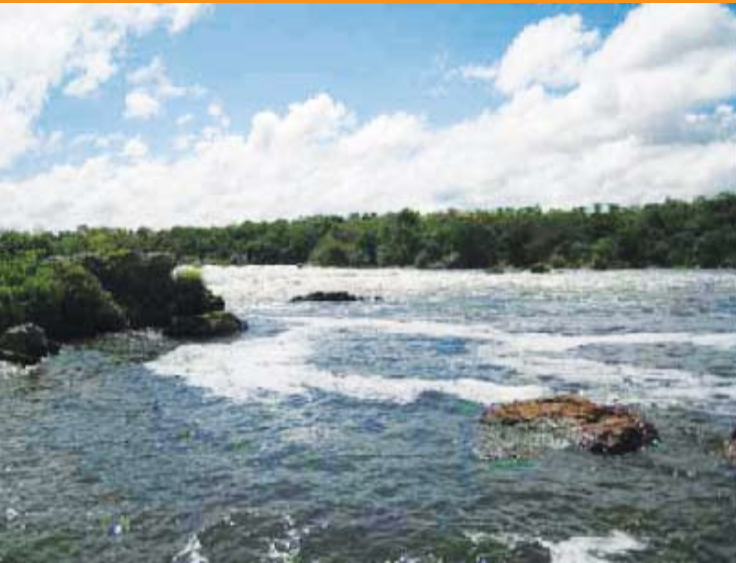




MAINTAINING THE CONSERVATION AND TOURISM VALUE OF PROTECTED AREAS IN PETROLEUM DEVELOPMENT ZONES OF THE ALBERTINE RIFT

Ensuring Win-Win Policy Approaches



This publication was prepared with generous support from Irish AID through the World Resources Institute (WRI) in Washington, DC.

Cover Photos (left to right): 1) *River Ayago*, 2) *giraffe in Murchison Falls National Park* and 3) *open non-flared oil pit at Waraga*.



MAINTAINING THE CONSERVATION & TOURISM VALUE OF PROTECTED AREAS IN PETROLEUM DEVELOPMENT ZONES OF THE ALBERTINE RIFT

Ensuring Win-Win Policy Approaches

**Ivan AmanigaRuhanga
Jacob Manyindo
Mark Jordahl**

April 2009

Oil & Gas Series #2
© Uganda Wildlife Society



TABLE OF CONTENTS

I.	INTRODUCTION	5
II.	THE NATIONAL OIL AND GAS POLICY	6
III.	POTENTIAL RISKS AND IMPACTS OF OIL & GAS DEVELOPMENT IN AND AROUND PROTECTED AREAS	7
IV.	MAINTAINING THE CONSERVATION AND TOURISM VALUE OF PROTECTED AREAS IN OIL AND GAS DEVELOPMENT ZONES	11
a)	No Net Biodiversity Loss	11
b)	Preservation Zones	12
c)	Land Swaps	12
d)	Wildlife Corridors	13
e)	Wildlife Restocking	13
f)	Conservation Education	14
	<i>i. Community Education</i>	14
	<i>ii. Tourist Education</i>	14
	<i>iii. Education of Oil Company Staff and Government Representatives</i>	14
	<i>iv. Tertiary-level Education</i>	15
g)	Access To Information, Transparency and Monitoring	15
h)	Biodiversity Action Plans	15
i)	Directional Drilling	16
V.	CONCLUSIONS	17



I. INTRODUCTION

Oil and gas exploration and production has reached an exciting new phase in Uganda, as recent well tests have consistently confirmed commercially-viable quantities of oil in the Albertine Rift. The excitement stems from the fact that Uganda's economy is primarily dependent on agriculture and the new oil and gas industry is expected to bring much needed economic diversification and growth. Exploration by two of the four companies that the Government of Uganda has licensed in the Albertine Rift, Tullow Oil and Heritage Oil and Gas Ltd, has revealed petroleum reserves estimated to exceed one billion barrels.

However, the region in which this petroleum exploration and production is occurring is of dual importance – it is Uganda's primary petroleum prospect area and is of high biological diversity value. The Albertine Rift is the northern most part of the western arm of the East African Rift System. It is approximately 500 kilometers long and 45 kilometers wide on average – stretching from the northern tip of Lake Albert to the southern tip of Lake Tanganyika. The Albertine Rift in Uganda covers approximately 23,000 square kilometers. It is the most species-rich eco-region for vertebrates and one of the most biodiverse areas on the African continent. It has been independently identified as an 'endemic bird area' by Birdlife International, an 'ecoregion' by World Wildlife Fund and a 'biodiversity hotspot' by Conservation International.¹ The Rift has high species diversity, including 39% of Africa's mammal species, 51% of its bird species, 19% of its amphibian species and 14% of its plant and reptile species. It harbours more endemic species than any other region in Africa. It is also home to 79 threatened terrestrial vertebrates according to IUCN Red Data book listings.² As such it is one of the most important conservation eco-regions in Africa.

Numbers of Endemic Species in the Albertine Rift³

	Butterflies	Amphibians	Reptiles	Birds	Mammals
Total ¹	123	32	21	41	29
Uganda (% of total)	68 (55.3)	11 (34.4)	13 (61.9)	36 (87.8)	23 (79.3)

Besides this, the region has a variety of ecosystems; both terrestrial and aquatic, which are vital not only for harbouring valuable biodiversity but also for tourism and other income generating activities. For instance there are several lakes, rivers, forest and wildlife reserves, hot springs, wetlands and national parks in the Albertine Rift. The forests of the Albertine Rift are a global centre of diversity and endemism across all taxa, and are of socio-economic and cultural importance to the people of Uganda.

Oil and gas exploration and production in ecosystems of high biodiversity value such as the Albertine Rift poses great environmental and socio-economic risks. In general terms, operations can have negative primary and secondary impacts on ecosystems and the quality of air, water and soil. The unintended consequences of migration into rural areas and rapid socio-economic change can be expected to have disastrous consequences on the environment, unless mitigated through careful planning and management. Avoiding, minimizing and mitigating these impacts should be the priority of oil companies and the Government of Uganda.

