



Oil palm plantations in forest landscapes: impacts, aspirations and ways forward in Uganda

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Overview

Paradise lost, or found? The introduction of oil palm to Uganda's tropical forest islands in Lake Victoria – a review of experiences and proposed next steps

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Summary

The main aim of introducing oil palm (*Elaeis guineensis*) on islands in Lake Victoria is laudable – to provide cash incomes to impoverished rural people and to improve the national economy. But do these two objectives go hand in hand? Projects packaged on perceived contributions to national economies do not always translate to improvements in the wellbeing of rural communities as relationships are not straight forward in such complex situations. The introduction of oil palm in Kalangala has certainly provided a number of benefits, but most new jobs pay less than prevailing wage rates in the area. This has thus attracted migrant labour with associated social costs, while local people still tend to prefer to carry on fishing, farming and using their forests. But due to negative environmental impacts resulting directly and indirectly from oil palm expansion, people were also finding that their waters are being polluted and their forests are fast disappearing.

The recent introduction of oil palm into Uganda's Lake Victoria islands has caused significant negative

impacts, and papers in this report have made a start in documenting them. Communities were also not consulted during the planning phase or prior to implementation. They complain about negative impacts and not being compensated equitably or promptly for what they have lost and are continuing to lose. This overview summarizes the findings from a series of eight background review papers prepared as part of activities by the Green Livelihood Alliance in Uganda in 2017. These look specifically at the impacts of oil palm production that now occupy more than a third of the main island in Kalangala district, and implications for planned expansion here and in neighbouring Buvuma district where oil palm plantations are scheduled for half of the area. The eight papers cover land use changes, environmental impacts, gender-based impacts, economic and social benefits compared to those from central forest reserves, mitigating negative impacts, implications on the management of remaining forests, and of land tenure laws.

All land in Uganda is owned by the citizens of Uganda, and any land acquisition in the country, be it by government or private entities, must meet the requirements of Article 26 of the Constitution. This states that every person has a right to own property either individually or in association with others, and that no person shall be compulsorily deprived of property or any interest in or right over property of any description except where certain conditions are satisfied. The 'oil palm project' in Kalangala district has also seriously tested the commitment and resolve of the Ugandan government to enforce its own environmental laws. But unfortunately, evidence appears to suggest that the sanctity of lakeshores and natural forests have been violated. An assessment of the benefits of oil palm needs to be considered, and compared to actual and potential benefits from central forest reserves and private forests that are being replaced. Available evidence some of which is presented here indicates that natural forests can generate incomes and services to local communities in excess of those from oil palm.

As to the future? Plans are underway for growing more oil palm in Uganda, and experiences like those from Kalangala documented here are important and must be borne in mind when planning further expansion. It is reported that 3,500 hectares of forest will be cleared for the establishment oil palm plantations on Buvuma island, and which is likely to impact at least some of the many gazetted forest reserves. The Buvuma Palm Oil Project is a component of the Vegetable Oil Development Project

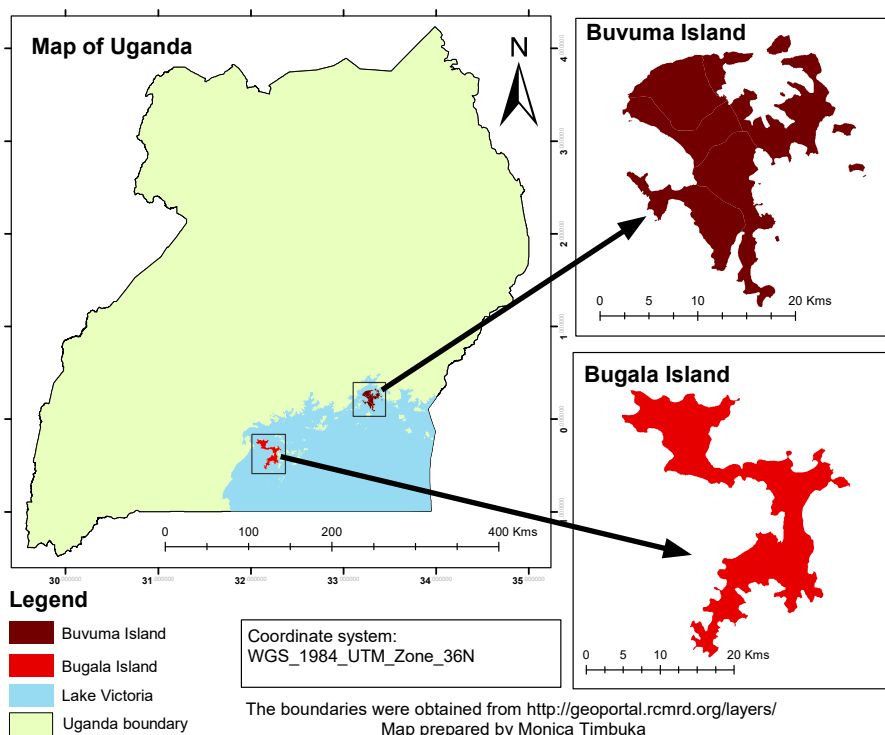
(VODP) under the Ministry of Agriculture, to be managed by Oil Palm Uganda Ltd (OPUL), a subsidiary of BIDCO Uganda.

