) Reporting requirements
b) Reporting Procedures
c) Compliance levels
d) Link between indicators and reporting
e) Indicators for Environmental Trends
f) Environmental quality
g) Environmental Stress factors
h) Socio-economic indicators – Livelihoods
i) Socio-economic indicators – Development/Poverty
j) Trans-boundary effects

Category II: Reporting by lead agencies to NEMA

The questionnaire aimed at capturing:

a) Reporting requirements to NEMA
b) Reporting procedures to NEMA
c) Compliance levels from relevant sub-sectors
d) Link between indicators and reporting
e) Indicators for environmental trends
f) Environmental quality
g) Environmental stress factors
h) Socio-economic indicators – Livelihoods
i) Socio-economic indicators – Development/Poverty
j) Trans-boundary effects

Questionnaire for filling information gaps – Central Agencies

Issue	Institution	Questions
Environmental Indicators	NEMA	Reporting requirements
		Reporting Procedures
		Compliance levels
		Link between indicators and reporting
		Indicators for Environmental Trends
		Environmental quality
		Environmental Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Wetlands	WID	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting
		Indicators for Wetlands Trends
		Wetlands quality
		Wetlands Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Forestry	NFA	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting
		Indicators for Forestry Trends
		Forestry quality
		Forestry Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Land	MWLE	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting
		Indicators for Land Trends
		Land quality
		Land Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Soil	MWLE/MUK	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting
		Indicators for Soil Trends
		Soil quality
		Soil Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Biodiversity	MUIENR	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting

		Indicators for Biodiversity Trends
		Biodiversity quality
		Biodiversity Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Populations	PS	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting
		Indicators for Population Trends
		Population quality
		Population Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Poverty	MoFPED	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting
		Indicators for Poverty Trends
		Livelihoods quality
		Socio-economic Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects
Water	DWD/WRM	Reporting requirements to NEMA
		Reporting Procedures to NEMA
		Compliance levels from relevant sub-sectors
		Link between indicators and reporting
		Indicators for Water quality Trends
		Livelihoods quality
		Socio-economic Stress factors
		Socio-economic indicators – Livelihoods
		Socio-economic indicators – Development/Poverty
		Trans-boundary effects

Annex II (b): Questionnaire for applied for District Consultations

1. Introduction

The National Environment Action Plan (NEAP) for Uganda (1994) identified environmental indicators as a necessary tool for timely and effective monitoring of changes in the environmental processes in the country *(Attached NEAP Indicators)*. Also, sub sectors such as Forestry, Wetlands, Land, Wildlife, Water and Climate have indicators for measuring their performance in implementing their mandates.

The National Environment Management Authority is presently reviewing existing indicators with the view of strengthening them. The main outcome of this exercise is to put in place indicators for environmental monitoring and reporting in Uganda. To achieve this,it calls for:

a) Indicators at Central and district levels;
b) Effective systems and procedures for applying these indicators;
c) Monitoring of environmental trends; and,
d) Environmental reporting to inform the public, decisions makers and environmental managers.

2. Why consult districts?

The **Environment Statute decentralized environmental management to districts.** Notable among the relevant actions relating to environmental indicators and reporting by districts include:

a) Development and implementation of DEAPs,
b) Integration of environmental actions in District Development Plans;
c) Environmental reporting (e.g., preparation of District State of Environment Reports/District Environment Profiles)

In addition, **management of other natural resources (wetlands, forests, wildlife (outside protected areas), agriculture/land, etc.) is decentralized to districts**. This also requires Districts to monitor the performance of these sectors and report on them regularly. In addition, Districts prepare Development Plans and implement development activities/projects (e.g., road construction, agriculture/PMA/NAADS/) that impact on the environment and therefore, are expected to monitor and report on such impacts.

Therefore, Consultations aim at undertaking a survey of sample districts to document the:

a) Environmental indicators applied at the district level;
b) Monitoring tools and methodologies applied;
c) Reporting procedures and requirements to NEMA and other sectors;
d) Provisions of environmental monitoring in DEAPs, DDPs, and annual plans/budgets, etc.) .

2. What are environmental Indicators?

Indicators are measures of judging trends in environmental quality and impacts of various actions on the environment. Indicators show environmental changes (e.g., changes in vegetation cover), and how the changes have occurred (cause, where, size of area affected, what period of time these changes have taken place, etc.).