Lake Albert, as one of the important resources in the Albertine Rift, harbours internationally important numbers of water birds, as indicated by the designation of the Murchison Falls–Albert Delta Wetland System as a Ramsar site. Lake Albert also represents one of Africa's most important sources of mixed species fresh water fisheries. Of the 53 species of fish recorded in Lake Albert, at least 10 are endemic.⁵ Fishing is the primary source of income and subsistence for the majority of the project area, though small business ownership and cattle farming supplement fishing livelihoods. In general, there is a lack of formal employment opportunities. Although the oil and gas project could be a source of employment for the local communities and a boost to foreign exchange for the economy, it could be accompanied by cumulative ecological impacts including; air, water and soil pollution, communicable diseases, destruction of the terrestrial integrity, and a decline in the tourism and fishing industries. Therefore, both the impacts on communities and impacts by the growing and changing communities should be considered by the oil companies and the Government of Uganda.

¹ Plumptre, A.J et al. 2003. *The biodiversity of the Albertine Rift*. Wildlife Conservation Society.

² IUCN Red Data Book Lists. Latest database available from www.iucn.org

³ USAID. 2006. *Uganda Biodiversity and Tropical Forest Assessment: Final Report*.

⁴ Total numbers of species are shared with Burundi, Rwanda and the Democratic Republic of Congo.

⁵ Environmental Resources Management. 2008. *Early Production System Environmental Impact Assessment: Final Report*.

II. THE NATIONAL OIL AND GAS POLICY

The Government of Uganda has developed a national oil and gas policy to guide and govern petroleum exploration and production activities in the country. Accordingly, the draft policy is driven by the desire to create lasting value to society by ensuring a maximum return to investment in the Uganda oil and gas industry for investors, the Government and the people of Uganda, and to achieve growth, poverty reduction, and sustainable development.⁶

The draft policy has laid down a number of objectives that the policy seeks to achieve. However, a critical analysis of the objectives shows that most of them are lacking in content or do not provide a clear policy direction. For instance the first objective seeks to ensure efficient and effective management of Uganda's oil and gas resources. However, critics observe that this is a lofty ideal that will nevertheless require intensive training and expansion of the institutional structures managing this sector.⁷ Uganda's experience with public goods (parastatals) clearly shows a serious deficiency in this area.

Furthermore, the policy expresses the desire to ensure that revenues from the oil and gas sector are properly managed and utilized to create new wealth. Ideally, if this desire is achieved it should create alternative sources of livelihood and reduce harmful impacts on other natural resources. However, the policy ought to demonstrate exactly how this is to be achieved. The policy does not indicate what type of new wealth will be created from oil revenues. It also falls short of illustrations on how new wealth will be created from oil in a sustainable manner.

Lastly, one of the other intriguing objectives of the oil and gas policy is that of ensuring that oil and gas activities are undertaken in a manner that conserves the environment. The policy acknowledges that the oil and gas industry will affect the wildlife, biodiversity and economy of the Lake Albert ecosystem as well as the corridor in which the pipeline will pass.⁸

It proposes to mitigate environmental damage through control of air pollution, keeping access roads at minimum and using bitumen to surface the roads, control measures against the release of chemical wastes and spills into Lake Albert and rivers that drain the basin. The policy also states that a disaster preparedness response mechanism will be put in place to respond to any oil spills in the Lake Albert basin and pipeline corridor.

The challenge however is how to ensure that oil companies are held accountable when they damage the environment, and are made to clean up the development areas after completion of their contracts. Additionally, attempts to have an effective disaster preparedness mechanism in Uganda have not been successful. The policy should, in clear terms, show how government intends to respond to potential disasters in respect to oil spills and/or fire outbreaks. Government monitoring of implementation of corporate environmental mitigation commitments has been a consistent weakness despite the existence of a relatively adequate environmental legal framework.

⁶National Oil and Gas Policy, Republic of Uganda.

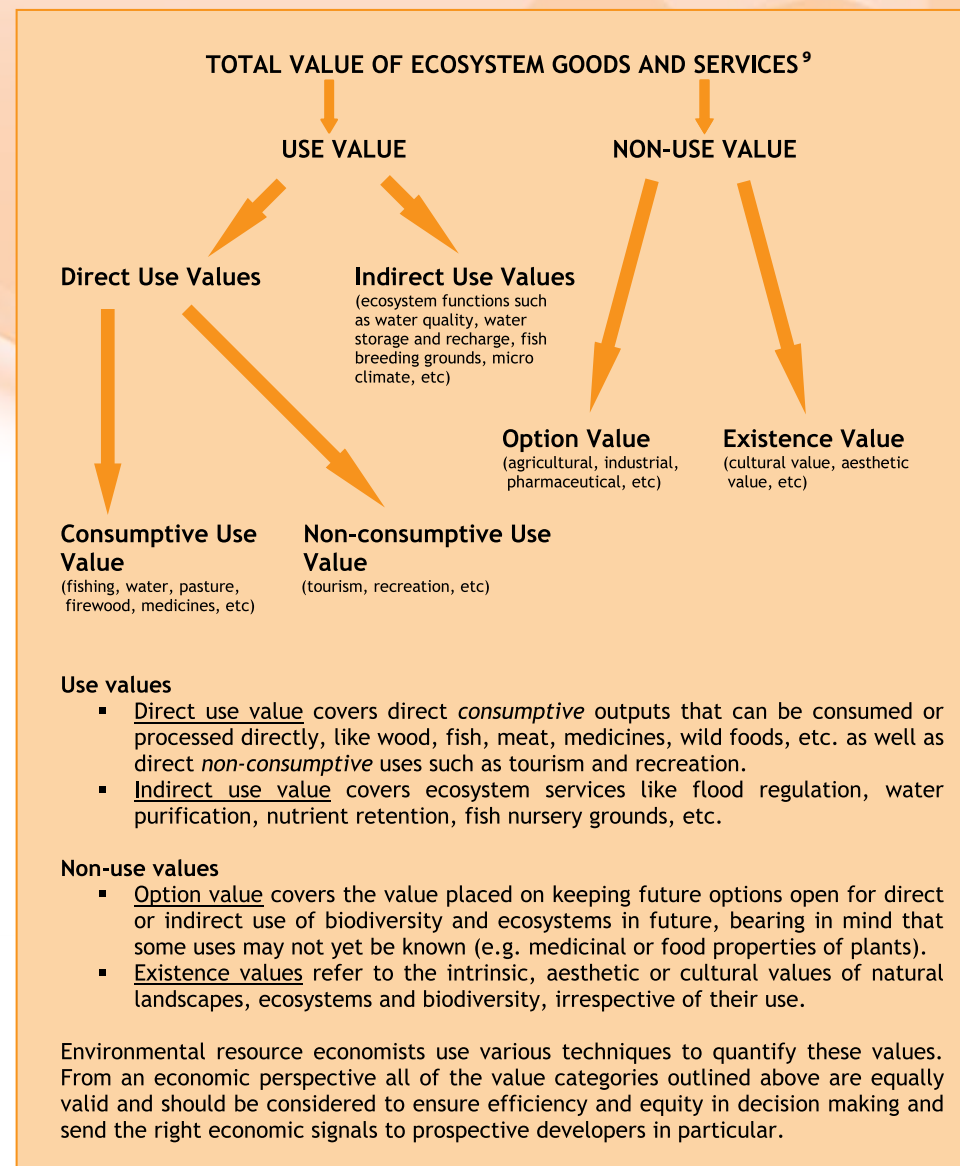
⁷Bainomugisha. A. et al. 2006. *Escaping the oil curse and making poverty history: A review of the oil and gas policy and legal framework for Uganda.*