And those involved in the planning for Buvuma would do well to look at experiences in Kalangala as well as those from West Africa and elsewhere (Pasicznik and Savenije, 2017). Many positive success stories show that more sustainable systems of palm oil production are not only possible, but also profitable and more equitable, through the organization and empowerment of smallholder farmers rather than the expansion of multinational-owned monoculture plantations as the preferred business model. Specific recommendations include the need for repeated consultations and active participation of local communities and all stakeholders, thorough and environmental impact and gender assessments conducted prior to any implementation, and regular, independent and transparent monitoring.

Uganda's Lake Victoria islands

This report focuses on Kalangala and Buvuma districts, central Uganda. Both are made up entirely of islands in the north and northwest of Lake Victoria. Kalangala and Buvuma districts are made up of a total of 136 islands with no mainland. Kalangala district comprises 84 islands, also known as the Ssesse Islands, with a total land area of 468 km². Of these, 63 are inhabited, by far the largest being Bugala island with an area of 296 km², making it

Figure 1. Bugala island in Kalangala district, and Buvuma island in Buvuma district.
Map by: Monica Timbuka



the second largest island in Lake Victoria. Buvuma district includes 52 islands, the largest being Buvuma island, with 26 gazetted forest reserves though many are threatened by unregulated logging and charcoal making, and now by the planned establishment of oil palm plantations.

The Uganda National Bureau of Statistics (UNBS, 2017) estimated the populations of Buvuma and Kalangala districts as 100,500 and 58,000, respectively. This represents large increases in the past 15 years, compared to the respective populations in 2002 of 42,483 and 34,800. Historically, fishing was the main economic activity, followed by subsistence agriculture, livestock farming, logging and charcoal making. In addition, tourism is now also becoming more important, yet facilities are still rudimentary in most areas. In the mid-2000s, commercial oil palm production was introduced on Bugala island as a new economic activity and plantations now cover up to 10,000 hectares or 100 km² of the island's 296 km².

In Kalangala district in 2014, 73% of households had no access to safe drinking water, 24% had no toilet facilities, and 23% of all adults were illiterate (UNBS, 2017). Half of the population was engaged in farming, and a livestock census showed that there were 3000 cattle, 7000 pigs, 1235 goats and 250,000 poultry. Islanders also depend significantly on fishing, migrating in search of the seasonal

shoal migrations. Lumbering is also another economic activity, tourism is increasing, and the district holds several investment potentials including the BIDCO palm oil project.

The islands lie just south of the equator in the humid tropical zone. Mean maximum temperature is 27-30 °C with a mean minimum generally not lower than 18 °C. Mean annual rainfall is around 2200 mm, with the heaviest rainfall in March-May and November-December. The natural vegetation in Kalangala was a mosaic of grass savannas and moist evergreen forests. Such grasslands are widespread in Uganda, but the Ssesse Islands forest type is distinguished from mainland forests by the abundance of *Uapaca guineensis* and other dominant trees such as *Piptadeniastrum africanum*, *Maesopsis eminii* and *Canarium schweinfurthii* (Thomas, 1941). However, by the mid-1900s, forest patches had already been cleared for agriculture "leaving just a fringe of trees round the edge" (Langdale-Brown et al., 1964). On Buvuma, the main vegetation includes medium altitude moist semideciduous forest, moist grass savanna, and undifferentiated semideciduous thickets.

Figure 2. Vegetation maps of Bugala and Buvuma islands (after Langdale-Brown et al., 1964). Bugala (Q5 - *Themeda-Loudetia* grass savannas; C1 - *Pitadeniastrum-Uapaca* type medium altitude moist evergreen forests); Buvuma (D1 - *Celtis-Chrysophyllum* medium altitude moist semideciduous forest, Q1 - moist *Hyparrhenia* grass savanna, G1 – undifferentiated semideciduous moist thicket).



The arrival of oil palm

When Uganda embarked on the road to developing oil palm plantations, the aim was to increase domestic production, generate rural jobs, substitute imports and diversify exports. It was also to support the government's Vision 2040 and National Development Plan II (GoU, 2013) of becoming a lower middle-income country by 2021 with a per capita income of US\$1,026, and upper middle-income country by 2040 with a per capita income of US\$7,500. A core area of economic growth was the improvement of commercial agriculture, including oil palm, and one part was the Vegetable Oil Development Project (VODP) approved in 1997 to increase household incomes by through domestic vegetable oil production in partnership with the private sector (FAO, 2013). It was conceived by the government and IFAD with three components: (1) to introduce commercial oil palm production on Bugala island, Kalangala district; (2) to develop traditional oil in northern, eastern and mid-western districts, and (3) to research and develop essential oil crops, piloted in a variety of districts (FAO, 2013). There were also additional plans to expand plantations into Buvuma.