Indicators are based on baseline information. There is need to establish the starting pint. e.g., Size of wetlands in XXX County is XXXX ha. This baseline data forms the benchmark for monitoring the changes in future when you compare the situation/condition/size of today and in future. Therefore, indicators can be quantitative (e.g., size of wetlands) or qualitative (e.g., smell of air).

Environmental indicators can be based on **physical** (e.g. size of encroached area), **chemical** (e.g., quality of water pollution/) or **biological** (e.g., number of exotic species introduced) measures associated with environmental quality or natural resources.

In their desired state, environmental indicators should summarize some aspects of the state of the environment, natural resources assets and related human activities. To be useful to the sustainable development context, environmental indicators should relate environmental aspects to socio-economic factors. Therefore, they should track environmental quality, socio-economic and development changes over time.

NEAP Indicators (Source: NEAP 1994)

Focal area	Indicators	Methodology/Tool	Lead
Natural forest and man-made forests	⇒ Canopy cover ⇒ Openness ⇒ Frequency and density of fire tolerant species ⇒ Humidity and soil, moisture ⇒ Change in regeneration of common species ⇒ Insect build up ⇒ Pathogenic outbreaks ⇒ Demand for forest products ⇒ Utilization /harvesting effectiveness	⇒ Remote sensing ⇒ Periodic Inventories ⇒ Field inspections ⇒ Field reports from administrative, communities and forest department staff ⇒ Review of administration files	Forest Dept. Local Administration Communities
Savannah and rangeland ecosystems	⇒ Density /frequency/cover of annual species ⇒ Canopy of Woody species ⇒ Frequency and density of fire resistant species ⇒ Decrease of over-all cover ⇒ Frequency/density of indicator species ⇒ Frequency and density of palatable species ⇒ Frequency and density of toxic species	⇒ Remote sensing ⇒ Periodic Inventories ⇒ Field inspections ⇒ Field reports from administrative, communities and forest department staff ⇒ Review of administration files	⇒ Not specific
Invasive & exotic Species	⇒ Extent of spread ⇒ Impact on natural ecosystems	⇒ Not specified	⇒ Not specific
Soil Degradation			
Physical degradation	⇒ Changes in depth of top soil ⇒ Bulk densities and temperatures ⇒ Infiltration rates and porosity ⇒ Signs of rill/gully/sheet erosion ⇒ Yield and productivity ⇒ Siltation in neigbouring waters ⇒ Evidence of surface crusts/soil slips/slumps and landslides	⇒ Not specific	⇒ Not specific
Chemical degradation	⇒ Changes in soil acidity and exchangeable manganese	⇒ Not specific	⇒ Not specific
Biological degradation	⇒ Changes in population of micro-organisms	⇒	⇒
Biomass productivity	⇒ Soil productivity ⇒ Nutrient deficiency symptoms	⇒	⇒
Other	⇒ Leaching levels ⇒ Soils/murram/clay/sand extraction	⇒	⇒
Wetlands			
Habitat	⇒ Water levels ⇒ Inflow/outflow rates ⇒ Sediment transport	⇒ Not Specific	⇒ Not specific

	⇒ PH ⇒ Transparency ⇒ Colour ⇒ Conductivity ⇒ Dissolved oxygen ⇒ Biochemical oxygen demand ⇒ Algae ⇒ Macrophytes ⇒ Invertebrates ⇒ Fish/bird and animal life		
Pollution			
a) Water Pollution	⇒ Pollutants	⇒	⇒
Sewerage discharge (Urban)	⇒ Volume and composition of discharge	⇒	⇒ Dept of Occupational Health ⇒ NWSC
Individual discharge	⇒ Volume and composition of discharge	⇒	⇒ As above
Condition of lakes and rivers	⇒ Sediment load ⇒ Volume flow ⇒ Chemical pollutants	⇒	⇒ DWD, Fisheries dept
Domestic water supply	⇒ Water quality (chemical and biological examination)	⇒ Sampling	⇒ Public health, DWD, NBS, Government Chemist
Residues in Aquatic Life	⇒ Chemical/residual content	⇒ Laboratory Tests	⇒ Fisheries, FIRRI, LGS, NBS
b) Land Pollution	⇒ Size of affected land ⇒ Levels of hazardous materials ⇒ Level of hazardous material in Plant/animal life at affected sites ⇒ Agro-vet pesticides residues	⇒ Laboratory tests ⇒ Field inspection ⇒ Inventory of hazardous chemicals	⇒ MAAIF, LGB, Government Chemist, Public health
c) Air Pollution	⇒ Sites emissions ⇒ Extent of cover/influence ⇒ Trapped particles	⇒ Sampling ⇒ Laboratory tests	⇒ Urban authorities, Public health, Met
Climate Change and general atmospheric condition			
Atmosphere	⇒ Temperature ⇒ Rainfall ⇒ Humidity ⇒ Soil temperature ⇒ Evaporation ⇒ Radiation ⇒ Sunshine	⇒ Field measurements ⇒ Observation and records	⇒ Met ⇒ NEMA

