

The role of environment in increasing growth and reducing poverty in Uganda

Summary Report: Final

Gil Yaron and Yakobo Moyini
with David Wasike, Maxwell Kabi and Mildred Barungi

February 2004

ema Consult
ema.consult@utlonline.co.ug

GY Associates
info@gya.co.uk

Contents

ABBREVIATIONS AND ACRONYMS.....	iii
1 Introduction.....	1
2 Recognising the economic importance of the ENR sector.....	2
2.1 The ENR sector and the National Accounts	2
2.2 Missing GDP	3
2.3 Employment generated by the ENR sector	4
2.4 Adjusted Net Savings and sustainable growth	4
3 A summary of key policy recommendations	6
4 ENR, rapid and sustainable economic growth and structural transformation	7
4.1 The links between ENR, economic growth and poverty reduction.....	7
4.1.1 Opportunities for growth provided by the ENR sector	7
4.1.2 Sustainable growth.....	7
4.2 Key policy recommendations - PEAP pillar 1	7
4.2.1 Links to agriculture	7
4.2.2 Links to fisheries, forestry, wetlands and tourism.....	8
5 ENR and governance and security	9
5.1 Main findings	9
5.2 Key policy recommendations - PEAP pillar 2	11
5.2.1 Building capacity for environmental governance	11
5.2.2 Improving environmental legislation	11
5.2.3 Improving coordination within government.....	11
5.2.4 Reforming local taxation.....	11
5.2.5 Make the ENR sector eligible for LGDP funds	11
6 ENR and an increased ability of the poor to raise their incomes	12
6.1 Key policy recommendations - PEAP pillar 3	12
6.1.1 Improving existing policies – the PMA and NAADS	12
6.1.2 Improving existing policies – gender issues	13
6.1.3 Technical innovations.....	13
6.1.4 Payment for Environmental Services (PES).....	14
7 ENR and the quality of life of the poor	14
7.1 Main findings	14
7.2 Key policy recommendations - PEAP pillar 4	15
8 Cross-cutting actions.....	16
8.1 Strengthen performance indicators	16
8.2 Establish quality control for ENR valuation data.....	16
8.3 Priority research areas	16

This report has been prepared for the PEAP revision committee and the ENR Sector Working Group (SWG). It has been funded by the Department for International Development (DFID). We have received many helpful comments from members of the PEAP revision committee, ENR SWG, PMA and NAADS staff, DFID and others. However, the views expressed in this paper are those of the authors and do not necessarily reflect those of DFID or any other organisation.

ABBREVIATIONS AND ACRONYMS

CLA	Communal Land Association
CSOs	Civil Society Organisations
DWD	Directorate of Water Development
EIA	Environmental Impact Assessment
ENR	Environment and Natural Resource
FACE	Forests Absorbing Carbon dioxide Emissions
GDP	Gross Domestic Product
GoU	Government of Uganda
LGDP	Local Government Development Program
LSSP	Land Sector Strategic Plan
MAAIF	Ministry of Agriculture, Animal Industries and Fisheries
MLG	Ministry of Local Government
MFPEd	Ministry of Finance Planning and Economic Development
MTCS	Medium Term Competitive Strategy
MTEF	Medium Term Expenditure Framework
MSY	Maximum Sustainable Yield
NAADS	National Agricultural Advisory Services
NARS	National Agricultural Research System
NEMA	National Environment Management Authority
PEAP	Poverty Eradication Action Plan
PMA	Plan for the Modernisation of Agriculture
UBOS	Uganda Bureau of Statistics
UIA	Uganda Investment Authority
UWA	Uganda Wildlife Authority
WID	Wetlands Inspection Division
WSSP	Wetland Sector Strategic Plan

1 Introduction

The current PEAP revision provides an opportunity to consider the linkage of environment and natural resources (ENR) and poverty-reducing growth. This link with poverty reduction rests on the:

- vital role of ENR in GDP
- ability of GDP growth to reach the poor
- need for sustainable growth

While the contribution of the ENR sector is recognised to some extent within the PEAP, the current revision offers the chance to improve this. A review of the treatment of the environment in 40 PRSPs by the World Bank found that Uganda scored better than many countries but far lower than the best in sub-Saharan Africa. One of the reasons for this is the lack of data that allows the linkage between ENR and poverty reduction to be clearly articulated to policy makers. Other reasons may include the way existing data and arguments have been presented and an institutional structure that limits environmental messages getting through to the PEAP.

In the light of the above, DFID have funded a short study to produce summary and technical papers for the PEAP sub-committee and the ENR sector working group. This document is the draft summary report from this study.

There is no unique definition of the ENR sector. Following international practice, the ENR sector can be said to include: natural environment; fisheries; forestry; wildlife; wetlands; water quality; meteorology; disaster planning and mitigation; urban and regional development planning; and energy and minerals.

The focus of ENR policy is typically on securing natural capital and regulating its use to contribute to national development objectives. Other sectors are concerned with the commercial opportunities arising from this use. Hence, commercial agriculture, irrigation and oil refining are outside the sector but trying to ensure each uses natural capital in a sustainable way is part of the ENR remit.

Rather than try and cover all possible ENR areas, we have focussed on those:

- that are particularly important for achieving the PEAP objectives
- where we can demonstrate this linkage and (to a large extent) quantify it

The primary purpose of this document is to provide concise policy conclusions and recommendations with a summary of supporting evidence – which is discussed in depth in the Technical Report. References to reports and research mentioned in this summary can also be found in the Technical Report. In this document we also identify priority areas for future research beyond the current PEAP revision timeframe.