The oil palm component was to be implemented through a public-private partnership, a fully integrated oil palm value chain with forward and backward linkages addressing all value chain requirements from inputs (including finance) and production to marketing and processing. The three parties involved are the government of Uganda (represented by VODP); BIDCO, the private investor and majority shareholder in Oil Palm Uganda Limited (OPUL); and smallholder farmers represented by the Kalangala Oil Palm Growers Trust (KOPGT). KOPGT, a growers' trust, was established by the government to act as a commercial link between farmers and OPUL, and a distinctive feature of the Ugandan model is having a direct relationship between farmers and the private sector company. KOPGT acts as a centre of management, communication and decision-making between farmers and other partners, its main roles include to mobilize smallholders to participate in land surveys and form farmer groups, to distribute inputs and services, administer loan schemes, record production of oil palm delivery and payments made by OPUL, and other financial issues. In addition to KOPGT, the independent Kalangala Oil Palm Growers Association (KOPGA) was formed in 2007 by farmers who wanted a separate organization to promote their interests, though this was not part of the original design. This association has three members on the KOPGT board and gives farmers a platform to discuss and formulate proposals or requests that can be negotiated within KOPGT.

BIDCO makes contracts with outgrowers that want to sell their produce to Oil Palm Uganda Limited (OPUL),

a joint venture between Wilmar International, Josovina Commodities, and BIDCO Africais, 93% owned by BIDCO Uganda. BIDCO's role is to provide technical knowledge, as oil palm is a new crop in Uganda, to build an oil refinery in Jinja, establish and operate a nucleus estate and a crude palm oil mill (through OPUL), source inputs such as seeds and fertilizers that KOPGT buys and sells to farmers, and provide a direct market for smallholder produce. But BIDCO are also involved in a long running dispute over land with local communities (FoE, 2012; Mwesigwa, 2015).

Roles and responsibilities between partners were initially agreed in two agreements signed in 2003 (Thorpe and Maestre, 2015). These stated that the government would acquire land for oil palm development, while BIDCO was committed to invest in oil palm development and value addition (MAAIF, 2015). This began in 2006 with an initial project cost of US\$132 million, a government contribution of US\$12 million, and US\$120 million from BIDCO to develop 26,500 ha of plantations (nucleus estates and processing facilities) on Kalangala, and to build an edible oil refinery. This was implemented with the Wilmar Group of Malaysia, one of the largest oil palm producers in the world. BIDCO's long term plan is to establish 40,000 hectares of oil palm plantations in Kalangala and Buvuma, and which would be the largest such estate in Africa (FAO, 2013).

Gender and the environment have been key cross cutting issues for government programmes for many years, and the project aimed to reach out to women and youth, and was committed to employ gender-sensitive approaches at all stages. However, in the end, the national oil palm project did not conduct a gender assessment prior to commencing work, as intended, though an environmental impact assessment was carried out.

The first 10,000 ha were to be developed on Bugala Island, with a nucleus estate of 6,500 ha plus 3,500 ha of smallholder production, and the building of a mill that would process 30-60 tonnes of fresh fruit bunches per day. The government agreed to provide leasehold land free from encumbrances for all areas covered by the nucleus estates for a 99-year period (with renewal options). A tripartite agreement signed between the government, KOPGT and OPUL, which stipulated that KOPGT would hold 10% of all OPUL shares, and 800 smallholders were targeted to participate in the first phase. There was also an agreement between IFAD and the government regarding the financing of the initial loan of \$12 million made in 1998.

Through the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the government of Uganda provides strong leadership and a conducive environment for

the private sector. This comprises a supportive policy, legal and regulatory environment; tax breaks and other incentives, and assisting with compliance of environmental standards. IFAD is also key partner to the government of Uganda and serves many functions. These include providing loan funding for implementing the smallholder component, playing a brokering role, conducting a feasibility study with the World Bank, engaging in environmental impact assessments, ensuring a pro-poor focus, supporting the government's 'behind-the-scenes' activities during negotiations with BIDCO. IFAD also supports infrastructure development, providing technical support to the government and farmers, supporting the creation and operation of KOPGT, responding to stakeholder concerns over environmental and land rights issues, and ongoing monitoring and problem-solving, helping partners develop shared solutions.

Current changes

The industrial model being promoted demands a monocrop approach, and outgrowers are not allowed to intercrop with other trees (KADINGO, 2009). However, MAAIF (2003) recommends growing oil palm in mixed agroforestry systems, but there are no land use plans to guide farmers on how to use their land for varied enterprises. Whereas oil palm growing is currently restricted to Kalangala district, trial plots have been established in Buvuma district, and areas for full plantations are being demarcated for establishment in August 2017. Lessons learnt from Kalangala district have, however, influenced communities' attitudes to the need for sustainable management of natural vegetation, especially the last vestiges of remaining tropical high forest in Buvuma district.