Questionnaire for filling information gaps

Issue	Questions/Issue
Environmental Indicators ***Environment*** ***Wetlands*** ***Forestry*** ***Wildlife*** ***Soils*** ***Water*** ***Air/Climate*** ***Biodiversity*** ***Land*** ***Population***	Reporting requirements *to NEMA and other Sectoral agencies e.g. Forestry, Agriculture*
	Reporting Procedures- *how do you report? Are there reporting Formats?*
	Compliance levels – *scheduled reporting and compliance?*
	Link between indicators and reporting – *when you prepare your reports, on what basis do you compile information you report? E.g., do you base on your work plan? Do you base your reporting on any indicators? If you base on any indicators, are they measuring your performance of trends in the environment or impacts of your action on environment?*
	Indicators for Environmental Trends – *Does the district have indicators for measuring trends in the environment? Could they be in the DEAP or in the DDP?*
	Environmental Stress factors – *what can you state, as factors that overstretch the capacity of the environment to provide environmental services and goods in sustainable manner? E.g, Water availability to town. Quality of firewood/price? Fish size?*
	Trans-boundary effects- between districts ***(All districts)*** *and across international borders (Masindi and Kasese only). E.g. What environmental issues does your department collaborate on with sister departments in the neighboring district? How do you handle environmental effects arising from outside your districts but impact on your district/area of jurisdiction?*
DEAP	***DEAP is an official document and record of environmental action plans for the district. We would like to record indicators in this official document with respect to the following (Attn: DEO)*** Environment *Wetlands* *Forestry* *Wildlife* Soils *Water* *Air/Climate* *Biodiversity* *Land* *Population* *Social Economic,* Cross – cutting (Biodiversity, population.)
	Reporting requirement entrenched in DEAP?
DDP	DDP is an official document and record of development plans for the district. We would like to record environmental indicators in this official document with respect to the following ***(Attn: DEO)*** *Environment* *Wetlands* *Forestry* *Wildlife* Soils *Water* *Air/Climate* *Biodiversity* *Land* *Population* *Social Economic,* Cross – cutting (Biodiversity, population.)
	Reporting requirement entrenched in DDP?

Work Plans/Other	Each department is required to have annual work plans as an official plan for guiding the activities, budget and performance of the department. Work plans are official documents and record of activities for each department. We would like to record environmental indicators in this official document with respect to the following ***(Attn: DEO)*** *Environment* *Wetlands* *Forestry* *Wildlife* Soils *Water* *Air/Climate* *Biodiversity* *Land* *Population* *Social Economic,* Cross – cutting (Biodiversity, population.)