⁸Section 7.2.4, pp 41-42

III. POTENTIAL RISKS AND IMPACTS OF OIL & GAS DEVELOPMENT IN AND AROUND PROTECTED AREAS

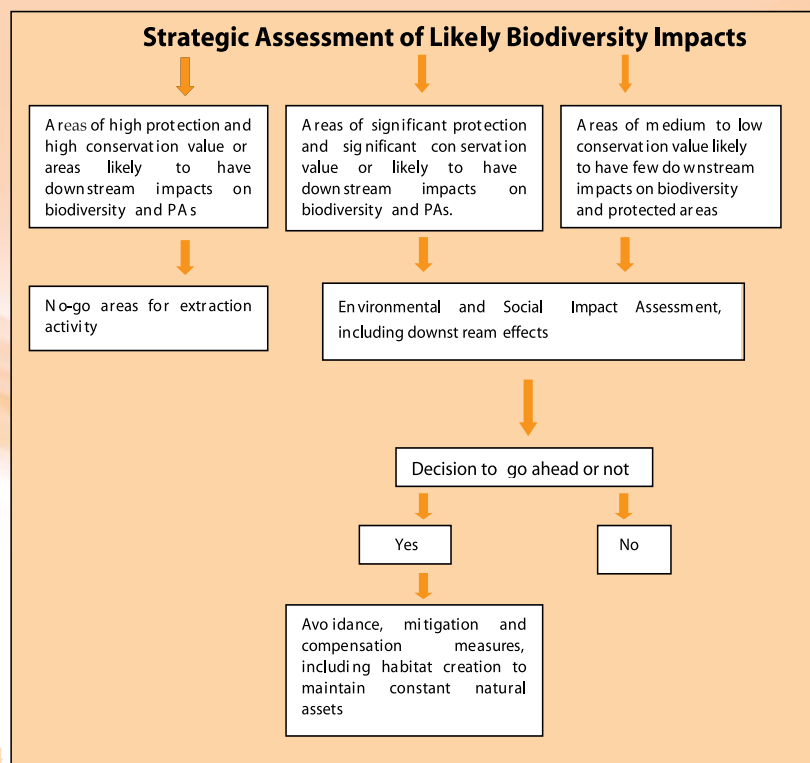
With Uganda's biodiversity increasingly being relegated to the protected estate, the aforementioned unique and valuable biodiversity of the Albertine Rift in Uganda is largely located in a number of wildlife and forest reserves, wetlands and national parks. Therefore, impacts of oil and gas exploration and production, which are occurring in the protected estate of the Albertine Rift to a large extent, need to be carefully considered, prevented or mitigated in order to protect the biodiversity of the Albertine Rift for ecological and economic reasons.

One way for this to happen is for the Government of Uganda to consider the total economic valuation of ecosystems in and around protected areas where oil and gas development is planned. The absence of such valuation often leads to unintended consequences of economic development projects, particularly those that are extractive. Therefore, the total economic value should consider both use and non-use values.



⁹Adopted from Department of Environmental Affairs & Development Planning, 2007. *Provincial Guideline on Biodiversity Offsets*. Edition 2. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

Development projects in Uganda such as oil and gas exploration and production are required to undergo environmental impact assessments (EIAs). Increasingly, there is a tendency to integrate the assessment of social impacts and benefits into EIAs to produce Environmental and Social Impact Assessments (ESIAs). In the Third Schedule of the National Environment Act, oil exploration is categorized under Section 6J among projects which should undertake full Environmental and Social Impact Assessment (ESIA) before implementation.



Ultimately, whether it is during oil and gas exploration, extraction, processing or transportation, direct and indirect negative impacts will occur. The ecological footprint of these impacts can extend far beyond specific drilling sites and may result in the following direct impacts:

- habitat conversion, degradation and fragmentation;
- aesthetic destruction;
- changes in the wildlife grazing arrangements, breeding capacity, and migration patterns;
- air pollution from vehicle emissions, petroleum-operated engines on drill pads, and dust raised from traffic on access roads;
- water pollution caused by hydraulic fracturing operations and the disposal of drilling fluids and produced water;
- soil compaction and pollution on drill pads;
- noise and light pollution;
- deforestation;
- soil erosion and sedimentation of waterways;
- contamination from improper waste disposal or oil spills;
- introduction of invasive alien species; and
- loss of productive capacity and degradation of ecosystem functions – both onshore and offshore.

The development of oil and gas resources in any area leads to an influx of people hoping to find employment. New projects also typically stimulate the provision of goods and services both to the project and affected local communities, creating additional employment opportunities and attracting more people to the area. For example in Gabon, Shell's operations have been the catalyst for the establishment and development of Gamba, a town of over 6,000 people.¹⁰ The influx of people to Gamba has had an impact on the surrounding biodiversity through limited agricultural activities and hunting of bush meat.