In Buvuma Island, the predominant land tenure is private and public *mailo*¹ with some public land in gazetted forest areas. This has led to absentee landlords in Buvuma owning large trunks of land, alongside the lawful and bona fide land occupants, tenants and squatters, all of whom should be compensated before the takeover of their lands for oil palm development. It is very important to balance the competing interests of all people who have interests in the same piece of land which the government wants to acquire for BIDCO through outright purchase and the use of outgrowers and smallholder farmers. To date, land acquisition has been based on the willing-buyer, willing-seller principle, based on the current land market rates in the area, and plans for future oil

1 Mailo land tenure – the holding of registered land in perpetuity and having roots in the allotment of land pursuant to the 1900 Uganda Agreement and subject to statutory qualifications

palm plantations have led to an increase in demand for what little land there is. This has in turn led to more encroachment on gazetted forests in Buvuma district, where, worryingly, landless farmers have started to congregate in concentrated camps.

Maximizing benefits, mitigating drawbacks

Based on the experiences in Kalangala district, the following recommendations from the review papers in this report are drawn out. These are all relevant for Kalangala, but are also especially relevant and must be considered when planning for developments on Buvuma district where oil palm is yet to be planted.

1. Establish land use plans, and business plans for forest reserves.

Undertake fine-scale mapping as a prerequisite, as current maps have too coarse a resolution for well-informed land use planning of areas not yet converted to oil palm plantations. Planning should be led by MAAIF, the National Forest Authority, and Kalangala and Buvuma district local governments. BIDCO must also be obliged to ensure that ex-post environment impact assessments are undertaken, that environmental and social management and monitoring plans are developed, and areas are allotted to meet the company's fuelwood needs. Recommendations of an EIA for Buvuma must be adhered to and an interdisciplinary team established to monitor its implementation, with processes and results to be transparent and made publicly available.

2. Conduct biodiversity inventories.

Conserve biodiversity by proposing and enforcing laws and regulations that guide management and use of protected areas. This should be coordinated by a team to be established, led by the National Forestry Authority and the National Agricultural Research Organisation.

3. Establish buffer zones and conservation areas.

Significant areas that guarantee environmental concerns and the protection of species at risk and must be defined, agreed and protected. To ensure this, legislation must be respected, and the government and OPUL have to draw up a sustainable land use management plan, and finance its operation.

4. Increase community awareness about the value of native trees.

Establish nurseries to raise native trees for large scale restoration and agroforestry. Seedlings must be raised

in adequate numbers and made available to farmers and other stakeholders at low cost, through the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

5. Promote agroforestry and other climate smart agriculture practices.

Provide knowledge and planting materials for alternative high value shade-tolerant crops (e.g. coffee, cocoa, cardamom, vanilla, black pepper, rattan, yam), develop forest ecosystems into an ecotourism product, and establish household or community woodlots to meet future fuelwood demand.

6. Support communities into forming associations.

To ensure a strong and united voice, producers should be encouraged to express their demands in an articulate and convincing way to responsible government bodies, to improve their livelihoods and ensure the conservation of their rich forest biodiversity. This could be assisted by the promotion of certification schemes for sustainable management, such as RSPO for palm oil and FSC for timber, as ways to provide secure land tenure to forest communities, and NGOs and CSOs could lead in such activities.

7. Gather improved social and environmental data for informed decision making.

Evaluate the impacts of oil palm expansion on biodiversity and community wellbeing, including a comprehensive gender analysis. Such data collection and analysis may be best achieved through partnerships between Ugandan and European universities, but must also include others such as OPUL, Kalangala Oil Palm Growers Trust (KOPGT) and Association (KOPGA), local government, national agricultural research and forest authority organizations, private land owners, plantation and mill workers, and local communities. This will generate specific primary data that will form the basis for further in-depth studies that will follow.

8. Establish an independent monitoring and evaluation mechanism.

Agree on criteria and indicators for use by independent auditors, developed together with all affected parties, including investors, CSOs, local communities, and government, among others. This should be financed by OPUL and the government, with international CSOs mobilising technical support and verification.

Ways forward

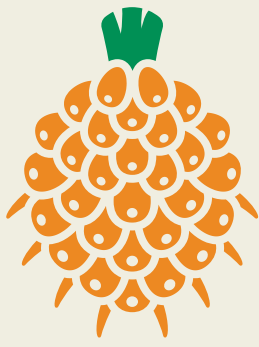
All said, it is important to recognize that there are no simple solutions for the clear negative consequences of large scale monoculture plantation agriculture. However, a fundamental aspect that must be respected is the need to be cooperative. This is because it is of little importance that some people are conserving natural forest, if others are destroying it for personal or national gains. But what is important is that whether rich or poor, we all depend on the survival of forests, and must therefore get together and make decisions on their effective conservation.

If we ensure that we can equitably share access rights to forests and forest products, then we should also share views on alternative or complementary livelihood options. This way, the future of different and complementary land use in natural forest areas can be fairly negotiated, and which can only help along the road to promoting the sustainable use of forest resources and improved livelihoods and wellbeing of those who depend upon them. One of the best means to achieve this would be through the formation of associations to have a unified strong voice for negotiation, lobbying and advocacy. We must also agree to no further conversion of forests and forest land to any form of farming, including oil palm, and to plan and restore degraded landscapes, advocate for holistic land use planning approach, and consider small scale rather than large scale plantations. We all have to eat.