Annex III: Documents reviewed/ List of References

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2. GoU (1995): The Constitution of the Republic of Uganda
3. GoU (1998); Vision 2025: A Strategic Framework for National Development (Vol I & II).
4. GoU (2002); Land Sector Strategic Plan: Analysis of Economic Rationale and Investment Programme. *Final Report*
5. GoU (2004); PMA Annual Report 2003/4
6. GoU (2004); Water and Sanitation Sector Performance Report, 2004
7. GoU/MWLE (2002); The National Forest Plan
8. Government of Uganda (2002); Draft National Biodiversity Strategy and Action Plan
9. Kasese District Administration (2004); District Environment Action Plan
10. Kasese District Administration (2005); District Environment Management Policy
11. Kasese District Administration (2005); District Land Use Policy
12. LAGBIMO (2003); Lake George Basin Management Plan
13. Ministry of Energy and Mineral Development (2004); Biomass Estimation of Charcoal Production Area in Masindi District
14. MoFPED (2001); Poverty Eradication Action Plan for Uganda (Vol 1)
15. MoFPED (2002); Poverty Relevant Environmental Indicators – Status report for Uganda – 2002
16. MoFPED (2003); Uganda Poverty Status Report, 2003
17. MoFPED (2003); Uganda's Progress in Attaining the PEAP Targets and Millennium Development Goals
18. MoFPED (2004); Poverty Eradication Action Plan (2004/5-2007/8)
19. Moyini, Y & Muramira E, (2002); Costs of environmental degradation and loss to Uganda's economy, with particular reference to poverty eradication.
20. MWLE (2000); Land Sector Strategic Plan
21. MWLE (2002); National Progress Assessment Report on the Implementation of Agenda 21
22. MWLE (2003); Draft Land Use Policy
23. NEMA (1994); State of Environment Report for Uganda
24. NEMA (1998); State of Environment Report for Uganda.
25. NEMA (2003); Framework for Environmental Governance in Uganda (Draft)
26. NEPAD (2001); The New partnership for Africa's Development (NEPAD)
27. Sustainable Development in the United States: An experimental set of indictors. Washington DC
28. The Common Wealth Foundation(1995); Non-Governmental Organizations : Guidelines for Good Policy and Practice
29. UNEP (2002); Africa Environment Outlook: Past, present and future perspectives
30. UNEP (2002); Global Environment Outlook 3
31. UNEP (2003); Guidelines for National Integrated Environmental Assessment Report (NIEAR) Preparation in Africa (Draft I)
32. UNEP/DEIA (1996). Rump, C. Paul: State of Environment Reporting: Source Book for Methods and Approaches- UNEP/DEIA/TR.96-1
33. UNESCO (1991): International Consultative Forum on Education for All.
34. World Bank (2003); Aide-Memoire: Fourth Poverty Reduction Support Credit (PRSC4) Uganda.

Annex IV: Specific Responses captured during consultations

A: Department of Environment Affairs (MWLE)

Indicators

a) Staff establishment in the District and number of District Forest service, Environment officers, Wetland Officer were appointed as per district structure.
b) Availability of District Environment Action Plans
c) Availability of District of Environment Office
d) Facilities available for district officer (DFS, EO,WO)
e) Inventory of local forest reserves and private/ community forests
f) Availability of District Wetland Action Plan
g) Availability of sub-county Environment and Wetlands Action Plan.
h) How often the District and sub county Environment and wetlands Committees meet.
i) State of Environment in the field
j) Enhanced environment monitoring inspection reporting and compliance – detailed / comprehensive reports – reports growing wider in coverage of issues
k) Non-formal training of communities
l) Formal environment education in institutions
m) Civil Society (NGOs and CBOs) integrated into and undertaken in national management programmes
n) Compliance Assistance Programme to assist private sector to adopt environmentally- sound practices developed and implemented.
o) Large industries having put treatment plants for waste discharge
p) Sectoral guidelines for EIA
q) Regulations, standards and guidelines in priority areas
r) Sectors where environment inspectors trained, gazzetted equipped
s) Compliance with National Environment Act Cap 153
t) Intensity of restoration activities
u) Intensity of TV and radio programmes

Best practices /wetlands management by communities

Environment Management and practical projects
Planted and maintained forest estates
Number of ha of forests established and maintained.
Number of private forest owners helped to produce forest management plans
Seedlings produced and issued out for planting by households and institutions.
Restoration practices/measures / Restored/rehabilitation sites

Worst Scenarios

a) Level/signs of land degradation/deforestation /domestic waste dumping/overgrazing
b) Water and atmospheric pollution from small-scale industries
c) Areas of degradation / encroached local forest reserves
d) Areas of private forests cleared for other uses
e) Action plans for DFS

f) Capacity Built in planning and management – courses attended
g) Sensitization / sessions workshops held with communities
h) Additional developed environmental indicators, regulations, standards, and guidelines.

B: Wetlands Inspection Division

Reporting requirements	Mandate	Status
Reporting requirements to NEMA	This is stated in the National Environment Act, cap 153, 1995 section 8 subsection 4 where each lead agency is expected to furnish NEMA with operational reports.	WID does not report to NEMA as is required because the mandate is strategically placed under the Ministry of Water, Lands and Environment
Reporting procedures to NEMA	Not stated anywhere	WID occasionally copies communication related to enforcement on wetlands to NEMA because most of the cases of wetland abuse are liable for prosecution under the statute that is a mandate of NEMA
Compliance levels from relevant sub-sector		
Link between indicators and reporting	There are no indicators so no reporting link	The indicators in wetlands sector are those developed under Wetland Sector Strategic Plan. These are linked to reports prepared quarterly and annually.
Indicators for poverty trends	Linked to those stated under PEAP probably	Linked to those stated under PEAP
Population quality	Not Indicated	No idea
Population stress factors	Not Indicated	No idea
Socio-economic indicators –livelihoods	Not Indicated	To be developed for sector soon under an upcoming consultancy
Socio-economic indicators-Development/poverty	Not Indicated	To be developed for sector soon under an upcoming consultancy
Trans-boundary effects	Not Indicated	No idea