This study aims to contribute to the PEAP revision process by highlighting how a fuller consideration of how improved ENR management can maintain, enhance and minimise risks associated with the delivery of core PEAP objectives, especially economic growth. Conversely we show how failure to consider these issues significantly diminishes the likelihood of achieving PEAP targets in the medium to long term. It is important to note that

identifying key ENR issues which need to be taken account of and where action required is part of an on-going process – this study is merely an input to this process. It is also worth reiterating that this study is not supposed to provide a comprehensive review of the linkage between each element of the ENR sector and economic growth. We have been forced to be selective for the reasons identified above and this explains why we do not discuss ENR areas such as meteorology and disaster planning etc. Water and environmental health issues are also excluded despite their importance as these have been considered elsewhere as part of the PEAP reform process.

The structure of this report is as follows. We begin by setting out the evidence for the economic importance of the ENR sector and continue with a summary of key policy recommendations. The subsequent sections explain the context to these recommendations and unpack them in terms of the four pillars of the PEAP. Note, however, many of the proposed actions will have benefits across pillars and achieving them will require a coordinated response rather than a narrow focus on a sole PEAP pillar.

2 Recognising the economic importance of the ENR sector

2.1 The ENR sector and the National Accounts

The ENR contribution to economic growth in Uganda has not been recognised partly because much of the economic value it generates is unrecorded in the official statistics. As Table 1 shows, this reflects a serious undervaluation of direct financial benefits from the sector and a failure to measure broader indirect economic benefits.

Clearly some elements of the ENR sector are missing from Table 1 (water production, for example) – which tends to understate the contribution of the sector. We have also not been able to incorporate the cost of soil degradation from livestock overgrazing – a serious issue in some areas. Nonetheless, an annual economic value of US\$1726 million or UGSh 3450 billion is a very significant figure. It corresponds to:

- UGSh 140,000 (US\$70) for each person in Uganda
- Approximately 30% of the 2002 GDP

Slade and Weitz (1991) estimated that soil degradation accounted for 4-10% of GDP and accounted for as much as 85% of total environmental damage. Table 1 suggests that the economic cost of soil degradation is now almost 11% of GDP which implies total environmental damage is equal to 13% of GDP (as it seems reasonable to assume that soil degradation continues to contribute 80-85% of total damage).

Table 1 - ENR economic values

ENR area	Annual economic value (US\$ millions)	Currently recorded in GDP (US\$ millions)	Notes and key data sources – see Technical Report for more details
Soil nutrient loss	\$625	Not included	IFPRI research – Nkonya and Kaizzi (2003) and authors' calculations. Excludes soil degradation from livestock
Fisheries	\$301	\$130	Additional contribution from market valuation of catch from all major sources and calculation of contribution of transport, trading and processing – Banks (2003)
Forestry	\$360	\$112	Additional contribution comes from the informal sector (2.75% of GDP) and non-marketable outputs such as watershed benefits, carbon sequestration etc (1.45% of GDP). Processing values are included in manufacturing not forestry – Falkenburg & Sepp (1999) updated to 2002 prices
Wetlands	\$277	Minimal – value of agricultural production	Direct extractive values contribute 19% of the total. The figure quoted is based on a conservative estimate of 50% of the typical wetland product values calculated for five pilot areas by Haskoning <i>et al</i> (2001) extrapolated to all wetland areas and updated to 2002 prices.
Tourism & Wildlife	\$163	\$163	MTTI
Total of above	\$1726	\$405	

2.2 Missing GDP

Some of the most important values in Table 1 (such as loss of soil fertility) reflect a loss of capital rather than the narrow measure of economic production captured by GDP. We note how this affects the sustainability of growth later on. Nonetheless, as GDP is so widely quoted, in Table 2 we calculate how much the current figure understates the ENR contribution – restricting this to direct use values (products rather than broader environmental services) that are typically included.

Even using this narrow measure of economic welfare, we can see that only around half the current production value from the ENR sector is captured in GDP statistics and GDP would be some 7% higher if these were included.

It is important to note that the difference in ENR economic contribution between Table 1 and Table 2 reflects the inability of GDP to measure environmental services. These services do have a very real economic value. The value of wetlands in providing waste water treatment does not appear in Table 2 although, ironically, spending on construction to build a sewage treatment plant would be recorded.

Table 2 - GDP from the ENR Sector

ENR area	Contribution to GDP (US\$ millions)	Currently recorded in GDP	Notes and key data sources – see Technical Report for more details
Fisheries	\$301	\$130	Additional contribution from market valuation of catch from all major sources and calculation of contribution of transport, trading and processing – Banks (2003)
Forestry	\$274	\$112	Additional contribution comes from the informal sector, 2.75% of GDP Falkenburg & Sepp (1999) updated to 2002 prices
Wetlands	\$53	Minimal – value of agricultural production	Direct extractive values quoted contribute 19% of the total. The total figure is based on a conservative estimate of 50% of the typical wetland product values calculated for five pilot areas by Haskoning <i>et al</i> (2001) extrapolated to all wetland areas and updated to 2002 prices.
Tourism & Wildlife	\$163	\$163	MTTI
Total of above	\$791	\$405	

2.3 Employment generated by the ENR sector

One measure of the vital importance the ENR sector plays in Uganda's economy is the employment (both formal and informal) that it generates. Sustainable natural resource use implies that this sector will continue to provide a vital non-agricultural rural employment for the poor. Conversely, unsustainable use will eliminate jobs from this sector.