As the local population increases in oil and gas development areas and new access roads open previously inaccessible areas, the need for housing, food and other goods and services will also grow, often through totally unplanned and uncontrolled new settlements. The increased demand will put additional pressure on natural resources resulting in; deforestation, increased demand for water

¹⁰Sader, S.A. et al. 1997. *Time series tropical forest change detection for the Maya Biosphere Reserve.*

resources, increased illegal hunting and fishing, as well as commercial and illegal logging. The consequences on communities of changes in economic status and stratification, having unrealistically high expectations of the change to their own economic status, and political manipulation of communities should be planned for and addressed by the Government of Uganda.

Oil exploration infrastructure such as rigs and access roads are currently located in important and previously remote wildlife areas in prime tourist destinations of the Albertine Rift. Elephant tracking and surveillance by the Wildlife Conservation Society (WCS) around the Giraffe exploration site in Murchison Falls National Park a few days before exploration drilling revealed unusually sudden and significant movements. Affected elephants did not return to the area for five months after the drilling. Additionally, the bright lights currently visible on active rigs at exploration sites are a new and unsightly feature of the night in wildlife protected areas, which could negatively impact tourism, nighttime bird navigation and activities of other wildlife.

The oil companies have already made some good-faith efforts towards mitigating these impacts within the Murchison Falls National Park boundaries. The areas disturbed for test drilling and placing the well heads for production, initially 100 meters square, have had their topsoil replaced, are being re-vegetated, and have been reduced to 10 meters square structures disguised as “termite mounds.” These mounds cover the wellheads and will camouflage the infrastructure from three sides, allowing them to blend into their surroundings. On one side there is a door for access to the wellheads. Hopefully this practice will be replicated at the other drilling sites. The park staff is also receiving additional training to monitor the behavior of wildlife in these areas, so hopefully any unexpected impacts will be caught early.

There is a long and terrible record of environmental destruction and human rights violations associated with oil-production in developing countries. Oil corporations take advantage of weak laws and lax enforcement in Nigeria to avoid responsibility

for the environmental damage their operations cause.¹¹ The gross level of environmental degradation caused by oil exploration and production in the Niger Delta has gone unchecked for the past 30 years. A look at Uganda’s legal framework related to oil and gas shows a number of lacunas that may create conditions similar to those in the Niger Delta.¹² The weak institutional framework and lack of political will for environmental monitoring and enforcement are also a cause for concern with regards to oil and gas development in the Albertine Rift.

Protected area natural assets in the Niger Delta are important for sustaining local communities because of the ecological and livelihood services they provide including soil stability, watersheds, potential microclimate impacts, traditional medicine sources, fisheries, wood fuel, shelter, tannins and dyes, and income from tourism. Extraction of oil and gas can result in accidents such as oil spills that are contaminating, degrading, and destructive to nature and human life. Endangered species—including the Delta elephant, the white-crested monkey, the river hippopotamus, and crocodiles—are increasingly threatened by oil exploitation in Nigeria. The construction of infrastructure for oil facilities is done with little or no regard for environmental considerations. To facilitate road construction, waterways are frequently diverted, to the detriment of fish populations.¹³ Sudden and drastic changes to the local environment by oil companies are sometimes accompanied by direct loss of human life. Such potential negative impacts of oil development in the Albertine Rift can be very severe due to its ecological and socio-economic value.

The construction of roads, well pads, pumping stations, pipelines and other industrial infrastructure can have negative environmental impacts. They can lead to habitat fragmentation thereby diminishing the value and extent of wildlife and livestock grazing areas or even render them impractical to use. Forage is lost or degraded by road dust. Contact with toxic substances in wastewater pits and drilling mud is harmful to animals. Noise from drilling operations and extension of road networks stresses wildlife, gives poachers easy access to previously remote areas, and can

¹¹Dara O'Rourke and Sarah Connolly. 2003. *Just Oil? The Distribution of Environmental and Social Impacts of Oil Production and Consumption*.

¹²Oil and Gas (Exploration and Production) Act, 2006.

¹³Essential Action. 2005. *Threats to the livelihood of communities by the operations of multinational oil corporations in the oil-producing areas of the Niger Delta*. www.essentialaction.org.

have a negative impact on the tourism potential of a region. All these are some of the examples of potential dangers that require pre-project implementation planning. The mitigation measures usually advanced in ESIA's are seldom fulfilled and adequately monitored by various lead agencies. This habitually weakens the environmental mitigation value of EIAs in Uganda. Additionally, preference by the Government of Uganda for single site EIAs and the impediment of multi-site EIAs means that these cumulative impacts are not afforded any consideration.

Onshore drilling can harm terrestrial ecology and open up wilderness areas. Drilling in Ecuador's Oriente, for example, has threatened the Yasuni National Park.¹⁴ It has proved that impacts can occur before drilling begins. Seismic exploration involves clearing narrow strips through vegetation, and in tropical forests peasants and miners have used these as migration routes, resulting in major deforestation as in Rondonia, Brazil.¹⁵

Presently, there is minimal legal protection to the environment in which oil production is conducted in Uganda. It should be noted that the Petroleum (Exploration and Production) Act¹⁶ was enacted at a time when natural gas was not looked at as viable source of energy. Indeed, it was seen as an inconvenient by-product of oil production. Accordingly, while section 31 prohibits wasteful or environmentally damaging oil field practices, subsection (2) and (3) empower the holder of a petroleum exploitation license (the licensee) to flare natural gas.¹⁷

The real problem may lie in expecting the oil companies to altruistically safeguard the environment; an expectation that conveniently overlooks a ruthless motivation to profit that drives the operations of the oil multi-nationals. A study of how the oil companies have polluted the Niger Delta demonstrates the futility of relying on licensing conditions to combat environmental degradation.¹⁸

The Ugandan Constitution (1995) provides a vague legal starting point for the nascent oil and gas sector. However, it does not create enough protection for citizens in the oversight of oil reserves, creates confusion over land rights in the

oil regions and how they should be treated, and does not sufficiently ensure fair and equitable sharing of petroleum revenue. Although the Petroleum (Exploration and Production) Act creates a more thorough basic framework for exploration and production activity, it is outdated in some areas (notably in failing to account for Uganda's large natural gas stores), and insufficiently protective of private and communal landowners, the environment and the rights of local parties to some of the proceeds. The National Oil and Gas Policy sets up an admirable scheme and list of goals in the reaping and utilization of oil and gas revenues, but does not build enough specific and enforceable obligations to promote responsible regulation of this sector, especially with regard to protection of the environment.