C: Water Resources Management Department

Reporting Requirements	Water resources
Water Resources	▪ Annual state of the Water Resources of Uganda. The source document is usually our Annual Year Book.
Reporting Procedures	▪ Manuals ▪ Data reports ▪ Assessment reports
Compliance Levels	▪ Defined in the standards for water quality for various uses ▪ Abstraction thresholds under the permit system ▪
Link between indicators & reporting	▪
Indicators for environment trends	▪ Frequency of eutrophication of water bodies, trends in pollution
Indicators for environmental quality	▪ Water Quality parameters monitored e.g. turbidity, EC, PH
Indicators For environmental stress factors	▪ Droughts, floods, increased pollution levels, declining water levels in major water bodies, declining yields of boreholes and stream flow
Socio-economic indicators – livelihoods	▪ Clean water, decreased disease incidence, increased, productivity from irrigation, high water supply coverage, renewable water resource per year
Socio-economic indicators-development/poverty	▪ Droughts, declining water resources for hydropower production, water resource conflicts
Trans-boundary effects	▪ Flooding, pollution from upstream sources, water sharing conflicts

d) Forestry Resources Management

PEAP Pillars	Main NFP strategies	Indicators of Impact on PEAP(source of information)
I. Economic Growth and Transformation	• Removal of constraints (land, tree seed) • Improvement of investment climate (transparency, secure tenure) • Provision of information (markets, prices) • Economic incentives (Forest Fund) • Training (skills and advice)	• Value of **commercial investment** in forestry business (NFA/UIA) • Volumes and values of **forest products traded** (domestic and international (URA/UBOS) • Number of people and wage rates(by gender, socio-economic group, geographic location) in forestry-related **employment** (UBOS) • Value and % contribution of forestry to **GDP** (UBOS)

II. Good Governance and Security	• Community-based participatory planning • Creation of NFA, NAADS and reforms in local government and community institutions • Increasing access to information • Pro-poor regulations and guidelines • Civil society advocacy forum	• Local representation on FMA **Forestry Committees** (NFA) • Area of FRs under productive forest management by **NFA and Local governments** (NFA/LGs) • Number of effective **CFM agreements** in FRs (NFA) • Number and areas of **community forest reserves** (LGs) • Open access to **public information** on forestry (MWLE)
III. Ability of the poor to raise incomes	• Advisory and training support • Small-business growth • Security of land and tree tenure • Appropriate technologies	• Each indicator measured by gender, socio-economic group, geographic location- to ensure targeting of interventions: • 10 % of **household income** derived from different forestry-related enterprises (UBOS) • Number of **NAADS contracts** for forestry advisory services (NAADS) • Number of people with tree growing **permits in FRs** (NFA) • Number of farmers using improved **agro forestry technologies** (UBOS)
IV. Improving the quality of life of the poor	• Developing sustainable forest management • Securing cultural values of forests • Use of forests as safety nets to reduce vulnerability • Biomass energy conservation	• % of population with secure **access to forest resources** for subsistence (as #7&#8 under pillar II) • Improved **tree cover, biodiversity and water flows** from natural forests in FRs and privates (NFA-NBS) • **Reduced time and distance** to collects forest produce (UBOS) • Number of households and businesses using improved **biomass energy technologies** (UBOS)

District Level Consultations

Methodology:

Five districts namely Mukono, Masaka, Bushenyi, Kasese and Masindi were selected and surveyed. The five Districts were selected taking into account: districts that have benefited from ECBMP I and II, bordering a protected area, bordering an international border, levels of socio-economic activity, levels of environmental degradation, budget constraints. It is expected that the other district will participate in the review of this draft before it is finalized.

Within each district, several sectoral officers were interviewed or provided information. The Consultant used a questionnaire to solicit responses from the Districts. The key issues of interest during the consultations were grouped under the following three categories, namely: Environmental indicators, Planning tools and Work plans.

