ANALYZING THE RESPONSIVENESS OF EMERGING ENVIRONMENTAL LAWS TO SOCIAL ECOLOGICAL PRACTICES IN UGANDA

Shared Resources, Joint Sollutions (SRJS) Lobby 2018 Edition

Limestone extraction in Kasese, in the Queens landscape has a seriouis impact to the ecosystem

Development of infrastructure - Oil pipeline poses a threat to the Muchsons landscape

Content

Introduction

The desire to consider social and economic development within the context of planetary life-support systems has become important in the quest to address the sustainability challenges that the world faces (Selomane et al. 2015). Governments are still grappling with the challenge of how to achieve sustainable outcomes that benefit both people and nature (Kareiva & Marvier, 2012). This is partly the reason Uganda is currently going through processes of amending existing laws or enacting new laws governing climate, wildlife, environment, wetlands, water, land and sugarcane growing and production. These laws can potentially affect socio-ecological resilience and local livelihoods. It is against this backdrop that partners implementing the Shared Resources, Joint Solutions (SRJS) program in Uganda considered supporting a study that would analyse the bills and principles to ensure that international Public Goods (IPGs) of food security, water provisioning, climate resilience and biodiversity are secured. The study will be the basis on which SICU partners will generate aspects for advocacy and lobbying to address observed gaps in relation to IPGs.

The context

Laws play an essential role in shaping natural resources and environmental management (Garmestani et al. 2013; Beyer, 2006) and resilience of social-ecological systems (Ebbesson & Hey, 2010). A responsive legal framework that acknowledges the importance of socio-ecological resilience is important in the quest for attaining development that reduces environmental risks and ecological scarcities yet improving human well-being and social equity (Allen et al. 2011). It is therefore necessary to have laws that can enhance socio-ecological resilience (Cote & Nightingale, 2012), because resilience is a primary basis for sustainability (Chapin et al. 2010). This can be attained by having a legal framework that values environmental assets and secures their capacity to support societal development for a long time (Lambin, 2005).

Studies elsewhere have shown that environmental governance is more effective when the scales of ecological processes are well matched with the human institutions charged with managing human–environment interactions (Leslie et al. 2015). Therefore, understanding the responsiveness of emerging laws to socio-ecological realities of Uganda is critical in the quest for sustainability.

The Scope of analysis

The analysis focused on establishing defects/weaknesses in existing framework governing each of the aforementioned seven aspects and making proposals to address them.
It will involve reviewing laws and bills where they exist and identifying issues and principles that ought to be considered in situations where there is no bill yet in relation with the ecological and social safeguards specifically related to food security, water provisioning, biodiversity, livelihoods and environment.

Defects in the existing legal framework were identified through key informant interviews, focus group discussions and workshops. The key questions that guided the analysis for each bill were to what extent does the bill contribute to: enhancing access to food and reducing vulnerability to food insecurity, enhancing water provisioning and reducing vulnerability to water scarcity, enhancing climate resilience and reducing vulnerability to climate change, and enhancing biodiversity conservation and reducing biodiversity loss? The bills were analysed by interrogating the content. Latent and manifest content analysis (Hsieh & Shannon, 2005) was applied to determine the extent to which the bills under study provided for social-ecological resilience using the components provided by the client. This included identifying the context and interpreting the content within each bill.

Key defects in the National Environment Act, 1995

- The Act does not provide a framework for Institutional coordination and this has led to poor management of environmental resources
- The tools that the Act provides for compliance are not effective considering the current rate of environmental degradation.
- The Act does not provide for adequate protection of indigenous plant genetic resources in the current era of commercial agricultural expansion
- The Act does not have adequate provisions for fiscal policies to promote compliance to environmental laws and regulations
- The penalties and sanctions provided in the Act are not deterrent enough thus keeping environmental crimes high
- The Act does not provide enough protection from political interference
- The law is not clear on forest and wetland land use change on private land thus increasing their conversion
- The law is unclear on ownership, use and access rights of wetlands and other protected areas such as forest reserves and wildlife conservation areas.
- The law lacks principles and guidelines for benefit sharing from environmental resources held in trust by government
- The law limits access to EIA reports to the discretion of the Executive Director NEMA, yet they should be public documents for scrutiny to ensure compliance to existing environmental laws
- The law does not give adequate powers to lead agencies in the EIA process yet they are the most technically appropriate for decision-making.
- The law does not provide a framework for inter-agency coordination in all land-use planning to minimise threats to environmental integrity due to development
- There Environment Act, 1995 does not provide for separation of powers between the approving agency for EIA reports (NEMA) and certifying of EIA and environment audit practitioners.
- The law does not provide a clear reporting mechanism between NEMA and other lead agencies that are required to enforce environmental law yet this is critical for systematic enforcement initiatives.

Findings on water provisioning in the National Environment Bill, 2017

The Bill in section 54 which provides for restrictions on the use of wetlands states specifically in subsection 4 that the lead agency shall ensure that there is no net loss to the affected wetland from an activity for which an environmental and social impact assessment is undertaken. This potentially has a risk of developers not investing in interventions that will enhance the flow of ecosystem services from wetlands thus concentrating on ensuring that their impact remains "neutral". The focus should be on achieving "net gain" and not only "no net loss" considering that wetlands are currently threatened and therefore there is need to increase the capacity of the few existing ones to provide ecosystem services. More so, the bill is not definite on the ecosystem services that the responsible agency should ensure that there is no net loss. Most lending agencies tend to only focus on no net loss of biodiversity (Bull & Brownlie, 2017). Other ecosystem services such as water provisioning service of wetlands may not be given attention.