Table 3 on the following page provides the latest estimates of full-time equivalent jobs in the ENR sector. These are based on secondary data rather than representative employment surveys (that should be undertaken) and give an indication of the magnitude of employment rather than a precise number.

2.4 Adjusted Net Savings and sustainable growth

Attempts to define sustainable development by the Brundtland Commission in 1987 and the growing interest in sustainability issues led to a critical review of traditional national accounting. This has resulted in green national accounting for many countries that incorporates the value of net investments in human capital and the loss of natural resources and costs of pollution.

Adjusted net savings (ANS) or genuine savings (as this used to be called) is defined as net saving plus net investments in human capital less the value of depleted natural resources and the cost of pollution damage (or abatement).

An important aim of including ANS rates alongside traditional measures is to focus attention on the sustainability of Uganda's growth. In terms of the ability of Uganda to improve the quality of life of its citizens over the period to 2020, ANS is a much better measure than GDP as it tells us about the assets the country can draw on.

As the World Bank (2003) shows, Uganda is one of the relatively few countries for which genuine savings data exists for 1980-89. The ANS for these years shows massive negative savings rates in the early part of the period that were brought closer to zero by the late 1980s. In the Technical Report we show how Uganda's ANS compares with some neighbouring countries since 1995. It appears that Uganda has made progress over this period but the ANS remains below Kenya and Tanzania.

Table 3 – Estimated employment in the ENR Sector

ENR area	Estimated employment (full-time equivalent jobs)	Notes and key data sources – see Technical Report for more details
Fisheries	100,000 directly + 400,000 secondary workers & subsistence use	Keizire (2001)
Forestry	100,000 directly + 750,000 mainly subsistence	89% of direct employment estimated to be in charcoal & fuelwood production. 95% of subsistence use is for firewood collection - Falkenburg & Sepp (1999)
Wetlands	2,400,000 mainly subsistence	Based on the labour intensity estimates for 5 pilot wetlands by Haskoning et al (2001) extrapolated to all wetland areas and halved to give a conservative figure. Virtually all employment is informal sector subsistence and rural business use – mainly cropping, fishing and sand digging
Tourism & Wildlife	11,000 formal sector	UNDP/WTO projections and authors' calculations
Total of above	3,761,000	Over 90% of this employment is in the informal sector and is mainly subsistence oriented

What is missing in the above analysis is the inclusion of the impact of soil degradation – the largest source of environmental degradation. Drawing on the recent IFPRI soil nutrient loss studies, 2002 Census and other data, we calculate the value of soil nutrient loss in Uganda to be US\$625million per annum (in 2001/2002 prices). The impact of including this in the ANS calculation is shown in Table 4 below. Once the loss of soil nutrients is taken into account, Uganda's net saving is significantly negative. Current practices are not sustainable. The formation of physical and human capital is too slow to offset the loss of natural capital.

Table 4 - Adjusted Net Savings in Uganda including soil nutrient loss

	2001 (US\$)	% of GNI	Data source
Gross National Investment (GNI)	5556150784		1
Gross National Savings	765219200	13.77%	1
Consumption of fixed capital	420933715	7.58%	1
Education expenditure	107580353	1.94%	1
CO2 damage	9469189.72	0.17%	1
Value of net forest depreciation	344459083	6.20%	1
Value of mineral depletion	0	0.00%	1
Value of energy depletion	0	0.00%	1
ANS (excluding soil nutrient loss)	97937565	1.76%	1
Value of soil nutrient loss	625355848	11.26%	2
ANS (including soil nutrient loss)	-527418283	-9.49%	3

Data sources: 1. World Bank (2003), 2. IFPRI (2003), 2002 Census and author's calculations, 3. Author's calculation

3 A summary of key policy recommendations

Recommendation	Action by	PEAP pillars	Priority ¹
Develop and implement a strategy with costed interventions for tackling soil degradation	PMA, MAAIF, MWLE	1,3,4	Very high
Reform local taxation of natural resources and use increased revenues for local government expenditure and better monitoring, control & surveillance of fisheries, forestry & wetlands resources	MLG, MAAIF	1,2,3,4	Very high
Build capacity in community NR management institutions & use these more widely i.e. BMUs & lake management organisations in fisheries, Communal Land Associations (forestry, wetlands etc)	MAAIF, PMU, MWLE, Donors	1,2,3	Very high
Strengthen capacity for ENR management in local government – develop a programme of capacity building for sub-district councils and empower parish and sub-county councils to formulate and enforce by-laws	MLG, PMA, MWLE	1,2,4	Very high
NAADS to establish targets for extending ENR activities in all target districts and identify costs – innovative funding mechanism provides incentives for sub-counties to address ENR issues	GoU, Donors	1,2,3	Very high
Make the ENR sector eligible for LGDP funds – improve the incentive for local government to take ENR issues on board	MFPED, MLG, MWLE	1,2,3	Very high
Derive & implement consistent, SMART performance indicators for the ENR sector & sub-sectors	PMA, MWLE, PMU	1,2,3,4	Very high
Promote exports of sustainably harvested non-wood forest and wetland products	MTTI, MTCS, MAAIF	1,3	High
Providing an enabling environment to facilitate NR-based businesses e.g. forestry plantations to be established on derelict land & expansion of wildlife tourism	GoU	1,3	High
Introduce technical innovations for natural resource management successfully used elsewhere	GoU, Donors	3,4	High
Strengthen support for local government environmental & agricultural officers to deliver ENR messages to farmers in non-NAADS districts	MAAIF, MLG, MFPED	1,2,3	High
Improve coordination on ENR issues within government	MWLE & GoU more generally	1,2,3,4	High
Address gender issues – land ownership & poverty within the household	GoU	1,2,3,4	High
Undertake further research – 13 key areas are identified	GoU, Donors	1,2,3,4	Medium
Identify the scope for sustainable aquaculture and the potential of innovative schemes (e.g. outgrower) for this to be pro-poor	MAAIF, Donors	1,3,4	Medium
Improve environmental legislation – replace prohibition with incentives for sustainable use, resolve land ownership issues in wetlands	MWLE	2,3	Medium