Issue	**Questions/Issue**
Environmental Indicators ***Environment*** ***Wetlands*** ***Forestry*** ***Wildlife*** ***Soils*** ***Water*** ***Air/Climate*** ***Biodiversity*** ***Land*** ***Population***	Reporting requirements *to NEMA and other Sectoral agencies e.g. Forestry, Agriculture*
	Reporting Procedures- *how do you report? Are there reporting Formats?*
	Compliance levels – *scheduled reporting and compliance?*
	Link between indicators and reporting – *you link your reporting with indicators? What do you base on to generate environmental reports?*
	Indicators for Environmental Trends – *are these available at district level?*
	Environmental quality – *are these available?*
	Environmental Stress factors – *are these available?*
	Socio-economic indicators – Livelihoods – *are these available*
	Socio-economic indicators – Development/Poverty – *are these available?*
	Trans-boundary effects- between districts ***(All districts)*** *and across international borders (Masindi and Kasese only)*
DEAP	Indicators in DEAP? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*
	Reporting requirement entrenched in DEAP?
DDP	Indicators in DDP for? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*
	Reporting requirement entrenched in DDP?
Work Plans/Other	Work plan provisions for Indicators on: *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*

Outcome of district consultations:

a) Masaka District

Issue	Questions/Issue	Response
Environmental Indicators ***Environment*** ***Wetlands*** ***Forestry*** ***Wildlife*** ***Soils*** ***Water*** ***Air/Climate*** ***Biodiversity*** ***Land*** ***Population***	Reporting requirements *to NEMA and other Sectoral agencies e.g. Forestry, Agriculture*	Monthly reports
	Reporting Procedures- *how do you report? Are there reporting Formats?*	No formal procedures. Report to CAO who in turn is expected to report to NEMA. Reports received/processed in form of Activity reports, field trip reports and verbal communication
	Compliance levels – *scheduled reporting and compliance?*	Reporting not regular Department receives monthly reports from field officers and field activities. Also reports received from LCs with respect to BMU
	Link between indicators and reporting – *you link your reporting with indicators? What do you base on to generate environmental reports?*	Not clear since there are environmental indicators. Use work plan targets for reporting Apply parameters such as fish size, product prices, abundance/availability of resources e.g. fish species;
	Indicators for Environmental Trends – *are these available at district level?*	Not clear Apply trends in market prices,
	Environmental quality – *are these available?*	Quality is measured on natural assets and not environmental trends e.g., fuel wood quality
	Environmental Stress factors – *are these available?*	No indicators *per se* but rely on filed observations e.g., Loss of wetland due to drainage or conversion Encroachment on natural forests and wetlands Development patterns Concentration of certain activities around some particular resources e.g. fish landings Complaints from Community and stakeholders over unregulated access or depleted resources
	Socio-economic indicators – Livelihoods – *are these available*	None
	Socio-economic indicators – Development/Poverty – *are these available?*	None
	Trans-boundary effects- between districts ***(All districts)*** *and across international borders (Masindi and Kasese only)*	Differences in management capacity and effectiveness Different levels of enforcement of environmental laws/regulations Unclear responsibilities over Transboundary issues
DEAP	Indicators in DEAP? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	Refer to DEAP Document
	Reporting requirement entrenched in DEAP?	Refer to DEA P Document

DDP	Indicators in DDP for? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	Refer to Work Plan/DDP
	Reporting requirement entrenched in DDP?	Refer to Work Plan/DDP
Work Plans/Other	Work plan provisions for Indicators on: *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	Refer to Work Plan

b) Bushenyi District

Issue	**Questions/Issue**	**Response**
Environmental Indicators ***Environment*** ***Wetlands*** ***Forestry*** ***Wildlife*** ***Soils*** ***Water*** ***Air/Climate*** ***Biodiversity*** ***Land*** ***Population***	Reporting requirements *to NEMA and other Sectoral agencies e.g. Forestry, Agriculture*	• Not formal except for the Environment office on NEMA Projects according to agreed work targets and formats
	Reporting Procedures- *how do you report? Are there reporting Formats?*	• No formal reporting structure/format • Reporting format based on work plan format
	Compliance levels – *scheduled reporting and compliance?*	• Irregular but suspected to be due to inadequate resources, lack of reporting format and lack of indicators • Receives reports from the field on monthly basis • Reports presented in form of monthly reports, activity reports e.g. training workshops, field trip reports and verbal communication • Field reporting follows an established format • Receives reports from NGOs/CBOs actively implementing projects under the office. Compliance satisfactory
	Link between indicators and reporting – *you link your reporting with indicators? What do you base on to generate environmental reports?*	• Reporting based on activities/work plan targets because there are no environmental indicators, no resources and clear methodology
	Indicators for Environmental Trends – *are these available at district level?*	• None
	Environmental quality – *are these available?*	•