The principle of conserving water is only provided for in the management and use of rangelands in section 65 (2) (b). This gives an impression that water conservation is only critical in rangeland areas yet water is increasingly becoming scarce in most parts of Uganda especially with the growing commercial agriculture initiatives. Conservation of water sources ought to be recognised as one of the key principles in environment management in the Bill.
This will facilitate issuing guidelines and prescribing measures that will ensure water conservation

in different ecological landscapes of Uganda. The Bill in section 70 (3) (j) provides for monitoring water bodies, soils or any other receiving environment for any spill of hazardous chemicals and contamination. It is however silent on monitoring water bodies on contamination from other pollutants other than hazardous chemicals such as solid wastes and faecal sludge. Studies elsewhere have shown that solid waste and faecal sludge can negatively affect the quality of water (Palamuleni, 2002) yet the current bill does not acknowledge this which may limit interventions to reduce it. It is important that water bodies are monitored for all pollutants apart from spill of hazardous chemicals only.

While the Bill in section 84 (2) (a) (b) provides for "polluter pays principle" in determining the fees to be charged, the conditions do not include payment of damage costs so as to improve the quality of the ecosystem that is being polluted. The Bill ought to have considered the fees to be paid by the polluter to cover cleaning up and improving the quality of the ecosystem (which may include water bodies) on which pollutants have been released into.

The Bill in effecting the pollution licence does not have any deterrent sanctions for a person who contravenes any provision of the law or fails to comply with any condition specified in the licence except cancellation. Lack of deterrent sanctions may abate pollution of water bodies since cancellation of the licence may be perceived very light depending on the benefits that the polluter gains within the time he is allocated before cancellation. It may be necessary that a person who pollutes even with a licence is held responsible and is held liable for any damage caused to human health or the environment as prescribed in section 79 (1) of the Bill.

There is need for explicit inclusion of reference to section 79 for anyone who contravenes the conditions of the pollution licence. This is to follow the legal interpretation principle of "expressio unius est exclusio alterius" (that which is expressed is included and that which is not is excluded).

The Bill provides for National Oil Spill Contingency Preparedness and Response in section 92. However, this provision does not include other hazardous substances that are associated with oil and gas exploration and production such as drilling wastes. The contingency plan ought to include other hazardous substances to protect water bodies where oil and gas activities are taking place.

The Petroleum Authority of Uganda, which was established under the Petroleum (Exploration, Development and Production) Act, 2013, is designated as the Competent National Authority for the implementation of the National Oil Spill Contingency Plan as prescribed in section 92. However, the bill does not specify the specific roles of other actors. This puts water bodies at risk considering that managing oil spills requires multiple actors whose role should be clearly defined in the law.

The current scenario may not secure water bodies considering that the Petroleum (Exploration, Development and Production) Act, 2013, does not explicitly mention implementation of the National Oil Spill Contingency Plan as one of the roles of the Petroleum Authority of Uganda. The Bill should specify the roles of each of the critical actors to ensure the safety of water bodies. To avoid having to amend the Petroleum (Exploration, Development and Production) Act, 2013 to provide for the new role for the Petroleum Authority of Uganda, the Bill should consider having the Health, Safety and Environment Unit at the Ministry of Energy and Mineral Development as a lead agency for the implementation of the National Oil Spill Contingency Plan.

Findings on water provisioning in the National Environment Bill, 2017

Section 116 (4) (b) mentions preserving the quality and flow of water in a dam, lake, river or aquifer that is an easement. The Bill does not include quantity as one of the components of water provisioning that should be preserved in easements. The Bill should include water quantity because it is equally critical for water easements.

The Bill in section 196 (1) (2) (c) states that a person engaged in an activity listed in schedules 6, 7 or 8 shall submit to the Authority an annual report as may be prescribed by the Authority and the annual report under subsection (1) shall contain information on—resource use, including chemicals, water and natural biomass. The Bill does not specify the categories of parameters that ought to be reported upon such as flow of rivers and recharge of aquifers, quantity of water for different uses (industry, energy, households, irrigation and livestock) and water quality for various uses which are important components of water provisioning.

2.3 Findings on food security in the National Environment Bill, 2017

The Bill acknowledges that the current law does not adequately address climate change which has had an impact on food security in the section that describes the defect in the existing law. While indeed food security is partly caused by climate change, there is growing evidence that destruction of natural ecosystems such as forests and wetlands has contributed to food insecurity through changes in the micro-climate and reduced access to foods from these ecosystems (Turyahabwe et al. 2013). The Bill ought to show the nexus between environmental degradation and food security to provide a basis for promoting food security through environmental legislation.

The Bill proposes a number of principles of environment management in section 4. However, none of the principles explicitly considers ensuring resilience of natural ecosystems to ensure food security. This is despite most communities in Uganda relying on the resilience of environmental resources for their food security.

There is need to consider including the principle of maintaining resilience of social-ecological systems since that would place human beings as important part of the ecosystems that they depend on. Section 50 provides for declaration of special conservation areas. While it requires EIA and SIA before declaration of an area as a special conservation area, the Bill does not mention remedies for the community that may have been using the area for their food security. It may be important to entrench food security safeguards during declaration of certain areas as special conservation area.

Section 53 (10) (11) provides for traditional uses of wetland resources. However, the Bill does not provide for fish ponds as an activity yet this would improve nutritional status of local communities. There is need to consider fish ponds as acceptable traditional use of wetland resources so as to improve protein supply in areas with wetlands. However, this should not be at a commercial level to negatively affect the ecological integrity of wetland ecosystem. The protection of indigenous plant material needs to be included in the Bill to ensure food security especially for local communities that may not afford to grow commercial varieties.

The Bill in section 82 requires that an environmental and social impact assessment will be done before a pollution licence is issued. However, it may be important to state that no pollutants will be released in natural ecosystems that are a source of food. There is need for environmental safeguards that will ensure safety of food sources during issuing of a pollution licence.