Notes: 1. Priority reflects both the importance of the issue *and* the chance of seeing results in the near future

4 ENR, rapid and sustainable economic growth and structural transformation

4.1 The links between ENR, economic growth and poverty reduction

The theoretical arguments that link ENR, economic growth and poverty reduction are well put in other contributions to the PEAP revision¹. Our primary focus is to provide evidence to support these. Nonetheless, here we highlight two aspects of this linkage.

4.1.1 Opportunities for growth provided by the ENR sector

Pro-poor growth implies a rural, natural resource focus – Given the overwhelming concentration of poverty in rural areas and the dependence of the poor on agriculture, the most effective way to reduce poverty is to raise the returns to agriculture (through increasing productivity and the value of production). This increases the benefit the poor gain directly from growth and creates demand for rural service and manufacturing industries that are typically based on natural resource use (ranging from fish smoking to construction). It is therefore no surprise that Uganda's Investment Authority in their advice to potential investors recognise that²: "Uganda's existing comparative advantage is heavily concentrated in agriculture, forestry and mineral resources and their primary processing."

Bevan *et al* (2003) reviewing various studies report that *one-off* increases in agricultural productivity that reflect a return to security, removal of distortions and a favourable changes in the terms of trade were a significant component of the rise in total factor productivity that has driven Uganda's growth in the past decade. Future productivity growth is going to require continued good macroeconomic management, institutional reform as well as human and physical capital accumulation. This should allow Uganda to make the most of agriculture and hence to generate rural services and industry that are the key to structural transformation. Soil fertility plays a critical role in this process. The evidence that we find of soil fertility decline and land degradation more generally, is particularly worrying as it threatens the productivity of agriculture and reduces opportunities for growth.

4.1.2 Sustainable growth

Renewable natural resources such as fisheries and forestry provide the basis for sustainable growth and poverty reduction provided they are not overexploited. Fish exports, for example, have risen from US\$1.4 million in 1990 to almost US\$90 million in 2002 – the largest export earner last year. Unfortunately, there have often been weak incentives for sustainable resource use and regulation in the ENR Sector has been limited. As a consequence, sustainable growth is under threat. However, Uganda is at a cross-roads – new policies and institutional structures in fisheries and forestry offer the potential to finance improved regulation, maintain yields and ensure the poor get an increased share of the resource rent.

4.2 Key policy recommendations - PEAP pillar 1

4.2.1 Links to agriculture

We have emphasised the linkage between agricultural productivity, soil degradation and economic growth. Practical steps to reduce soil degradation are required and the strategy

¹ Guidelines For Mainstreaming Environmental Issues In The Poverty Eradication Action Plan (2003) and Sector PEAP Revision Paper For The Environment And Natural Resources Sector (2003)

² <http://www.ugandainvest.com/opport.htm>

for achieving this should be explicitly defined in the Plan for the Modernisation for Agriculture (PMA) – the framework for transforming subsistence to commercial agriculture. A key tool for implementing the PMA is the National Agricultural Advisory Services (NAADS) programme that has so far only directly addressed soil degradation issues in a small minority of the 21 districts it is working in. As the PMA is formally linked to PEAP pillar 3 (incomes of the poor) detailed recommendations are given under this heading. Here we recommend:

- ✚ Reviewing how the Plan for the Modernisation for Agriculture (PMA) can better address the *sustainability of growth*. An emphasis on improving market access by itself simply increases the opportunity for increased short-run production that depletes the soil. There is an urgent need to mainstream the objective of maintaining soil fertility and to recognise that this will only become demand driven when it is too late for cheap solutions.
- ✚ Building on the indicators produced by the PMA ENR sub-committee to capture how often soil improving farming practices are introduced as a result of extension work.

4.2.2 Links to fisheries, forestry, wetlands and tourism

The Technical Report demonstrates how fisheries and forestry sub-sectors make a significant unrecorded contribution to pro-poor economic growth in Uganda. This contribution is threatened by weak incentives for sustainable resource use and ineffective regulation. However, new policies and institutional structures in fisheries and forestry offer the potential to finance improved regulation, maintain yields and ensure the poor get an increased share of the resource rent. There is also scope to improve the economic returns that the poor get from sustainable use of forests and wetlands by improving access to export markets for certain products.