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Oil palm in Uganda

A brief overview



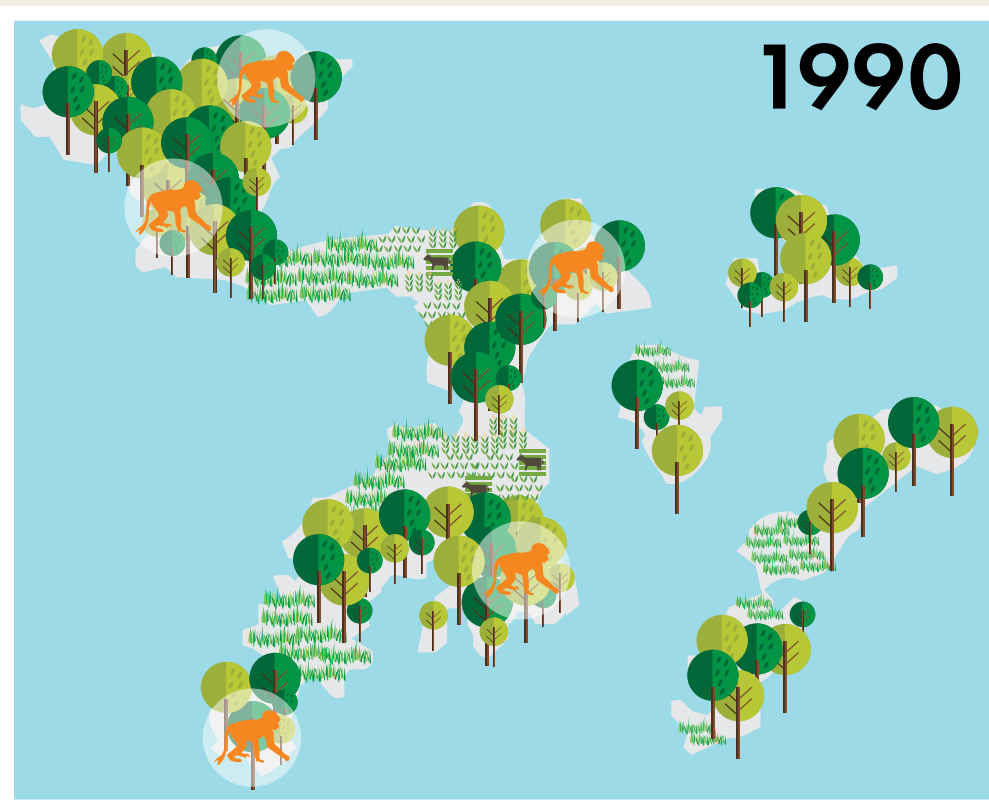
Uganda's aim with oil palm plantations:

- increase domestic production
- generate rural employment
- provide cash income to rural people
- substitute imports
- diversify exports
- improve the national economy

Kalangala district

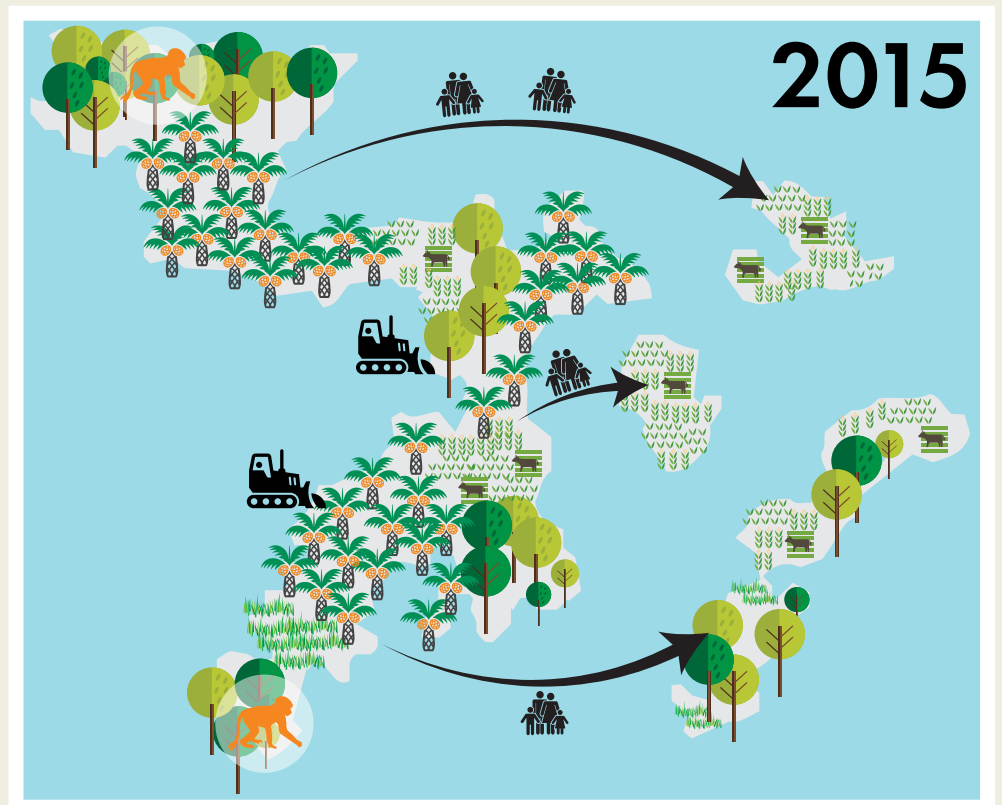
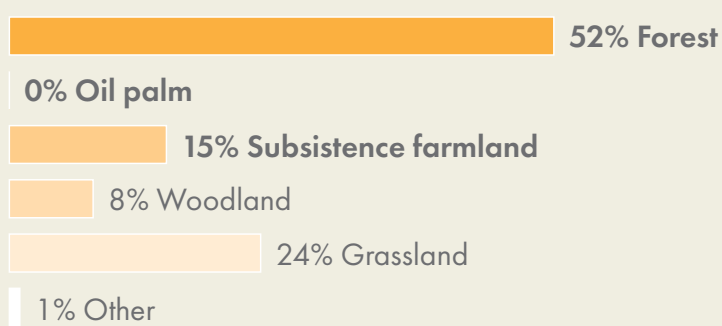
84 islands
468 km² land area
58,000 estimated population in 2017