Oil and Gas Developments Challenges in Uganda's Albertine Graben

In 2016, the government of Uganda issued seven production licenses to Total E & P and Tullow Oil. These added on the earlier licenses to CNOOC. The above licenses constitute one of the key processes for oil exploitation by the government and oil companies in the rich biodiversity Albertine Rift and, the country generally. It is envisioned that by 2020, a crude oil pipeline, a Central processing facility and a refinery will be in place for petroleum exploitation with social, environmental and economic possible opportunities and challenges. In addition, the government is currently negotiating with a number of other oil companies for more exploration licenses to conduct oil activities in some of the most sensitive areas such as Queen Elizabeth National Park, L. Edward and others in the country.

In the Tilenga Project Spearheaded by Total E&P and Tullow Oil, what is currently planned is to include;

- A Central Processing Facility (CPF) with capacity to process 190,000 barrels of oil per day, and over 412 wells (including 189 injectors, 190 producers and 33 observers) which are planned to be drilled on 35 well pads.
- The CPF is an infrastructure used to process crude oil, which is received directly from the oil wells, by removing impurities and water and also separating the produced gas from the crude oil.
- The Tilenga project is also planned to have 250 kilometers flow lines which will transport crude oil within the oil fields and,
- A 110 km feeder pipeline which will transport the processed crude oil from the CPF in Buliisa to the export hub and refinery in Kabaale.

The Kingfisher Project

- The Kingfisher project has a planned CPF with a capacity of 40,000 barrels of oil per day and 31 wells (11 injectors and 20 producers) to be drilled on 4 well pads.
- The project is planned to have 16 kilometers of flow lines and,
- A 55km feeder pipeline from the CPF in Buhuka, Hoima district, to the Export Hub and refinery in Kabaale.

- CNOOC (U) Ltd has commenced pre-development work on the Kingfisher oil field starting with construction of infrastructure to support the operations.
- This includes the construction of a 10 kilometer all weather road from Ikamiro Village, across the escarpment to Buhuka in Kyangwali Sub county, Hoima district where the Kingfisher oil field is located, which was completed in February 2016.

East African Crude Oil Pipeline Project

In line with the MoU on commercialization of the discovered petroleum resources in Uganda, feasibility studies on the development of a Crude Oil Export Pipeline from the Albertine Graben in Uganda to the East African Coast were undertaken with a view to selecting the least cost route for transporting Uganda's crude oil to the coast. The Hoima (Uganda) – Tanga (Tanzania) route was selected as more secure, at a cheaper cost and therefore, a lower tariff.

The 3.5 Billion US Dollar Investment for a 1,445km long, 24-inch diameter, buried and heated East African Crude Oil Pipeline (EACOP) from Kabaale, Hoima in Uganda to Chongoleani in Tanga, Tanzania, is being developed to transport crude oil from Uganda to Tanga port in Tanzania. The development of this pipeline is being led by the licensed upstream oil companies in Uganda, with participating interests by the Governments of Uganda and Tanzania. The pipeline will have a loading pad in Kabaale, six pumping stations and 27 heating stations along the route together with a facility to load crude oil on to tankers at Chongoleani. Project development committees have been set up including a Pipeline Project Team led by the private sector in carrying out daily activities of the Project. This is in addition to a multidisciplinary Joint Project Development Committee (JPDC) spearheading the implementation of the project, and a Project Steering Committee (PSC) of Permanent Secretaries to review progress and report to the sector Ministers.

The Inter-Governmental Agreement between Uganda and Tanzania was signed during May 2017 and Foundation Stones for the EACOP were lad in Tanga during August 2017 and Hoima during November 2017. The Front-End Engineering Design (FEED) for the pipeline was undertaken by Gulf Interstate Engineering (GIE) and the project will be a partnership between Governments of Uganda (represented by UNOC) and Tanzania, together with the Upstream licensees in Uganda and funded through project finance arrangement.Negotiation of the Host Government Agreement (HGA) which shall be the framework for the implementation of the EACOP Project in the territory of Uganda commenced in August 2017 between the Government and the Pipeline Project developers. Thus the Project will be constructed and operated through a Pipeline Company with share holding from the Uganda National Oil Company (UNOC), Tanzanian Petroleum Development Cooperation (TPDC) and the three oil companies CNOOC, TOTAL and TULLOW.

While it is a legal requirement for all oil activities to be executed in line with Ugandan legal framework as well as international best practices to avoid and or mitigate negative oil impacts on biodiversity and livelihoods, the oil sector still continues to pose many conservation and livelihood challenges, even before commencement of actual exploitation. Going by experiences of oil producing countries such as Chad, Nigeria, Angola, South Sudan, Equatorial Guiney and others, there is fear that without strong laws and compliance, oil exploitation and expanded exploration activities will worsen conservation and livelihood challenges in Uganda. Groups like the SRJS partners and others must mobilize the citizens and engage stakeholders including companies, development partners, government and others to avoid oil activities in protected areas or apply mitigation hierarchy measures where avoidance is impossible.

Key challenges include the following;

Economic Issues

Expectation for Oil revenues amidst high levels of corruption and deteriorating observance of good governance principles. There is still a big task ahead for the government to ensure economic benefits are maximized. The country is still lacking on;

- Macro-economic policies
- Macro-economic level risks and mitigation measures
- Production sharing Agreements, good contracts with various companies developing the planned oil infrastructure including national safeguards that guarantee that the country benefits from oil.
- Integration of Oil in national development plans
- Policies and frameworks for managing Oil revenues including Revenue sharing schemes/ formulars to ensure that Oil revenues trickle down to other sectors of the economy and benefit the common man
- Contracts Transparency/Information Disclosure. The Ugandan government continues to run the oil sector in secrecy especially regarding information on terms and conditions in the licenses, Production Sharing Agreements (PSAs), feasibility studies for the refinery, EIA certificates for oil projects,UWA permits authorizing oil activities in the protected areas and others. Instead, they selectively give information as and when they want. Effective information disclosure (timely and accurate) through contact transparency is an essential foundation for legal compliance and general good governance.