In order to strengthen the contribution of fisheries, forestry, wetlands and tourism to PEAP pillar 1 we recommend:

- ✚ That the GoU recognise that export-led growth depends on meeting international quality standards and this increasingly implies demonstrating sustainable resource use.
- ✚ Continuing to tackle the causes of over exploitation of natural resources (NR) by building capacity in local community NR management institutions. In fisheries these institutions are Beach Management Units (BMUs) and lake management structures. BMUs can also play a cross-cutting role in sustainable environmental use within fishing communities e.g. fuelwood plots for fish smoking. More generally, the 1998 Land Act provides for Communal Land Associations (CLAs) to manage land held under private or customary tenure. Just as BMUs are taking a major role in managing fisheries, these CLAs could be far more widely used for managing common property resources (CPRs) in wetlands and pastures and are the preferred (but not only) means of managing community forests.
- ✚ Pursuing fisheries and forestry taxation reforms (at national and local level) to capture a higher share of resource rents for the GoU and public expenditure. Local taxation reform is a key issue and is discussed in the following sub-section.
- ✚ Using increased take of resource rent to strengthen monitoring, control and surveillance by fisheries and forestry agencies. There is scope for a virtuous circle in which improved regulation produces additional funds that finance regulation as well as increased local and national public expenditure. This is a “win-win” strategy for local communities, local government and national government.

- ✚ Using an increased take of resource rent to improve infrastructure at fish landing sites.
- ✚ Demonstrating the financial viability of culture-based fisheries and mainstreaming this into government programmes (for common property fisheries) and transferring it to the private sector (where access is privately controlled)
- ✚ Encouraging urban or peri-urban fish-farming using poultry processing waste
- ✚ Addressing key issues for sustainable aquaculture including: EIA use; appropriate taxation; outgrower opportunities and demand impact on poor people's fish (mukene)
- ✚ Reviewing the logging ban – local communities need a financial incentive to manage their forests and this would be greater if they could legally sell timber. This is only going to produce sustainable use if there is also sufficient local capacity to produce, monitor and enforce appropriate management plans.
- ✚ Promoting exports of sustainably harvested non-wood forest and wetland products as these are of particular relevance to the rural poor. International evidence suggests that there is a strong potential market for products such as rattan furniture and Uganda is not taking advantage of these.
- ✚ Focusing on more effective regulation and improved management incentives for the 70%+ of the total area of natural forests and woodlands that are in the hands of private landowners and communities and in which deforestation rates are highest.
- ✚ Providing an enabling environment to allow profitable forestry plantations to be established on derelict land. Uganda can potentially benefit from carbon sequestration payments as well as taxation revenue and employment from plantations. These have not been established despite private sector studies that show attractive financial returns because of uncertainty over land tenure and fear that contracts are unenforceable.
- ✚ Implementing those steps that various studies identify as necessary for Uganda to secure a higher share of the global tourism industry i.e. invest more in product diversification, marketing and promotion; develop additional infrastructure; curb insecurity within and along its borders; promote community-based tourism (which itself requires improved revenue sharing between the UWA and communities); and strengthen institutional capacity to regulate the sector.

5 ENR and governance and security

5.1 Main findings

Our analysis of the ENR sector in Uganda identifies a general weakness in decentralized governance. In forestry, part of the reason lies in the limited extent of decentralisation - most of the powers of rule enforcement and sanctioning are vested with the LC 5 (the District Local Council). These powers gradually diminish at each successive lower level of governance. Authority is needed by the lower councils in order to be effective forest managers. However, capacity at these lower levels is currently limited. Elected village, parish and sub-county councils typically do not have the capacity to enforce forest bye-laws.

A consequence of this weakness is that forest degradation increases with the distance from the local administrative centre.

A more general implication is that legislative measures to limit environmental damage (soil erosion, for example) that require monitoring and enforcement at a local level are unlikely to succeed with current levels of local capacity.

In the fisheries sub-sector, the recent development of Beach Management Units (BMUs) and lake management institutions presents a real opportunity for better local governance *and* improved resource use by local communities. While these organisations do need support to realise this potential, they show what could be done using community resource management in other areas such as forestry.

Environmental legislation covering issues such as bush-burning, use of wetlands and cutting of certain trees is frequently ignored. While lack of local capacity to enforce legislation is part of the story, there is also a need to review some of the legislation itself. For example, the Shea butter tree produces high value oils and wood and it is not feasible to prohibit harvesting. Instead, policies are needed to encourage sustainable use by communities with this valuable resource.

New legislation is also required to resolve land ownership in wetlands. While the Local Government and Land Acts grant a supervisory role for wetlands to Districts this quite often conflicts with the rights of private land ownership that are relatively common in wetland areas.

Wetlands could also benefit greatly from improved coordination within Government. Currently, the Wetlands Inspection division within the Ministry of Water, Lands and Environment (MWLE) supported by NEMA is attempting to stop building in the Nakivubu wetlands near Kampala. At the same time, the department of lands and surveys is complying with their mission by granting land titles in this wetland area.

Reform of local taxation – especially tendering – is a key issue for the ENR Sector. It has the potential to increase economic efficiency but we mention it in this section because current practices have:

- ✚ Created opportunities to manipulate the current system for personal and political purposes. While fisheries and forestry provides the source of rents for these activities, the failure of local taxation at the district and sub-county level undermines governance at these levels more generally.
- ✚ Produced very low revenues for local and central government (see the Technical Report for details). Taking a higher proportion of resource rents *and* using some of these to fund effective ENR regulation (in forestry, fisheries and wetlands) is essential for sustainable use of these resources. For example, taxation revenues could and should be used to improve local infrastructure, lowering costs for fisheries businesses as well as management of the fisheries resource. Public expenditure, local businesses and local communities can win from improving local fisheries taxation.