	Environmental Stress factors – *are these available?*	• Loss of communal land to private holding • High human population increase and resultant pressure on natural assets e.g., wetlands • Natural vegetation loss due to bush fires, over use • Increase in monoculture and commercial trees cover • Soil erosion • Soil fertility decline • Food insecurity • Degraded/decline in production of fisheries, firewood • Water scarcity • Water siltation • Degradation of hill sides and slopes • Wetland degradation and over-e .g for fish ponds • Pollution
	Socio-economic indicators – Livelihoods – *are these available*	• None • Some indicators based on projects work plans e.g., LGDP Projects, PMA
	Socio-economic indicators – Development/Poverty – *are these available?*	• None
	Trans-boundary effects- between districts ***(All districts)*** *and across international borders (Masindi and Kasese only)*	• Capacity to deal with poaching varies across district borders between Bushenyi and Kasese • Disease transmission for animals and crops e.g. bananas • Lack of collaboration between sister departments • Share development projects e.g. bridge construction • Collaborate in management of trans-boundary resources e.g., QENP on illegal activities, benefit sharing through established institutions such as CPAI. • Collaborate in management of L. George through the LAGBIMO • Illegal use of resources by foreigners (from DRC) e.g. fishing on L. Edward • Use of illegal fishing gear
DEAP	Indicators in DEAP? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	• Refer to the DEAP, DSOER, District Environment Profile Report
	Reporting requirement entrenched in DEAP?	• Refer to DEAP
DDP	Indicators in DDP for? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	• Refer to DDP
	Reporting requirement entrenched in DDP?	• Refer to DDP

Work Plans/Other	Work plan provisions for Indicators on: *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	

c) Masindi District

Issue	**Questions/Issue**	**Response**
Environmental Indicators ***Environment Wetlands Forestry Wildlife Soils Water Air/Climate Biodiversity Land Population***	Reporting requirements *to NEMA and other Sectoral agencies e.g. Forestry, Agriculture*	• Not formal
	Reporting Procedures- *how do you report? Are there reporting Formats?*	• No formal procedures or format • Reporting based on department work plans and formats • Submit progress reports
	Compliance levels – *scheduled reporting and compliance?*	• Weak due to motivation levels
	Link between indicators and reporting – *you link your reporting with indicators? What do you base on to generate environmental reports?*	• None • Reporting based on observation, perception, complaints e.g. about Kinyala dumping into water systems
	Indicators for Environmental Trends – *are these available at district level?*	• None
	Environmental quality – *are these available?*	• None
	Environmental Stress factors – *are these available?*	• Soil degradation • Shortages in trees and wood products • Water scarcity including during streams drying up • Natural vegetation cover loss/degraded • Capacity to manage natural resources – budget, staff/manpower, • Wetland loss/degradation
	Socio-economic indicators – Livelihoods – *are these available*	• None
	Socio-economic indicators – Development/Poverty – *are these available?*	• None
	Trans-boundary effects- between districts ***(All districts)*** *and across international borders (Masindi and Kasese only)*	• Lack of collaboration or coordination with neighbouring districts • Impact of migrants and refugees who have less attachment to the land and resources
DEAP	Indicators in DEAP? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	•

	Reporting requirement entrenched in DEAP?	•
DDP	Indicators in DDP for? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	•
	Reporting requirement entrenched in DDP?	•
Work Plans/Other	Work plan provisions for Indicators on: *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	

Kasese District

Issue	**Questions/Issue**	**Response**
Environmental Indicators ***Environment*** ***Wetlands*** ***Forestry*** ***Wildlife*** ***Soils*** ***Water*** ***Air/Climate*** ***Biodiversity*** ***Land*** ***Population***	Reporting requirements *to NEMA and other Sectoral agencies e.g. Forestry, Agriculture*	• Not formal except for the Environment office on NEMA , WID Projects according to agreed work targets and formats
	Reporting Procedures- *how do you report? Are there reporting Formats?*	• Annual reporting through not regular
	Compliance levels – *scheduled reporting and compliance?*	• Irregular but suspected to be due to inadequate resources, lack of reporting format and lack of indicators • Receives reports from the field on monthly basis • Reports presented in form of monthly reports, activity reports e.g. training workshops, field trip reports and verbal communication • Field reporting follows an established format • Receives reports from NGOs/CBOs actively implementing projects under the office. Compliance satisfactory
	Link between indicators and reporting – *you link your reporting with indicators? What do you base on to generate environmental reports?*	None
	Indicators for Environmental Trends – *are these available at district level?*	None
	Environmental quality – *are these available?*	None