Environmental Issues

- Albertine rift (AR): Rich in biodiversity –internationally and nationally; highly vulnerable to disturbance and changes
- AR offers wide range of economic, livelihoods and other services; therefore, AR is faced with challenge of managing "environment in Oil" at site and landscape levels and meeting international and regional obligations
- Application of Planning Tools – EIAs, SEAs /ESEA, etc
- Mining in Protected areas such as forested reserves, National parks, Game reserves, International rivers (Ramzar sites), wildlife sanctuaries, community reserves, etc
- The Albertine Graben has many sacred natural sites and territories of great importance.

Key challenges include the following;

- These sites are under increasing threat from oil activities and the situation will most likely worsen under the current and near future planned oil infrastructure such as pipelines
- Animal Human conflicts as oil developments will alter animal migration routes, breeding places and most likely accelerate poaching as poachers disguise themselves as oil workers. Ecosystem change will also scare away animals into communities.

Social Issues

- Oil activities cover 13 districts, approx 8 million people (20% of Uganda's population); multi-ethnic and complicated history.
- Challenge of managing demands /entitlements/claims by Bunyoro Kingdom since colonial times struggles between the British with their King Kabalega).
- Management of "very" high expectations (economy and social) + risks and problems associated with influx of people including conflicts and conflict management.
- Security threat on locals form Eastern Congo rebels.
- Inadequate participation in oil and other related development decision making processes
- Land rights protection and awareness. The development of oil and gas exploitation activities in the Albertine Rift continues to create excitement, opportunities and fears at the same time among the public, especially host communities. The on-going and planned oil development projects including the 1,445km East African Crude Pipeline running right from the shores of Lake Albert to Tanga port at the Indian Ocean through Tanzania is the biggest pipeline project on land in the world. The government also plans to build a refinery in Hoima, the shores of L. Albert banks of River Wambabya. The above two main projects will be served by hundreds of kilometers of feeder pipelines from over 80 oil wells and processing centres. The government is also in the process of issuing new licenses for further exploration in many areas including Queen Elizabeth Nation Park, L. Edward and others Other than conservation challenges, oil exploration and exploitation projects will increase the "rush for land" through compulsory acquisition by Government, land grabbing and other related social challenges Inadequate participation in oil and other related development decision making processes. Still a big challenge dictated by lack of transparency, limited capacity, security concerns, and bad laws that compromise CSO space among others.

Findings on water provisioning in the National Environment Bill, 2017

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There is need to consider including the principle of maintaining resilience of social-ecological systems since that would place human beings as important part of the ecosystems that they depend on.

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Findings on climate change resilience in the National Environment Bill, 2017

The Bill in section 68 proposes issuing of guidelines and measures by the lead agency in consultation with NEMA to address resilience of ecosystems. While the message is clear, legally the word “may” grants permission to act, and “shall” imposes duty to act.
Considering the importance of resilience of ecosystems in climate resilience it’s advisable that the diction changes to “The lead agency “shall”, in consultation with the Authority, put in place guidelines and prescribe measures to—address the impacts of climate change on ecosystems, including by improving the resilience of ecosystems, promoting low carbon development and reducing emissions from deforestation and forest degradation, sustainable management of forests, conservation of forest carbon stock.

The bill does not include wetlands, arable land, water sources, woodlands and rangelands as ecosystems whose resilience needs to be improved yet they are important for climate change mitigation and livelihoods. The improvement of the resilience of these natural ecosystems ought to be included in the Bill to ensure that the ecosystem services that are generated from them continue to flow amidst climate change.

The Bill is does not provide for any incentives to promote practices that will enhance climate change resilience. Most of these practices would result into public goods which land owners have little incentive to enhance, therefore external inducements through institutional incentives are critical if they are to be adopted (Goldman et al. 2007). The Bill needs to have compensation/rewards for land owners that protect ecological resources which they only partially benefit from and in some cases may not benefit at all but they are critical for climate change resilience.

The Bill does not provide any guiding principles that can enhance climate change resilience such as maintaining landscape heterogeneity, maintaining key species interactions and functional diversity, integrating local knowledge into adaptation responses and community empowerment. These would be adopted by the lead agency.

Section 65 (1) provides certain tenets that the National Environment Management Authority would follow in the issuing guidelines and prescribing measures in the Management of rangelands. It is noticeable that none of the guidelines recognises the importance of flexible management approaches that are shaped by functional resource heterogeneity to contend with weather and forage variability which characterize Uganda’s rangelands. It is therefore important that the Bill provides for flexibility in issuing guidelines and measures for rangeland management to ensure climate change resilience of the landscapes and users of rangelands.

This is because there is evidence that rangelands in Africa cannot be managed following the conservative assumptions of predictability, stability and equilibrium states because their functioning is event-driven (Niamir-Fuller, 1999; Sullivan & Rohde,2002).

Part of Nile River ecosyste in this landscape is threatened by oil development projects such as the oil pipeline among others

Findings on Biodiversity Conservation in the National Environment Bill, 2017

The policy and principles of the Bill do not recognize biodiversity loss as an important issue that ought to be addressed instead biodiversity offset management is what is presented as a critical emerging issue. This gives an impression that biodiversity loss in general is not a problem except management of biodiversity offsets. The drivers of biodiversity loss such as habitat loss, plant genetic erosion due to increased commercial farming, poaching, illegal trade in forest products, unsustainable harvesting of environmental resources and invasive alien species are not mentioned. It may be necessary to include biodiversity loss as issue that the current Bill has not adequately addressed in order to have specific provisions in the Bill that will address the drivers. The challenges that require legislation to ensure biodiversity conservation are not recognised in the section that describes the defects in the Bill yet biodiversity loss is still common in Uganda.

The notable examples of challenges that ought to be included in the defects are lack of legal provisions for incentives that can promote biodiversity conservation especially on privately owned land and requirements for effective restoration of disturbed land in critical habitats by all forms of development.