Uganda's first oil palm plantations were established in Kalangala in 2003 with 10,000 hectares to date planted



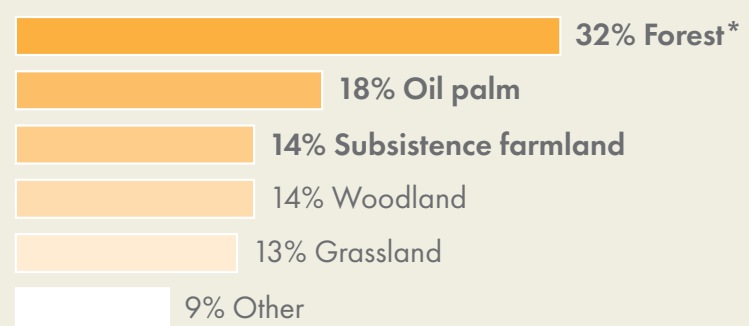
Land use 1990

Kalangala district



Land use 2015

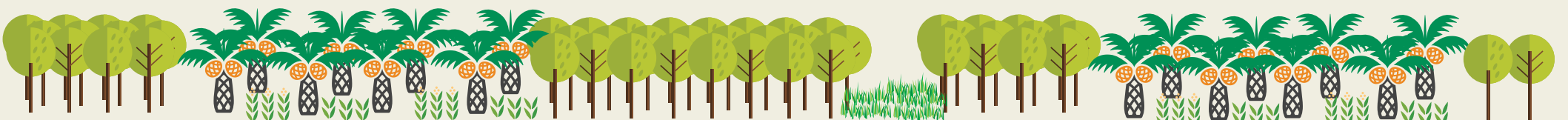
Kalangala district



*Primary high forest and degraded forest

Recommendations for ways forward in Kalangala, and other districts.....

- 1 Establish land use plans, and business plans for forest reserves
- 2 Conduct biodiversity inventories
- 3 Establish buffer zones and conservation areas
- 4 Increase community awareness about the value of native trees
- 5 Promote agroforestry and other climate smart agriculture practices
- 6 Support communities into forming associations
- 7 Gather improved social and environmental data for informed decision making
- 8 Establish an independent monitoring and evaluation mechanism



Land use changes (1990-2015) in Kalangala and Buvuma districts, southern Uganda



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Summary

Trends in land cover change were assessed for the Kalangala landscape, composed of Kalangala and Buvuma districts. Land cover has greatly changed in both districts but the type of change varies between them. In both districts, the dominant land use in 1990 was fully stocked tropical high forest, but by 2015, this had been reduced to less than half in Kalangala district, from 52% to 22%, whereas in Buvuma district high forest had been completely cleared, from 47% to 0% cover. In the same period in Kalangala district, uniform farmland which describes palm oil plantations had increased from 0 to 18%, whereas in Buvuma, subsistence farmland had increased from 8% to 52%. And whereas most of protected areas in Kalangala district had not

been cleared of tropical high forest, most land in protected areas in Buvuma district had already been converted to subsistence farmland. With these changes, both local livelihoods, and flora and fauna are being threatened. Both endemic and IUCN Red List species have been identified in this landscape, with some already threatened. There is therefore urgent need for action to halt further conversion of forest land within the framework of land use planning. Finer scale mapping of areas not allocated to oil palm plantations must also be a prerequisite for guiding land use planning land restoration interventions since the area is highly fragmented, including a full assessment of the drivers of land use change.