¹⁴Judith Kimmerling. 1992. *Amazon Crude*. National Resources Defense Council, Washington DC.

¹⁵Mallingeau, J P, R D'Achuna and C Justine. 1992. Future operational monitoring of tropical forests: An Alert Strategy. *Proceedings of the World Forest Conference*, San Jose dos Campos, Brazil, Joint Research Centre CEC, Ispra, Italy.

¹⁶The Petroleum (Exploration and Production) Act, Cap 150. Laws of Uganda.

¹⁷Natural gas flaring in the Niger Delta has resulted in widespread social and environmental destruction.

¹⁸Francisca Isi Omorodion. 2004. The impact of oil petroleum refinery on the economic livelihoods of women in the Niger Delta region of Nigeria. *Journal of Culture and African Women Studies*, Issue 6, 2004.

IV. MAINTAINING THE CONSERVATION AND TOURISM VALUE OF PROTECTED AREAS IN OIL AND GAS DEVELOPMENT ZONES

The discovery of oil and gas need not be detrimental to the ecological integrity and tourism potential of the Albertine Rift and its diverse protected areas. Prudently managed, the oil and gas sector can be highly beneficial to the country, and especially so in the management of ecological resources. A country such as Norway, for instance, has utilised its oil resources so well that it is ranked highest on the United Nations Development Program's list of the best development performers – a clear indication that the problems often associated with oil are not inherent in the oil itself. Certainly, Uganda can use its oil wealth wisely to attain sustainable development and enhance environmental governance. The quality and implementation of environmental policies will determine whether or not this is successfully done.

There are a number of interventions that both government and oil companies may consider and implement to ensure that the ecological integrity and tourism potential of the Albertine Rift is minimally affected by petroleum development.

a) No Net Biodiversity Loss

A country devoted to a diversified and sustainable economy should be seen developing mechanisms to ensure no-net-biodiversity-loss in oil and gas development areas. The unique biodiversity in the Albertine Rift is at stake in the absence of environmental standards, regulations, laws, implementation strategies and enforcement measures.

To begin with, oil exploration and production may result in changes in the ground

water regime that may adversely affect habitats dependent on the water table, particularly wetlands. Depending on the geology, lowering the water table can impact habitats a considerable distance from the development. This may also affect downstream human communities. There is also a danger of increases or reductions in natural rates of water flow. Accumulation of construction spoil can alter flow, volume and composition of the water (e.g. increased solids, increased turbidity), which can cause abrasion damage and gill blockage in fish, lead to the net loss of filter feeding invertebrates, and ultimately to net biodiversity loss.

Whereas it is a fact that oil and gas development will lead to environmental damage, measures should be taken to keep this damage at minimum levels. The environmental and social impact assessments have shown that measures will be taken to control air pollution but no steps to deal with water and soil contamination are shown. Aside from this, Government and its lead agencies like the National Environment Management Authority (NEMA) have not publicly demonstrated the practical measures they expect from petroleum companies to deal with issues of water and soil pollution.

Introducing non-native invasive species can also cause significant and long term disturbance to a habitat and other species. This can happen either intentionally (e.g. by planting non-native invasive species in restoration), or unintentionally (e.g. by bringing non-native invasive species onto a site on equipment used elsewhere). Uganda's oil and gas policy does not put forward Government intentions in terms of monitoring investors' interventions in restoring the status of the environment.

In addition, the oil and gas project may induce social changes that result in long-term impacts on biodiversity that may be more significant than the actual ecological footprint of the project itself. Many of these changes can be the direct result of access to areas that were previously inaccessible to settlement. The result is increased logging and hunting, increased pressures on natural resources and other impacts that come with human presence, fuelling biodiversity loss. One of the most important socio-economic impacts to guard against in relation to oil and gas development in protected areas is the change in the subsistence patterns of local communities, especially those that could lead to increased illegal hunting of

wildlife. These changes can occur not only because of the rapid development of cash economies, but also because of increased access to markets, and changes in the social values and perceptions of local people regarding their life standards.¹⁹

In an increasingly inter-connected global economy, pressure from governments, communities, shareholders and non-governmental organisations is building for companies to go beyond mitigating negative impacts and to take advantage of opportunities to benefit biodiversity conservation in and around project sites and in the countries and regions where they operate. In Western Australia, for example, the government approval process for new natural resource development projects requires developers to contribute to 'net conservation benefits' that go beyond typical project-specific mitigation measures.²⁰ The policy builds on the idea that, although impacts from a project will most likely be felt at a local level, the conservation values associated with the impacted resources are often more generalized and widespread.

One way to ensure no-net-biodiversity loss is through voluntary or compulsory biodiversity offsets. Biodiversity offsets are defined as compensatory actions targeting residual, unavoidable harm to biodiversity caused by development (land use change), with the objective of no-net-biodiversity-loss or even a net biodiversity gain for a defined geographical area. These offsets may be carried out in a number of ways, including: creating new wildlife corridors to maintain wildlife movement in petroleum development zones, restocking protected areas with native fauna and flora that has been or is likely to be degraded, demarcating preservation zones that will serve as strict nature reserves because of the ecosystem services they provide, etc.

b) Preservation Zones

The current preparations for oil extraction and production in the Albertine Rift need to incorporate the gazettement of areas free from oil activity that can be left out for conservation of the variety of life forms. For instance, no development should take place in aquifer recharge zones and NEMA should set a standard distance to

be observed by petroleum companies in such ecologically sensitive areas. One such area includes the Murchison Falls–Albert Delta Wetland System that was recently declared a Ramsar site. Its importance as a spawning and breeding area for indigenous fish species and a feeding and watering refuge for wildlife during dry seasons should make it a preservation zone or strict nature reserve. Preservation zones, with their no-touch and no-access status, provide an appropriate method for protection against the total demise of valuable natural life forms.

c) Land Swaps

Land for oil exploration and production can be appropriated for use by Government through compulsory acquisition as stated in the Land Acquisition Act,²¹ which empowers a Minister to acquire land deemed necessary for public use.²² However, one fundamental issue to consider in the development of oil and gas in the Albertine Rift is that there will often be other competing land use interests of national value, particularly within protected areas. Protected areas hold valuable biological diversity, which may be sacrificed for petroleum development interests.