The other principles in Section 4 (2) (f) states "restoring lost or damaged ecosystems where possible and reversing the degradation of the environment and natural resources". The phrase "where possible" negates the whole purpose of ensuring that biodiversity loss is minimised. Developers can easily claim that it is not possible thus choose not to restore. The phrase where possible ought to be removed from this principle.

There are no specific land use principles among the environment management principles in the Bill that can promote biodiversity conservation. There is need for inclusion of land use principles that can promote biodiversity conservation such as maintenance of connectivity of different ecosystems, maintenance of landscape heterogeneity, identifying of biodiversity hotspots for conservation, maintaining critical natural ecosystem in agricultural landscapes and restoring degraded lands.

Identify and prioritize rural hotspots, where the conservation of biodiversity and rural livelihoods can be achieved jointly.

Section 47 of the Bill provides for Land use planning in which a lead agency is required to liaise with the Authority to ensure that environmental considerations are an integral part of land use plans. While this may contribute to biodiversity conservation, it may be important to state the key environmental considerations that are entrenched that the lead agency would have to consider.

Section 50 provides for declaration of special conservation areas. However, the criteria for declaring special conservation areas are not provided. It would be useful to have such criteria and one of them ought to be areas of high biodiversity importance i.e. areas with endemic species, rare, threatened or endangered species that are significant at global, regional and national level.

Defects in the Wildlife Act, 1995

- The principles for benefit sharing mechanisms between government that holds in trust all wildlife and the citizens especially local communities adjacent to wildlife conservation area is not clear in the Act.
- The Act does not provide for adequate incentive mechanisms to promote co-management of wildlife conservation area.
- The Act lacks clear mechanisms of addressing human-wildlife conflicts and compensation for damages caused by wildlife
- Inter-agency coordination for wildlife conservation is not adequately provided for in the Act
- The law does not provide adequate safeguards from threats from mining, power generation, oi exploration and production and other developments in wildlife conservation areas .
- The law does not provide mechanisms for securing wildlife outside protected areas from land use changes that may affect their natural habitats.

Findings on water provisioning and food security in the in the Uganda Wildlife Bill, 2017

Section 25 of the Bill provides for the declaration of a wildlife conservation area which may be an area of land or water. While the Bill requires conducting social and environmental impact assessment, there is no guarantee for local communities' water and food security in case the area considered has sources of water and the only arable land. The Bill should have certain critical social safeguards such as access to water sources and food.

Section 24 of the Bill states that "The Authority shall in consultation with the National Environment Management Authority carry out audits and monitoring or cause audits and monitoring of projects that impact on wildlife in accordance with the National Environment Act and any regulations made under that Act. In order to ensure the flow of all ecosystem services including water provisioning services from wildlife conservation areas, it may be necessary to include monitoring critical ecosystems not only wildlife as the bill seems to suggest in the current format.

Section 26 (6) (e) of the Bill provides for regulated extractive utilisation of natural resources in a wildlife reserves, however the entire bill does not define what type of natural resources may be extracted.

It would be useful to have a list of the resources that can be extracted and water for domestic use and local foods ought to be considered. The current diction of the Bill does not provide any guarantee that local populations can access water sources and food from wildlife reserves.

Findings on conservation of biodiversity and climate change resilience in the Uganda Wildlife Bill,2017

The Bill does not mention anywhere working in close consultation with the National Forestry Authority in the management of wildlife in central forest reserves yet forests are critical habitats for biodiversity conservation including wildlife. The Bill should provide mechanisms through which coordination with other relevant bodies such as the National Forestry Authority can be achieved for instance by: creating a duty to exchange information on matters of common concern, and/or request the prior consent or advice of inter-institutional government bodies that are critical in wildlife management. This can potentially reduce biodiversity/wildlife loss in areas that have not been declared as wildlife conservation areas.

Section 31 provides for use of wildlife resources and mentions that the Executive Director shall ensure that the annual harvest does not exceed the sustainable yield level. It may be "safe" to provide for the principle of maximum sustainable yield than annual sustainable yield to cater for all the resources that may not require a whole year to determine what to harvest. It may also be useful to include the statement that resources with fluctuating recruitment, low quantities should be harvested in certain periods than following the maximum sustainable yield principle. It is advisable to not give the role of ensuring maximum sustainable yield to the Executive Director but to entrench it as a principle that UWA applies.

Section 2 of the Bill provides for the purpose of the Act. However, none of them includes enhancing regulatory ecosystem services from wildlife conservation areas such as climate change mitigation yet most of the wildlife conservation areas are equally vulnerable to climate change but also have ecosystems that can be useful in climate change mitigation and adaptation.

There is need to include addressing climate change in the Bill considering that climate defines the environment and influences future trajectories of the distributions of species and their habitat and management actions can help increase resilience of certain critical natural resources in wildlife conservation areas (Baron et al. 2009). climate change has caused shifts in species distributions, changes in phenology, for particular species; decoupling of coevolved interactions, such as plant–pollinator relationships; extinction or extirpation of range-restricted or isolated species and populations; warming of habitats (such as mountain streams); increased spread of wildlife diseases and parasites, increased spread of invasive or non-native species, including plants, animals, and pathogens (Mawdsley et al. 2009).

Defects in the current framework governing climate change adaptation and mitigation

There is increasingly wide acceptance that all agricultural and industrial enterprises need to operate in a manner in which not just the economic but also the social and environmental factors are promoted (Rein, 2010; Mallawaarachchi et al. 2001). The following defects in relation to socio-ecological resilience are identified in the current legal framework governing sugar production in Uganda:

- There are no mechanisms to certify that sustainable practices are being adhered to by actors involved in sugar production.
- There are no sectoral regulations to ensure biodiversity and other ecosystem services are secured in sugar production.
- Self-regulation by actors in sugar production to ensure that important livelihood components especially food security are maintained by actors involved in sugar production is not provided for in existing legal framework
- There are no incentive mechanisms for producing sugar sustainably in Uganda's legal framework
- There is no Code of Practice for sustainable sugarcane growing thus increasing use of unsustainable practices which may damage environmental integrity and local livelihoods
- There is no legal provision for sugarcane growers to ensure Best management practices to increase land productivity so that less natural ecosystems are converted for expansion.