Introduction

The establishment of oil palm plantations is often associated with forest clearing (Koh and Wilcove, 2008; Block, 2009; Colchester et al., 2013). This results in reduction of wildlife habitats, exertion of more pressure on remaining forests by local communities for fuel, timber and non-timber products, increased wildlife poaching, and more competition for land for food production, resulting in the expansion of agricultural land onto marginal areas. Furthermore, there are specific issues related to island ecosystems in Uganda, such as draining of wetlands that serve as a buffer and runoff filter for Lake Victoria posing an additional threat to the aquatic wildlife. Land cover changes over a period of 25 years were assessed using classified GIS maps from 1990, 2000, 2005, 2010 and 2015, obtained from the Ugandan National Forestry Authority. Changes on the main islands of Kalangala and Buvuma districts were then assessed between 1990 and 2015, with the area gained and lost in each land use category calculated, with separate analyses for the two districts as drivers of change differ in each.

Kalangala district

Kalangala district land use maps show that fully stocked tropical high forest had the highest coverage in 1990. But

by 2015, 'uniform farmland' (synonymous with oil palm plantations) dominated the largest island (Bugala) and subsistence farmland had spread to the smaller islands where it did not exist in 1990. Most of the remaining tropical high forest was within protected areas. Due to the varying disturbance levels on different islands over the years, the direction of change in spatial coverage (increase or decrease) of the different land use classes varied greatly. In 1990, tropical high forest had the highest percentage coverage (52%) followed by grassland (24%). By 2015, tropical high forest had decreased to only 22%, and grassland had also reduced to almost half of its previous size (from 24% to 13%). Uniform farmland that did not exist in 1990 covered 18% by 2015. By 2015, most of the tropical high forest found on the smaller islands was either converted to subsistence farmland or degraded forest, which in most cases is a transitional land cover to other land uses. A similar but more exaggerated picture is seen on Bugala island alone (by far the largest island), where fully stocked tropical high forest also had the highest percentage cover in 1990, but with an equivalent decrease from 58% in 2000 to less than 20% in 2015. In contrast, uniform farmland increased from zero in 2002 to 31% in 2015. See Tables 1 and 2 and Figure 1, below.

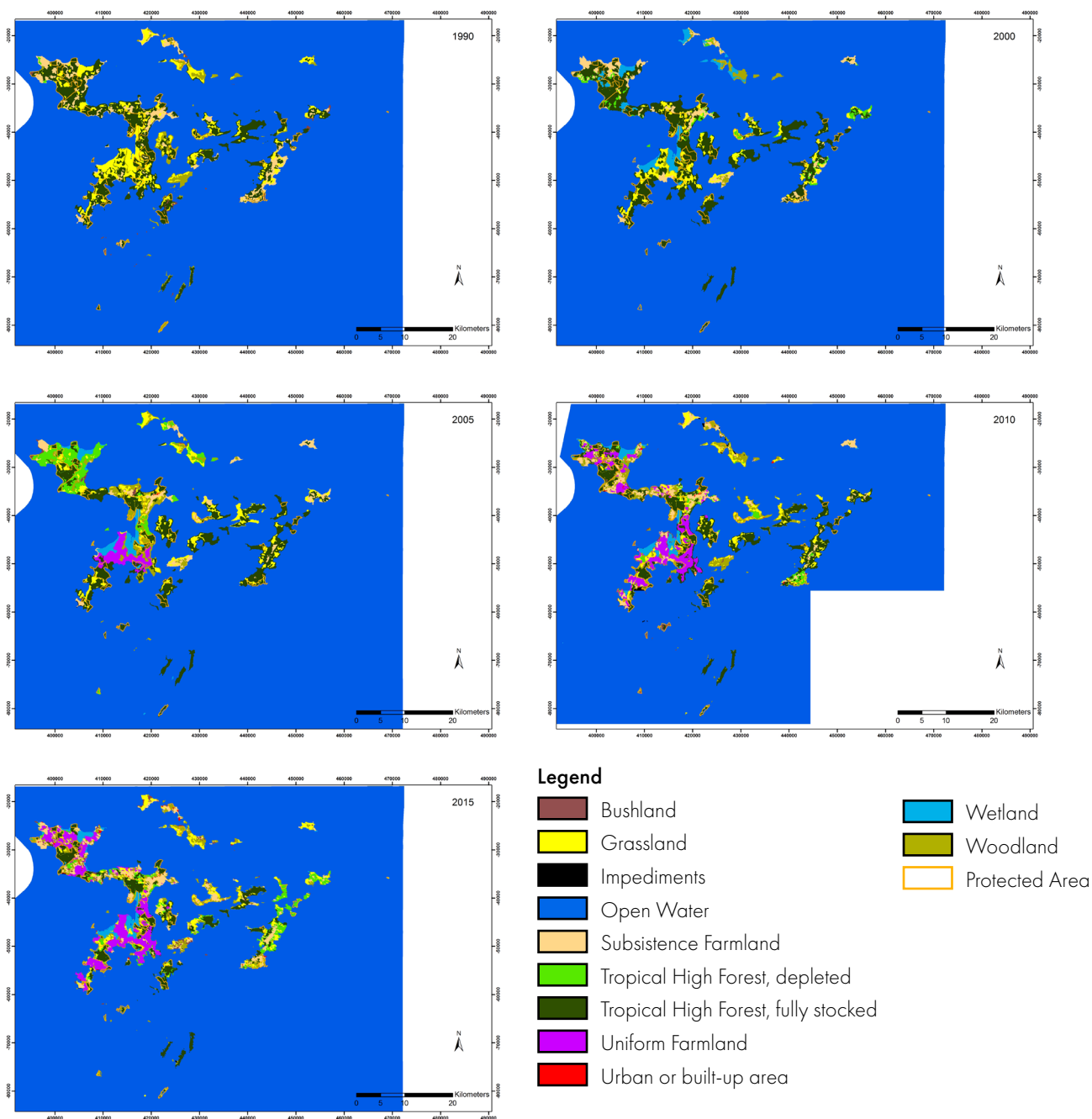
Table 1: Percentage land use/land cover, Kalangala district (1990-2015).