It is also important to recognise that *by itself* local taxation reform will not solve ENR problems. Funds to support regulation and sustainable resource management more generally should be returned to the sector. Indeed, by helping farmers to achieve higher returns to marketed crops there may be increased soil fertility loss (nutrient mining). Taxation reform needs to be accompanied by using NAADs and other tools within the PMA

to deliver a holistic package that helps farmers to increase the sustainable return to agriculture

5.2 Key policy recommendations - PEAP pillar 2

Reforms that build improved local capacity for environmental governance and a more efficient and equitable local taxation system will have impacts across PEAP pillars and beyond the ENR sector. Yet the ENR sector provides an especially good opportunity to address these issues.

5.2.1 Building capacity for environmental governance

For forestry and wetlands we recommend: developing a programme of capacity building in environmental management for the sub-district councils, identifying sustainable funding (from resource use levies) and empowering parish and sub-county councils to formulate and enforce by-laws.

For fisheries we recommend: providing support to Beach Management Units (BMUs) and lake management institutions to build capacity as soon as possible at this early stage in their lives. In the medium term, these institutions should be able to call on support from the PMA.

5.2.2 Improving environmental legislation

There is a need to:

- ✚ Review environmental legislation that is not enforced locally – in particular where sustainable use is more likely to be a viable option than prohibiting use
- ✚ Complete the drafting of a Wetlands Bill that will resolve land ownership issues in wetland areas

5.2.3 Improving coordination within government

- ✚ Government ministries that have a mandate for ENR issues should consider how they can improve their coordination across departments and divisions – this is particularly urgent for wetlands.

5.2.4 Reforming local taxation

While reform is required across the ENR sector, there are particular opportunities in the fisheries sub-sector as studies have proposed detailed proposals relating to licensing, tendering and other resource levies (e.g. the “cess”). We recommend that these proposals be taken forward as soon as possible. At the same time careful attention should be paid to potential conflicts of interest and incentives for capture by elites that could arise if BMUs are given both regulatory and tax raising functions.

5.2.5 Make the ENR sector eligible for LGDP funds

Currently around 80% of Local Government Development Programme (LGDP) funds are conditional grants and exclude the ENR sector. We recommend that MFPED and MLG, with donor support, make the ENR sector eligible for this funding.

6 ENR and an increased ability of the poor to raise their incomes

The incidence of income poverty in Uganda fell from 56% in 1992 to 34% in 2000 but rose to 38% in 2003. This reflects a decline in agricultural production by small farmers. Various factors are involved in this including declining soil fertility. Indeed, numerous case studies undertaken by UPAP2 identify declining soil fertility as a major cause of poverty. It is therefore essential to consider how the PMA and NAADS can best address this issue.

More generally, the evidence presented in the Technical Report indicates that there are three areas that offer particular scope for the poor. These are improving existing policies (strengthening the ENR component of the PMA and NAADS and reflecting gender issues in ENR policies), technical innovations (ideas for doing things differently) and payment for environmental services (such as watershed protection, carbon storage and biodiversity conservation).

6.1 Key policy recommendations - PEAP pillar 3

6.1.1 Improving existing policies – the PMA and NAADS

The PMA is a potentially powerful tool for enabling the ENR sector to increase the incomes of the poor. This is recognised by PMA staff and an NR sub-committee was established in 2002.

In order to build on this progress we recommend that:

- ✚ The PMA Secretariat in conjunction with MAAIF and MWLE urgently develops a strategy with costed interventions for tackling soil degradation. This should utilise the NR sub-committee established in 2002 but needs to be given a very high priority by the PMA steering committee to bring together representatives from MWLE and MAAIF to make this happen by mid-2004.
- ✚ The NAADS programme continues their efforts to mainstream fisheries and agroforestry. A specific funding target for 2004 for these activities would help achieve this.
- ✚ Immediate support is given for capacity building in BMUs with NAADs as a delivery mechanism where possible.
- ✚ GoU and donors work with the NAADS Secretariat and relevant staff in MAAIF to draw on the regional Soil and Water Management Network to identify relevant lessons to farmers on maintaining soil fertility and identify a strategy and suitable delivery institutions to achieve practical implementation of these regional lessons. There is currently limited capacity to get practical research findings such as these out to district agricultural officers or private sector providers of NAADS services. National Agricultural Research Organisation (NARO), NAADS and PMA need to identify effective linkages between research and extension.
- ✚ ENR performance indicators with the PMA are reviewed as part of a broader ENR indicator review (such as recently been undertaken in the water and sanitation sector) to achieve a consistent set of indicators for the sector. A number of good indicators have been proposed by the PMA Secretariat but measuring GoU funding for ENR

activities may need to be replaced by an indicator of ENR expenditure by GoU *and* fisheries and forestry authorities. Support should be given to joint work with UBOS to measure key indicators in 2004 – ideally drawing on the forthcoming agricultural census.

NAADS offers an excellent opportunity to address ENR issues in districts in which it operates. However, NAADS staff have faced challenges to get sub-counties to address ENR issues: the value of changing farming practices to secure improved soil fertility is not recognised locally; farmers do not identify common property resources as opportunities in their plans; and while fisheries and forestry are important for the livelihoods of a minority within target sub-counties but priorities are set by the majority.