Findings on food security in the Sugar Bill, 2016 (Bill No 18)

The Bill is silent on any social safeguards related to food security. This is despite recent studies in Uganda showing that Commercial sugarcane growing is replacing land that was previously used for food production and thus increasing the risk of food insecurity (Mwavu et al. 2018). More so, important traditional food crops have declined due to commercial sugarcane growing (Mwavu et al. 2016). Studies elsewhere have shown that sugarcane growing may increase soil erosion because of extensive areas of bare soil that are associated with the management practices thus reducing the productivity of the soil for food production (Martinelli & Filoso, 2008).

The Bill ought to have provisions on principles that will guide growing of commercial sugar crops of which social safeguards related to food security are provided. These principles may include but not limited to requirement for social impact assessment for expansion of sugarcane into an area, land use plans that ensure a balance of food crops and sugarcane and providing incentives for food crop production for out-growers. It may also be crucial to have a provision for a proportion of land that out-growers of sugarcane have to preserve to ensure food security entrenched in the law.

Findings on water provisioning in the Sugar Bill, 2016 (Bill No 18)

The entire Bill does not provide for any principles or purpose of ensuring that sugar production does not jeopardise water provisioning. This is despite the fact the sugarcane growing has negative impacts on water mainly due to increased evapotranspiration, pollution of water sources through eutrophication linked to use of fertilizers (Martinelli & Filoso, 2008), pesticides and herbicides (Davis et al. 2013). and stream sedimentation (Arthington et al. 1997). More so, processing of sugarcane requires large volumes of water while the liquid effluents may affect the quality of water sources (Ingaramo et al. 2009). All of these may affect water provisioning in areas with sugar production.

Environmental safeguards and incentives for water efficiency ought to be included in the Bill to ensure that the sugar industry does not affect water quantity and quality. It may be useful to include restoration orders based on the National environment Act in the Bill so that any player that affects water provisioning services is required to implement remedies. Regular monitoring and reporting by sugarcane producers and processors on the quality and quantity of water sources to the lead

agency should be included in the law to ensure that sugar production is within the statutory thresholds of the water parameters monitored.

Findings on biodiversity conservation in the Sugar Bill, 2016 (Bill No 18)
The Bill is silent on biodiversity conservation yet there is evidence that sugarcane production has contributed significantly to biodiversity loss in Uganda through loss of habitats such as forests and wetlands that are converted into sugarcane plantations (Mwavu & Witkowski, 2008; Reynold et al. 2003). Sugarcane plantations have also led to increased loss of agro-biodiversity (Mwavu et al. 2016).

The Bill should consider having in place principles that will ensure that sugarcane growing does not cause biodiversity loss. This can be through ensuring that sugarcane plantations are located in a more strategic way that considers landscape context and is sensitive to how they affect biodiversity. The sugarcane plantations should have a positive interaction with other landscape units. This can be achieved by the law requiring land use plans that provide for habitat corridors, habitat heterogeneity and outlawing conversion of natural habitats such as forests and wetlands into sugarcane plantations. The Bill should provide for incentives for growers that carryout environmentally friendly practices that result into biodiversity conservation.
More so, burning of sugarcane before harvesting should be banned to minimise loss of biodiversity especially wildlife (rodents and meso-predators) and belowground biodiversity that get trapped when fire is set in sugar plantations (Rachid et al. 2013; Joly et al. 2015).

Findings on climate resilience in the Sugar Bill, 2016 (Bill No 18)
The Bill is generally silent on climate resilience except in section 26 (2) (i) where there is a provision of fostering of research on sustainable productivity and environmental issues as one of the roles of the proposed National Sugar Research Institute. It is silent on mechanisms and procedures that will enhance climate resilience of the industry and the socio-ecological system

of the areas where sugarcane is grown in Uganda. This is despite studies showing that sugarcane production is highly vulnerable to climate change due to increased frequency and intensity of the extreme weather events, such as drought, heat and flooding (Gawander, 2007; Knox et al. 2010; Zhao & Li, 2015).

High temperatures can increase evapotranspiration rates thus reducing the amount of water available in soil (de Carvalho et al. 2015) which may increase irrigation demand (Santos & Sentelhas,2012). It may also result into decreased yield due increased water deficit stress caused by the warmer climate (Singh & Maayar, 1998).

It will be useful to include among other roles for the proposed National Sugar Research Institute the following: breeding sugarcane varieties or cultivars that adapt to drought conditions or greater water use efficiency, promoting diversification of varieties and conserving local genetic diversity to enhance climate change resilience in sugar production.

The Bill should consider having principles that sugarcane growers ought to follow that will ensure climate change resilience such as water use efficiency, and conservation of natural ecosystems especially soil, forests, wetlands and water.
This may therefore require banning sugarcane burning because it releases greenhouse gases like carbon dioxide, methane, non-methane volatile organic compounds and nitrogen gases which increases effects of climate change.
Green harvest increases amount of sugarcane residue which is useful in improving soil physical and chemical properties. The residue is important in weed suppression, can increase organic matter in the soil which increases water holding capacity; improve soil structure and biological activity in the soil which are critical for climate change resilience.

Defects in the Constitution (Amendment) Bill, 2017 (No.13)

The Bill would deny citizens of Uganda the right to land, which is critical in the livelihoods of most of the rural population.
The Bill violates article 26(1) of the Constitution of the Republic of Uganda that provides that every person has a right to own property either individually or in association with others. The proposed amendment limits the fundamental right to property.
It can easily be a source of land grabbing by government agencies.