Apart from this, most of the land where oil exploration is currently occurring in Uganda is within wildlife conservation areas or communal land. Compulsory acquisition legal provisions together with Constitutional changes that removed minerals and petroleum from the domain of the public trust doctrine can potentially deprive local people of their rights over land and change land use and boundaries in protected areas. With this threat to protected areas and communal lands, there has been no mention of likely compensatory measures by the petroleum companies or Government.

It is essential that property rights are respected. Therefore, rather than employ command and control strategies, petroleum companies and the Government should negotiate with land owners (including the Uganda Wildlife Authority, which

¹⁹Suárez, E. et al. Oil industry, wild meat trade and roads: indirect effects of oil extraction activities in a protected area in north-eastern Ecuador. *Animal Conservation* 12 (2009) 364–373.

²⁰The Energy and Biodiversity Initiative. 2007. *Assessing Opportunities for Benefiting Biodiversity Conservation*.

²¹The Land Acquisition Act, Cap 226. Laws of Uganda.

²²S.3(1) Provides that whenever the Minister is satisfied that any land is required by the government for a public purpose, he or she may, by statutory instrument, make a declaration to that effect.

manages wildlife protected areas) for the location of roads, wells, pipelines and compressor stations. Oil companies should restore water and soil they damage. Where private land or protected areas will be used for oil and gas production with the potential of permanent damage, the oil companies should be required to swap that land with other land of similar size and value as a form of compensation. In the case of protected areas, land swaps may help maintain valuable wildlife habitat and migratory routes.

d) Wildlife Corridors

Increasing human population growth and activity in the Albertine Rift is resulting in isolated wildlife habitat areas (wildlife reserves, forest reserves and national parks). The consequence of this is the isolation of wildlife populations and disruption of their natural movements, dispersal patterns and diversity of gene pools ultimately leading to the loss of species in the long-term. Therefore, with the connectivity of these various isolated wildlife habitats at stake due to increasing oil and gas development in the Albertine Rift, a concerted effort should be made to establish and maintain wildlife corridors.

Of particular concern are the north-south wildlife corridors: one of them stretching from Tooro-Semliki Wildlife Reserve on the southern end and Mount Otzi Forest Wildlife Sanctuary on the northern border with Southern Sudan, and another between Kigezi Wildlife Reserve at its southern end and Kibale National Park at its northern end. Both these wildlife corridors are located within active oil and gas development areas. One other important wildlife corridor currently under pressure due to oil and gas exploration stretches from Bugoma Forest Reserve, through Kabwoya Wildlife Reserve, to Lake Albert along the Hohya River. Already, a crucial wildlife corridor between Queen Elizabeth National Park and Kibale National Park has been disrupted by limestone mining with no remedial measures being implemented to maintain important wildlife movements between both national parks.

One way of easing land fragmentation caused by oil and gas development infrastructure such as roads and pipelines could be for petroleum companies to

actively and constantly work with the Uganda Wildlife Authority to establish and maintain wildlife corridors. Now that insecurity in northern Uganda has significantly declined, one particular wildlife corridor that should receive immediate attention, either as a gazetted area or as a conglomeration of private game ranches, is the former Kilak Controlled Hunting Area. Petroleum companies should consider working with the Uganda Wildlife Authority and private landowners to encourage this area be maintained for movement of wildlife between Murchison Falls National Park and East Madi Wildlife Reserve.

e) Wildlife Restocking

Decades of political instability, insecurity and intense poaching in the Albertine Rift extirpated or drastically reduced the populations of several species inside and outside protected areas. It is evident that with improved security, wildlife protection and management over the last decade, wildlife populations are beginning to recover. Wildlife habitat fragmentation and the potential influx of human migrant populations as a result of oil and gas development may negatively affect this recovery.

Therefore, with the support of petroleum companies, the Uganda Wildlife Authority should embark on wildlife restocking in the Albertine Rift as one important method for advancing conservation and tourism in areas where oil and gas development may cause adverse effects. Viable wildlife populations form the basic element of tourism development. Tourism has contributed immensely to national revenue and has demonstrated livelihood sustainability and community economic benefits in the Albertine Rift over the last decade.

Wildlife restocking could be encouraged in existing wildlife reserves such as Kabwoya and East Madi, but it may also be undertaken in an adequately-sized and enclosed location in Kaiso-Tonya Community Wildlife Area or the former Kilak Controlled Hunting Area. However, illegal hunting and other existing threats to the restocked animals such as climate change in the Albertine Rift would first need to be addressed.

f) Conservation Education

The petroleum industry is continually changing, with rapidly evolving best practices, global and local regulations being created on an ongoing basis, and new technologies being developed. It is also an industry that is heavily loaded with internal jargon, labyrinthine legal agreements to protect companies from liability, and an historic disregard for the people living in the areas in which they are active.

Due to the fast-changing nature of the industry and the potential for devastating changes to the Albertine Rift ecosystems through oil spills and other accidents, it is critical to include ongoing education in any plan for mitigating impacts on conservation, tourism and community integrity. Four major groups that would benefit from conservation education include: communities, tourists, oil industry employees and government officials, and tertiary-level students.

i Community Education

Oil development in the Albertine Rift will primarily be carried out in areas where formal education levels are low and community-based organizations are not positioned to influence the power brokers in Kampala and abroad. It is the responsibility of the Government of Uganda to ensure that these communities are fully aware of their rights in these matters. This should be proactive, with government representatives coordinating with local councils to conduct informational meetings before any agreements are made with the oil companies that will affect the communities. At present the only 'education' is that offered by the EIA practitioners when they hold scoping sessions with stakeholders.

The community members should also be enlisted and trained to help with environmental monitoring in their home areas. They are in the best position to observe changes in their environment. They should be given training in what red flags to look for to detect oil spills or leakage, natural gas leaks, and changes in vegetation or wildlife behavior patterns. They should also be fully informed of any potential health risks, such as respiratory ailments resulting from the flaring of natural gas.

ii Tourist Education

Tourism consistently ranks as one of the top foreign exchange earners for Uganda, and with proper care the industry is poised to expand greatly in the coming years. Tourism provides long-term, diversified income to the country. It is also critical for Uganda's international image. In the rush of excitement around the potential income from oil, it is important to continue to recognize and care for the national treasures that protected areas represent.