In order to overcome some of these constraints, NAADS has established an innovative fund to give farmers extra money if they address environmental issues and is working in partnership with an environmental NGO to improve service delivery. However, NAADS is only tackling ENR issues in a small minority of its 24 target districts and is only expected to achieve national coverage in 2007. We therefore recommend that:

- ✚ The GoU and donors work with NAADS to establish targets for extending ENR activities in all target districts and support this with appropriate funding.

Given the limited coverage of NAADS, the traditional extension service operating through district agricultural, forestry, fisheries, environment and wetlands officers will continue to be a vital channel for delivering ENR-related support to farmers. A vital link will be the sub-county extension officer. This group have very little training in ENR issues and can benefit from skills upgrading. MAAIF will need to work with the Districts to identify how this extension support is going to be delivered and ensure that these officers have sufficient resources to operate effectively. It is important that this forms part of the new agricultural investment plan.

6.1.2 Improving existing policies – gender issues

- ✚ It is important to ensure gender issues are recognised in ENR sector policies as this can have a significant impact on intra-household poverty e.g. women currently do most harvesting and processing of wetland products and attention needs to be paid to the effect of commercialising these products.
- ✚ Land reform is highly contentious but the current situation in which women cultivate most farmland but own some 4% is unjust and inefficient.

6.1.3 Technical innovations

On the basis of the detailed analysis in the Technical Report we find that there are a number of areas in which technical innovations in the ENR sector offer good opportunities to raise incomes of poor rural households. We recommend:

- ✚ Developing consensus building methodologies for common property resource (CPR) use (with the support of NGOs). International experience suggests that these can have large pay-offs to the poor by allowing communities as a whole (rather than elite groups) to agree how CPRs such as fisheries, forests or wetland areas should be used³.

- ✚ Promoting establishment of woodlots for firewood and building poles, and planting of fruit trees for supplemental income.
- ✚ Enhancing the value of, and developing domestic and international markets for, non-timber forest and wetland products (handcrafts, furniture, ornamentals, herbs, fruits and honey).
- ✚ Identifying those areas in which livestock can offer a route to increasing incomes of the poor from animal products and higher agricultural productivity from manure use as well as improving food security. Nkonya and Pender (2003) offer some empirical evidence for households in Eastern Uganda to support this claim. However, extension support for livestock rearing may benefit larger owners rather than the poor and large numbers of small stock (in particular) can undermine sustainable agriculture in sensitive areas. The environmental dimension in this discussion needs to be brought out more clearly in the PMA.

6.1.4 Payment for Environmental Services (PES)

FAO (2001) notes that markets that pay for environmental services already exist or look feasible in many countries. The central rationale is that those who benefit from the services that forests or wetlands provide should pay those living next to the natural resource – often the rural poor – to ensure the resource is used sustainably.

Uganda already has one example to draw on. Since 1994, the FACE Foundation and the Uganda Wildlife Authority have been working jointly on reforestation projects in Mt. Elgon and Kibale National Parks as part of a private voluntary carbon offset agreement.

As the market for environmental services increases, the challenge will be to ensure that the poor can participate effectively. There are various factors that make it difficult for the poor to achieve this including the:

- ✚ Lack of clearly defined property rights
- ✚ Lack of information and skills to participate as a contracting party
- ✚ High transactions costs when dealing with isolated communities

For the GoU, there are likely to be clear areas of overlap between actions to promote PES to benefit poor communities and actions to strengthen their ability to increase their incomes from agricultural and rural small businesses more generally. Hence we recommend interventions that have relatively wide benefits such as:

- ✚ Formalising forest property rights held by poor people;
- ✚ Strengthening cooperative institutions to lower the transactions costs of establishing PES projects
- ✚ Investing in training and education to enhance skills necessary for PES
- ✚ Bringing PES within the Medium Term Competitiveness Strategy (MTCS) – which should help communities that wish to develop projects to gain access to finance

7 ENR and the quality of life of the poor

7.1 Main findings

There is considerable qualitative evidence that Uganda's poor depend particularly on natural resources – see UPAP2 for example. The analysis in the Technical Report suggests that

there are cases where this should be reflected directly in PEAP pillar 4 (given the role ENR plays as a safety net). In addition, the effect of ENR on the quality of life of the poor sometimes depend on factors that cut across various PEAP pillars and focussing solely on likely ENR policy impacts within one PEAP pillar understates the true benefits or can even be misleading.

Examples of understated benefits if the focus is on one PEAP pillar include:

- ✚ Policies to increase rate and sustainability of growth that also reduce the vulnerability to extreme climatic events. Agricultural practices that reduce land degradation and raise productivity are also likely to lead to reduced *vulnerability* to drought or flood (pillar 1 with benefits to pillar 4)
- ✚ When improved cooking stoves are adopted (which occurs only when the design and cost is right) indoor air pollution is reduced and women and children obtain health benefits and well as saving time in searching for decreasing fuelwood – an opportunity to increase economic growth (pillar 4 with benefits to pillar 1).

ENR policies themselves sometimes need to form part of a broader package. For example, a cause of the cycle of poverty and environmental degradation that afflicts some low-potential agricultural areas is rapid population growth combined with freehold and mailo tenancy - which has led to land fragmentation. Interventions to encourage slower population growth, land reforms and to improve agricultural practices need to be combined to make a significant difference. In such cases a holistic approach is required.