Findings on food security in the Constitution (Amendment) Bill, 2017 (No.13)
The rationale of the Bill is to to empower the Government or local government to take possession of the declared property upon depositing the compensation awarded for the property with court, pending determination by the court of the disputed compensation awarded to the property owner or

person having an interest in or right over the property. Essentially, this implies that Government would not wait to utilise the land or property even when court has not made a judgement on the dispute on compensation of land or property that is compulsorily acquired.

This Bill has implications on food security because in Uganda most people especially in the rural areas produce their own food and therefore access to land is critical considering that poverty levels are still high and therefore people may not be able to purchase all foods that they need in their diet. Government utilizing the compulsorily acquired land before compensation due to disputes on compensation can contribute to food insecurity because it dispossesses the people of their land before receiving their compensation which they would have hitherto used to acquire land for food production.

This Bill may also discourage investors interested in food growing due to the fear of loosing their investment on land that government wishes to acquire yet is not willing to only use it when disputes on compensation are addressed. Low agricultural investment will make Uganda less food secure.

Uganda ratified (21st January, 1987) the United Nations, General Assembly, International Covenant on Economic, Social and Cultural Rights which requires the state to ensure full realisation of rights to land, food security, and livelihood for all citizens involved in land acquisition and resettlement. Uganda will not be able to fulfil this principle if this amendment is passed by Parliament of Uganda. It is therefore advisable that the amendment is not considered because of its deleterious effects on food security.

Findings on water provisioning, Biodiversity and Climate resilience in the Constitution (Amendment) Bill, 2017 (No.13)

The amendment Bill has potential to negatively affect natural ecosystems and consequently the resilience of the socio-ecological systems in Uganda. Government using the land before compensation may result into displacement of people into protected areas that are not well-secured against encroachers and other common pool resources such as rangelands, forests and wetlands. This may threaten biodiversity and catchments thus affecting water provisioning. Encroachment on wetlands and forests will contribute to increased emissions and decline in resilience to climate change.

The Bill will increase tenure insecurity because of the "fear" of being unfairly compensated by government and this potentially may increase conversion of natural ecosystems by land owners. Studies have shown that environmental degradation especially forest and wetland loss and degradation tend to increase with insecure tenure (Banana & Gombya-Ssembajjwe 2000; Hartter & Ryan, 2010). Land tenure security has been found to be associated with less deforestation (Robinson et al. 2014). The Amendment Bill therefore should not be passed due to its potential impacts on the socio-ecological systems.

Wetland Management

The following defects are discernible in the current policy and legal framework governing wetlands:

- Unclear mandates of the National Institutions (NEMA, Uganda Land Commission and Wetlands Department) and District Local Governments in the management of wetlands
- Unclear description of the role of technical staff and locally elected leaders in the management of wetlands
- Lack of statutory incentives for payment of ecosystem services including wetlands
- Lack of well-defined criteria to determine ecologically sustainable land uses
- Unclear ownership rights of wetlands on private land that are not protected
- Lack of a coordination framework among agencies, departments and relevant ministries involved in wetlands management
- There are no guidelines for gazetting wetlands thus rendering most wetlands susceptible to conversion into other land uses
- Poor compliance to implementation of Environmental Impact Assessment of projects in wetlands
- Failure of government including wetlands in national accounting systems.

Principles in wetland Management

- Cross-sectoral coordination in planning and management of wetlands should be promoted .
- The use and management of wetlands should promote social-ecological resilience.
- Wetland use should not cause net loss but net gain or no net loss of wetland ecosystem services.
- Institutional mandates should be well defined to prevent jurisdictional conflicts.
- Equity in access to tangible benefits from wetlands.
- Increasing benefits from wetlands for the local people without affecting their capacity to provide characteristic ecosystem services.

Findings on water provisioning, Biodiversity and Climate resilience in the Constitution (Amendment) Bill, 2017 (No.13)

Water Management

Defects in current legal framework governing water include:

- Overlap of institutional roles in water provisioning.
- Lack of a coordination framework for the actors involved in water provisioning.
- Limited participation of local people in decisions-making linked to water management.
- Weak enforcement of regulations governing water especially issuance of water permits and protection of water sources.
- Lack of principles and guidelines for protection of water sources in oil and gas exploration and production and mining areas.
- Lack of guidelines for management of waste water .
- Lack of provisions to enhance climate resilience of water sources.
- Internal institutional weaknesses.
- Monopoly of National water and sewerage corporation and district local governments.

Recommended Principles

- Harnessing indigenous knowledge in water management is critical in good water governance.
- Participation through all stages of the water planning cycle is an important tenet in water governance.
- Consideration of the different interests of water users is important in allocation of water use rights.
- Building capacity for local people to meaningfully engage with lead agencies is important for good water governance.
- Water is a social-economic resource.
- Fresh water is a finite and vulnerable resource, essential to sustain life, development, and the environment.
- Water governance systems should be gender sensitive.

Conclusion

The most visible defect in the Environment Act, 1995 is that the tools and measures currently used by enforcement agencies are not effective thus rendering the environment susceptible to degradation. There is need to review the Environment Bill to promote the use of economic instruments and deterrent penalties to improve compliance. The National Environment Bill, 2017 does not prioritize water provisioning services except in rangelands. The "polluter pays principle" is not comprehensively defined to confirm that polluters would pay a value commensurate to the cost of restoring the ecological integrity of systems that they have polluted. The Bill is silent on the role of the environment in ensuring food security and thus safeguards for food security are very limited in it. The Bill does not emphasise the enhancement of the resilience of natural ecosystems to climate change and there are no specific provisions for incentives that can promote climate change adaptation and mitigation practices. The Bill does not raise the issue of biodiversity loss despite the current trend of habitat loss in Uganda. It is silent on mechanisms of promoting biodiversity conservation on private land.