Uganda already struggles to compete with its neighbors for tourists, and this will become even more difficult if Uganda becomes known as a place where visitors have to view wildlife through the scaffolding of an oil rig. As stated earlier in this paper, Heritage Oil has invested in camouflaging their well-heads in the delta area of Murchison Falls National Park. This provides an opportunity to educate visitors about the ways the oil companies and the GoU are attempting to reduce the impact on wildlife and the visitor's experience. If this and other mitigation strategies become standard practice, the oil companies should invest in education as a way to promote a positive public image.

Information in the form of signs near any oil infrastructure in protected areas and written brochures should be available informing visitors of what measures have been taken to mitigate the impacts of oil exploration and what ongoing monitoring will be implemented.

It is also critical to educate the driver/guides and tour company owners about current and future oil development plans. They will receive many questions from their clients about the impacts, and they should have up-to-date information about what is being done. This could be accomplished through workshops hosted by the Association of Uganda Tour Operators.

iii Education of Oil Company Staff and Government Representatives

In order for oil company employees to take appropriate measures to care for the environments in which they work, it is necessary for them to fully understand

the biodiversity value of these areas. Every employee, from the CEO to the gate guards, should be aware of the fact that they are working in one of the world's most ecologically important regions, and they should be educated about ways they can contribute to the stewardship of the Albertine Rift and the local communities. By informing them about the value and giving them clear actions they can take to benefit the area, they are more likely to become allies in efforts to protect the conservation and tourism values of the Albertine Rift.

The same holds for government ministers and others involved in developing the working agreements with the oil companies. It should not be assumed that members of the government necessarily understand the biodiversity values of the areas where oil development is taking place. This information should be made available both in written form and through presentations and workshops.

iv. Tertiary-level Education

It should be the goal that many of the high-level, skilled positions in the Albertine Rift project sites should be filled by Ugandans. The Kigumba Petroleum College and other Universities where these future specialists will be trained should include evaluation and mitigation of environmental impacts in their core curriculum. Up-to-date best practices in lower-impact techniques must be taught as a baseline expectation for doing business, not as a lofty goal that can be set aside as not cost effective.

g) Access to Information, Transparency and Monitoring

Considering the biodiversity value of the Albertine Rift and the fact that the majority of oil and gas extraction will occur in protected areas, petroleum companies must be required to carry out their operations with transparency and actively facilitate independent monitoring of their activities. This should start with public access to information, particularly access to the production sharing agreement between the petroleum companies and Government.

Petroleum companies should also be expected to observe the precautionary principle before their operations begin and subsequently be expected to meet prescribed standards of transparency. Records that must be made available include those related to their investments in Uganda, environmental performance, and agreements with local communities. This will facilitate independent and statutory monitoring of project activities by various stakeholders and, provide an opportunity to hold Government and the oil companies accountable for actions with negative social, environmental and economic impacts.

Additionally, NEMA and UWA should be expected to conduct interim and long-term monitoring of biodiversity impacts of oil and gas exploration and production as part of their mandate. They should also be expected to regularly report the results of such monitoring. Biodiversity monitoring programs enable the accuracy of the impact predictions and the degree of success of mitigation measures to be evaluated. The uniform biodiversity monitoring framework should also be employed for all licensed oil and gas exploration and production activities in the Albertine Rift.

h) Biodiversity Action Plans

Due to the immense biodiversity value of the Albertine Rift and the environmental risks associated with petroleum development, oil companies should be compelled to develop biodiversity action plans before starting any operations. A biodiversity action plan is a set of future actions designed to protect, restore and enhance wildlife and its habitat.

Fundamental to any biodiversity action plan is the documentation of individual species, with emphasis on their population distribution and conservation status. However, the principal steps in developing and implementing a biodiversity action plan in the petroleum industry are:

- Deciding if a biodiversity action plan should be done – understanding legal, biodiversity and business case drivers.
- Completing prerequisites – planning for integration with site or project management systems and management of resources.

- Preparing the biodiversity action plan – establishing the priorities for conservation.
- Implementing the biodiversity action plan – rolling out the necessary actions.
- Monitoring, evaluation and improvement – tracking implementation progress and effectiveness.
- Reporting, communication and verification of performance – upgrading engagement processes and building support with stakeholders and partners.²³

A biodiversity action plan may be more effective if there is a broader company biodiversity strategy. However, that is not a prerequisite for the successful preparation and implementation of a biodiversity action plan.

Species that require large blocks of homogeneous habitat (such as forest interiors or bushy grassland) are particularly vulnerable to habitat fragmentation.²⁴ Fragmentation of habitat is widely acknowledged as detrimental to wildlife and plant species. Landscape analysis is a proven method to identify fragmentation and other agents of change in a given area and should be an integral part of any biodiversity action plan in the petroleum industry.²⁵

The polluter-pays-principle should also be an integral part of any biodiversity action plan. Petroleum companies operating in the Albertine Rift should be required to clean-up areas polluted as a result of their operations. They must compensate communities for resources lost or damaged as a consequence of oil exploration and production activities. While it is acknowledged that oil production is necessarily destructive, NEMA should be expected to impose pollution and damage standards as a pre-condition to oil production and in a manner that reflects the Albertine Rift's assimilative and self-restoration capacities respectively. Any failure by the petroleum companies to meet prescribed standards should attract fines tailored towards replacing what the environment and the community has lost in addition to punitive fines to discourage such failures in the future.

A biodiversity action plan may also demonstrate corporate social and environmental responsibility by providing for a biodiversity fund. Together with a pre-determined

portion of the government revenues from oil, oil companies should be encouraged to contribute part of their profits to a biodiversity or environment fund. Such a fund can be established under either the National Environment Management Authority or the Uganda Wildlife Authority, but preferably in a non-governmental, independent institutional structure. This fund can be used for maintaining wildlife corridors to address habitat destruction or disturbances as a result of petroleum development. It can also be used to encourage tourism in the Albertine Rift as an additional source of community and national income.