	Environmental Stress factors – *are these available?*	• Loss of communal land to private holding • High human population increase and resultant pressure on natural assets e.g., wetlands • Natural vegetation loss due to bush fires, over use • Increase in monoculture and commercial trees cover • Soil erosion • Soil fertility decline • Food insecurity • Floods • Degraded/decline in production of fisheries, firewood • Water scarcity including in rivers • Water siltation • Degradation of hill sides and slopes • Wetland degradation and over-use e .g for fish ponds • Industrial Pollution (Kilembe) • Disease transmission
	Socio-economic indicators – Livelihoods – *are these available*	• None
	Socio-economic indicators – Development/Poverty – *are these available?*	• None
	Trans-boundary effects- between districts ***(All districts)*** *and across international borders (Masindi and Kasese only)*	• Capacity to deal with poaching varies across district borders between Bushenyi and Kasese • Disease transmission for animals and crops e.g. bananas • Lack of collaboration between sister departments • Share development projects e.g. bridge construction • Collaborate in management of trans-boundary resources e.g., QENP on illegal activities, benefit sharing through established institutions such as CPAI. • Collaborate in management of L. George through the LAGBIMO • Illegal use of resources by foreigners (from DRC) e.g. fishing on L. Edward • Use of illegal fishing gear
DEAP	Indicators in DEAP? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	• Refer to DEAP
	Reporting requirement entrenched in DEAP?	• Refer to DEAP
DDP	Indicators in DDP for? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	• Refer to DDP
	Reporting requirement entrenched in DDP?	• Refer to DDP

Work Plans/Other	Work plan provisions for Indicators on: *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	• Plans to develop District land use Plan • Have land use policy

e) Mukono District

Issue	**Questions/Issue**	
Environmental Indicators ***Environment*** ***Wetlands*** ***Forestry*** ***Wildlife*** ***Soils*** ***Water*** ***Air/Climate*** ***Biodiversity*** ***Land*** ***Population***	Reporting requirements *to NEMA and other Sectoral agencies e.g. Forestry, Agriculture*	▪ Monthly reports
	Reporting Procedures- *how do you report? Are there reporting Formats?*	▪ No formal procedures. Report to CAO who in turn is expected to report to NEMA. Reports received/processed inform of Activity reports, field trip reports and verbal communication
	Compliance levels – *scheduled reporting and compliance?*	▪ Reporting not regular ▪ Department receives monthly reports from field officers and field activities. Also reports received from LCs with respect to BMU
	Link between indicators and reporting – *you link your reporting with indicators? What do you base on to generate environmental reports?*	▪ Not clear since there are no environmental monitoring indicators. ▪ Use work plan targets for reporting
	Indicators for Environmental Trends – *are these available at district level?*	▪ Not clear ▪
	Environmental quality – *are these available?*	▪ Quality is measured on natural assets and not environmental trends e.g., fuel wood quality
	Environmental Stress factors – *are these available?*	▪ No indicators *per se* but rely on filed observations e.g., ▪ Loss of vegetation cover due to conversion to agriculture and settlements ▪ Encroachment on natural forests and wetlands ▪ Development patterns ▪ Complaints from Community and stakeholders over unregulated access or depleted resources
	Socio-economic indicators – Livelihoods – *are these available*	▪ None
	Socio-economic indicators – Development/Poverty – *are these available?*	▪ None
	Trans-boundary effects- between districts ***(All districts)*** *and across international borders (Masindi and Kasese only)*	▪ Differences in management capacity and effectiveness ▪ Different levels of enforcement of environmental laws/regulations ▪ Unclear responsibilities over Transboundary issues

DEAP	Indicators in DEAP? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	▪ No DEAP
	Reporting requirement entrenched in DEAP?	▪ N/A
DDP	Indicators in DDP for? *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	▪ Refer to Work Plan/DDP
	Reporting requirement entrenched in DDP?	▪ Refer to Work Plan/DDP
Work Plans/Other	Work plan provisions for Indicators on: *Environment; Wetlands; Forestry; Wildlife; Soils; Water; Air/Climate; Biodiversity; Land; Population;* *Social Economic, Cross – cutting (Biodiversity, population.)*	▪ Refer to Work Plan