The current Wildlife Act, 1995 lacks mechanisms of ensuring equity in benefit sharing from wildlife resources and addressing human-wildlife conflicts. The law does not provide robust protection of wildlife from development activities such as oil and gas activities and operations and mining. Social safeguards such as access to water sources and food are not adequately provided for in the Uganda Wildlife Bill, 2017. The Bill is not emphatic on monitoring of other ecological resources in protected areas except wildlife. Addressing climate change is also not prioritised in the Bill.

The study found that there is no legislation that promotes adaptation actions across sectors and reducing exposure and sensitivity to extreme whether events. Emissions reduction is not legislated and there is no law that provides for compensation due to climate change. Economic instruments for desirable behaviour for climate change adaptation and mitigation are not provided in Uganda's legal framework.
Food security and water provisioning are not recognised as important livelihood components that are affected by climate change to warrant legislation in the in the National Climate Change Bill, 2018. Similarly, biodiversity conservation is not recognised as important in the Bill. The Bill emphasises building resilience of vulnerable and marginalised communities but not resilience of natural ecosystems and nature-based adaptation mechanisms.

Conclusion

There is no legal framework requiring self-regulation to ensure that sugar production fulfills social and environmental sustainability principles. The industry lacks a code of practice for sustainable sugarcane growing and there are no incentive mechanisms for producing sugar sustainably in the legal framework. The Bill is silent on any social and environmental safeguards related to food security, water provisioning and biodiversity conservation. It does not provide for any mechanisms and procedures that will enhance climate resilience of the industry.

The Constitution (Amendment) Bill, 2017 (No.13) denies citizens of Uganda the right to land, which is critical to their livelihoods. The Amendment will contribute to food insecurity because it dispossesses the people of their land before receiving their compensation which they would have hitherto used to acquire land for food production. It can cause loss of natural ecosystems and consequently the resilience of the socio-ecological systems due to tenure insecurity associated to it thus increasing biodiversity loss and reduced water provisioning.

The current legal framework does not provide adequate safeguards against wetland loss and degradation. There is need for a wetland law to address the current threats and also promote sustainable and wise use. This can be achieved by implement sustainable principles.

The current legal framework governing water has defects/weaknesses mainly linked to overlap of mandates, weak coordination, enforcement of regulations and monopoly of National water and sewerage corporation and district local governments. There is need to amend the current water Act, 1997 to provide for effective participation of local communities, use of indigenous knowledge, integrating gender and acknowledging that water is a social-economic good.

Priority areas for advocacy

Environment management

- Engage with the Natural Resources Committee of parliament by October to include economic instruments such as taxes on products that may harm the environment and subsidies for sectors that promote sustainable practices.
- Engage the committee to consider including in the Bill the cost of restoring the ecosystems polluters degrade among the conditions applied in determining the cost when "polluter pays principle" is applied.
- The committee needs to include mechanisms for minimizing biodiversity loss through creating incentives for payment for ecosystem services
- The committee needs to be engaged to appreciate the defects in the National Environment Act, 1995.
- Engage the committee to consider having the Health, Safety and Environment Unit at the Ministry of Energy and Mineral Development as a lead agency for the implementation of the National Oil Spill Contingency Plan.
- The committee needs to integrate protection of indigenous plant material in the Bill to ensure food security.
- The committee needs to integrate incentives to promote practices that will enhance climate change resilience in the Bill
- The committee should provide for flexibility as an important principle in management of rangelands

Wildlife Management

- The committee should ensure that principle of distributive equity in benefit sharing from wildlife resources is included in the Bill.
- The committee needs to be engaged to integrate banning of mining, oil exploration and production in National Parks.
- The principle of maximum sustainable yield and not annual sustainable yield should be considered in the Bill
- The Bill should have provisions to address climate change

Priority areas for advocacy

Climate change

- Engage the parliamentary forum on climate change-Uganda to include provisions that can promote adaptation action across all sectors and reduce exposure and sensitivity to extreme whether events in the National Climate Change bill, 2018
- The committee should include emissions reduction that would require potential emitters to reduce their emissions in the Bill
- A provision on compensation due to climate change that may be linked to particular actions of individuals, corporations or government entities should be included in the Bill.
- Economic instruments such as taxes, tradeable permit schemes, and financial or administrative incentives for desirable behaviour for climate change adaptation and mitigation should be provided in Uganda's legal framework.
- There should be a legal provision for funding mechanisms to offset the disproportionate economic burden on disadvantaged individuals or groups by challenges associated with climate change
- Provisions that will require lead agencies to put in place mechanisms or procedures to minimise impacts of climate change on biodiversity should be included in the Bill

Sugar production

- Parliamentary com¬mit¬tee on Tourism, Trade and In¬dus¬try needs to be engaged to ensure that the Sugar Bill, 2016 (Bill No 18) promotes self -regulation for sustainable sugar production.
- The Bill should have provision for sectoral regulations to ensure biodiversity and other ecosystem services are secured in sugar production.
- The committee should include incentive mechanisms for producing sugar sustainably
- A code of practice for sustainable sugarcane growing should be included in the bill and it should cover environmental integrity
- The committee should outlaw burning of sugarcane before harvesting.

Land governance

The office of the Attorney General needs to get the view of the partners showing how the Constitution (Amendment) Bill, 2017 (No.13) will contribute to food insecurity, degradation of natural ecosystems and breakdown of socio-ecological systems. The message should be that the Bill is not returned to parliament due to the risk associated with it to local livelihoods and environment

Wetland management

Seek audience with the Director of Environment Affairs, Ministry of Water and Environment to ensure that the Wetland Bill addresses the defects identified and the principles proposed are integrated.

Water management

Seek audience with the Director of The Directorate of Water Resources Management (DWRM), Ministry of Water and Environment to ensure that the Water Bill addresses the defects identified and the principles proposed are integrated.

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