As part of its biodiversity action plan, an oil company may wish to commit to camouflaged infrastructure to reduce the aesthetic impact of petroleum industry infrastructure such as oil drilling rigs to tourism. Camouflaged infrastructure such as cellular antenna masts have been a feature of the telecommunications industry for over a decade. It is encouraging to see that the petroleum industry has implemented similar innovations to disguise the well heads in the Lake Albert/Nile Delta; however similar efforts should be made for all their other structures.

i) Directional Drilling

The direct and indirect negative impacts of oil and gas exploration and production can be minimized by well-demonstrated technologies to shrink the direct surface footprint of oil and gas operations. One of these technologies is directional drilling, which refers to multiple wells being drilled to extend outwards from one location, maximizing the ability to recover oil and gas while minimizing the number of drilling locations that must be established on the land surface.²⁶ This technology lends itself to clustering infrastructure, which dramatically decreases the amount of land disturbed by infrastructure such as drill pads and access roads.²⁷ It also allows access

²³International Petroleum Industry Environmental Conservation Association and International Association of Oil & Gas Producers. 2005. *A Guide to Developing Biodiversity Action Plans for the Oil and Gas Sector*.

²⁴Foreman et al. 2003. *Road Ecology: Science and Solutions*. Island Press. Washington, DC.

²⁵Weller et al. 2002. *Fragmenting Our Lands: The Ecological Footprint from Oil and Gas Development*. Ecological Analysis. Washington, DC. The Wilderness Society.

²⁶Amos, J. 2003. *Environmental Aspects of Modern Onshore Oil and Gas Development*. Testimony to the Committee on Resources of the United States House of Representatives, Subcommittee on Energy and Mineral Resources September 17, 2003

²⁷Center for Resource Conservation. 2005. *Responsible Energy Development for Sustainable Development*.

to oil and gas reserves under sensitive areas such as fish and wildlife breeding areas without disturbing their physical and ecological integrity and is recognized as a best management practice (BMP) in developed countries and numerous petroleum industry organizations.

However, industry usually resists using directional drilling, based on the issue of cost. Unfortunately cost figures are usually considered to be proprietary information by oil companies and hence their concerns are rarely quantified and are, therefore, not available for public analysis and verification. With the intention of not deterring investment in the petroleum sector, the Government (Petroleum Exploration and Production Department and the National Environment Management Authority) does not mandate the use of directional drilling. As a guiding principle, Government should realize that a major goal of oil & gas operators is to keep costs to a minimum. This may lead an operator to overstate difficulties, misrepresent costs, and fail to apply environmentally beneficial technologies that may be more costly. There is a distinction between costs that are simply higher and costs that are uneconomic.

The benefits of directional drilling are well-established; however, the following recommendations need to be part and parcel of petroleum industry policy and practice in Uganda in order to take advantage of these benefits:

- The reduction in surface impacts should become a major goal in the development of oil and gas.
- Directional drilling should be required by the government and utilized by oil companies as a “best practice.”
- A clear, comprehensive, and public cost-benefit analysis should be performed when any oil and gas development is proposed.
- When ‘high costs’ are cited by an operator as a reason to reject directional drilling, the burden of proof should be placed on the oil company and a full and public economic analysis should be undertaken.

- In this analysis, the reduction in surface impacts should be quantified to properly balance it against any increase in cost. The application of directional drilling, by preventing damage to the environment in the first place, may have the effect of reducing the need for other costly and uncertain mitigation measures meant to restore damaged ecosystems after the fact.
- The analysis should include the savings in operational costs, such as reduced number of pipelines and roads, benefits of concentration of facilities, etc.²⁸

Care needs to also be taken to ensure that directional drilling does not result in conflicts related to transboundary oil and gas reserves between Uganda and the Democratic Republic of Congo.

IV. CONCLUSIONS

Oil and gas production presents immense potential for economic growth and diversification for Uganda’s agriculture-dependent economy. It also presents well-documented potential environmental, social and economic costs. Uganda is therefore at a crossroads: one path leads to a possibly bright future in which oil and gas development brings an economic boom whereas another path could lead to biodiversity degradation, dried-up wells, polluted rivers, destroyed soils, and a less diversified economy due to decreased agricultural and tourism potential. Special attention should be given to the Albertine Rift because of its high biodiversity and ecological value, agricultural productivity and tourism potential. The focus of this special attention should be aquatic and terrestrial protected areas because of their

²⁸Kreckel, K. 2007. *Directional Drilling: The Key to the Smart Growth of Oil and Gas Development in the Rocky Mountain Region*. Washington, DC. The Wilderness Society.

Other UWS Publications

Access to Genetic Resources in Uganda: A Review of Legal and Institutional Options

Wildlife Trade and Implementation of CITES in Uganda

Wildlife Trade and Implementation of CITES in Tanzania

Wildlife Trade and Implementation of CITES in Kenya

Forest Degazettement in Uganda

Compliance Monitoring of Environmental Impact Assessments in Uganda

The Socio-Economic and Ecological Value of Butamira Forest Reserve to Uganda's Development Policies

Legal and Institutional Frameworks for CITES: A Case for Reform

Forest Degazettement in Uganda: A Review of Political and Economic Motivations

Monitoring Compliance with EIA Recommendations in Uganda: Opportunities for Progress

Public Access to Government-Private Sector Contracts: The Case of the Bujagali Project Power Purchase Agreement

Diversifying Commercial Forest Values for Forest Conservation and Improved Livelihoods on the Ssesse Islands

Conflicting Interests: Land Use Change in Protected Areas for Private Commercial Benefit

Trading Natural Wealth for Fiction: A Legal Opinion on the Proposed Degazettement of Pian Upe Wildlife Reserve

The Impact of the Reform Process on Forestry Management in Uganda

Status Report: The Protected Forest Estate in East Africa

A Review of Revenue Sharing Around the Queen Elizabeth Protected Area

Sharing Natural Resource Revenue: Towards Derivation Funds in Uganda

Conserving Biodiversity on Farmland: A Guide to Agricultural Extension Work

Sharing Oil and Gas Revenue in Uganda

Conserving Biodiversity on Farmed Landscapes of Uganda





UGANDA WILDLIFE SOCIETY

Plot 1521 Mawanda Road, Kamwokya, P.O. Box 7422, Kampala, Uganda

Tel: 256 414 530891 Fax: 256 414 530264

E-mail: uws@uws.or.ug

Website: www.uws.or.ug



Design and Layout by: Muhanguzi Edmund Katende.
Tel: 0712-802863 / 0712 - 628455.
Email: pressgraphics@yahoo.com / press.graphics8@gmail.com