Sometimes, there are trade-offs between ENR use and the goals of the four PEAP pillars. Caged fisheries (aquaculture) offers a good opportunity for export-led growth but this will sharply increase the demand for and price of the mukene fish currently consumed by the poor.

7.2 Key policy recommendations - PEAP pillar 4

We recommend that GoU and donors:

- ✚ Recognise that although the poor are particularly dependent on natural resources, policies to reduce vulnerability often require interventions across a number of sectors (such as in the population growth, land reform and land degradation example).
- ✚ Recognise when alternative resource uses imply trade-offs between PEAP pillars and evaluate the impact on the poor early on. In the case of aquaculture and mukene use, for example, we recommend investigating the likely impact on welfare using both a computable general equilibrium (CGE) model and qualitative case study evidence *before* developing an aquaculture strategy.
- ✚ Strengthen early warning systems for extreme weather and ensure that rural communities receive this information in a timely fashion.

8 Cross-cutting actions

8.1 Strengthen performance indicators

In order to monitor progress against targets for the PEAP review specified by each ENR sub-sector it will be necessary to regularly monitor output and intermediate outcome indicators. These indicators help justify to government and donors why they should be spending in a particular area and so getting this wrong can have very serious consequences.

A number of indicators have been proposed by the sub-sectors and this is an area where some further thought and discussion could be very useful. Following the recent support to the water sector in Uganda to improve performance monitoring, the ENR sector should seek assistance to define:

1. Indicators that are SMART⁴ and that best capture the levels of performance that need to be measured
2. Which sources of existing information are best suited to monitor these indicators
3. What are the most cost-effective means of filling the data gaps
4. Which institutional arrangements (UBOS surveys etc) will deliver this
5. How can performance against a range of indicators best be summarised and presented to stakeholders?

As an example, in the fisheries sub-sector, output indicator 1 is the “number of BMUs operating effectively and committee members trained (by gender)”. We suggest that there is some question as to how feasible it is to collect data on the functioning of *each* BMU. It is also not clear *how* we should measure “operating effectively” at the BMU or lake management level.

These are simply examples that illustrate the task that is faced and, as the Technical Report makes clear, many international organisations have struggled with similar issues. One option to consider is whether BMUs can demonstrate that they are functioning effectively by their actions- allowing this outcome to be monitored. We would suggest that the “*number of BMUs that supply data in the required format on fish catches*” could be an example of this kind of indicator.

8.2 Establish quality control for ENR valuation data

The ENR SWG or UBOS should investigate how they can provide quality assurance and hold and update a database with the key environmental valuation statistics to be used in GoU documents. It should be investigated how this data could be made publicly available e.g. on the UBOS website under an appropriate category – such as “environmental statistics”.

8.3 Priority research areas

- ✚ Refine estimates of Adjusted Net Savings for Uganda (and neighbouring countries if possible) and agree how this can be monitored and reported by MFPED

⁴ **Specific** – aim for clear rather than vague targets; **Measurable** – do not try and measure something you have no way of measuring and use data that is available at an acceptable cost; **Achievable** – targets should be challenging but attainable; **Realistic** - performance measures need to relate to project outputs and be relevant; and **Time-bound** – say “by when” you expect results and measure changes over time.

- ✚ Test fishing should be undertaken to investigate whether freshwater sardine species in Lake Albert offer an opportunity to significantly increase catch by exploiting new species.
- ✚ Estimates of crop yield losses from soil erosion in Uganda which will become available in 2004 should be used with the CGE model to estimate the impact on growth and welfare
- ✚ The modelling of the role of agriculture in structural transformation reported by Bevan *et al* (2003) should be strengthened by:
 1. Using a smaller set of countries as targets that were more like Uganda when they were low income e.g. the share of agriculture in GDP should be similarly high to start with.
 2. Consider an alternative scenario that reflects significantly increased export opportunities for agriculture.
- ✚ A *strategy* for getting the ENR message across to other sectors should be developed. That is to say:
 1. Defining who has to be reached
 2. Identifying the medium to reach target groups (policy briefings, meetings, workshops etc)
- ✚ Existing regional and national research should be used to identify changes in farming practices that provide yield increases to poor farmers and reduce soil nutrient losses
- ✚ Pilot studies to see how existing NGO (soil erosion) and government (yield increase) projects can be brought together should be undertaken
- ✚ Pilot schemes and analysis should be undertaken of the likely benefits and feasibility of restricting cage aquaculture to certain areas by only allowing cages to be set up at public cage mooring facilities. The potential for caged fish outgrower schemes in fisher communities should also be investigated.
- ✚ The impact on the poor of alternative commercialisation options for the cheap “mukene” fish they currently consume should be investigated, e.g. feed stock for Nile Perch export farming or processing and direct sales for local and regional consumption.
- ✚ The role of fish in reducing infant mortality and morbidity in fishing communities by providing micro-nutrients should be investigated if national survey data permits this.
- ✚ Opportunities for the poor from payment for environmental services in forestry and wetlands in Uganda should be investigated.
- ✚ The opportunities and constraints to sustainable export of wetland products should be investigated.
- ✚ The current and potential contribution of wildlife to economic growth (consumptive and non-consumptive use) should be identified.
- ✚ Identifying the incidence of poverty among rural households that make most use of natural resources.