Land use %	1990	2000	2005	2010	2015
Tropical high forest, fully stocked	52	57	40	35	22
Tropical high forest, degraded	0	5	13	3	10
Uniform farmland	0	0	6.6	14.3	18
Subsistence farmland	15	12	8	12	14
Woodland	8	4	11	17	14
Bushland	1	0	1	2	2
Grassland	24	13	15	10	13
Wetland	0	9	5	5	6
Urban or built-up area	0	0	0	1	1
Impediments	0	0	0	1	0

Table 2: Percentage land use/land cover, Bugala island (1990-2015).

Land use %	1990	2000	2005	2010	2015
Tropical high forest, fully stocked	57	58	28	26	20
Tropical high forest, degraded	0	3	19	3	6
Uniform farmland	0	0	11	24	31
Subsistence farmland	15	12	6	15	15
Woodland	1	2	16	16	11
Bushland	0	0	1	2	2
Grassland	27	14	10	5	6
Wetland	0	11	9	9	9
Urban or built-up area	0	0	0	1	1
Impediments	0	0	0	1	0

Figure 1: Land use, Kalangala district (1990-2015)



Overall areas of gain and loss for each land cover in Kalangala district was assessed by comparing the 1990 and 2015 maps. Gain represents the increase in area of a specific land cover/use class between 1990 and 2015 irrespective of what land cover it came from. Loss indicates the area that a specific class lost to other classes. The greatest loss was seen with fully stocked tropical high forest, while the greatest gain was for uniform farmland (oil palm), which did not exist in 1990. Grassland also lost significant areas, most of which were converted to uniform farmland (oil palm). Subsistence farmland almost balanced out its loss and gain (Table 3 and Figure

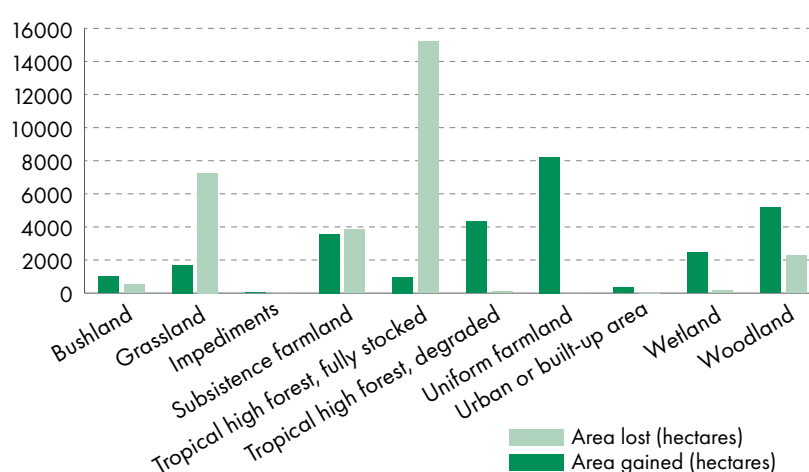
2). Most of the gain however was on smaller islands originally covered by tropical high forest.

Comparing 1990 with 2015, overall gain and loss of spatial coverage for each land cover/use class is observed. Whereas subsistence farmland gained the most, fully stocked tropical high forest lost the most to other land use types. Degraded tropical high forest depleted and wetland lost twice as much area as they gained, with major increases also for woodland and urban areas, which were almost non-existent in 1990.

Table 3: Area gained, lost or stable, by land use, Kalangala district (1990-2015)

Land use	Area gained (hectares)	Area lost (hectares)	Stable area (hectares)
Tropical high forest, fully stocked	972	15215	9066
Tropical high forest, degraded	4330	78	10
Uniform farmland	8231	0	-
Subsistence farmland	3574	3847	2848
Wetland	2464	175	21
Bushland	986	516	21
Woodland	5185	2268	1284
Grassland	1703	7259	4055
Impediments	46	-	-
Urban or built-up area	326	13	1

Figure 2: Area gained and lost by each land cover/use between 1990 and 2015 in Kalangala district



Buvuma district

In Buvuma district, land use has also changed significantly since 1990. Subsistence farmland used to be restricted to central and western parts of the main and largest island, Buvuma island. However, the eastern part which was mostly tropical high forest in 1990 was almost completely

converted to subsistence farmland by 2015, by which time there was no remaining fully stocked tropical high forest left in Buvuma district at all. See Tables 4 and 5, and Figure 3, below.

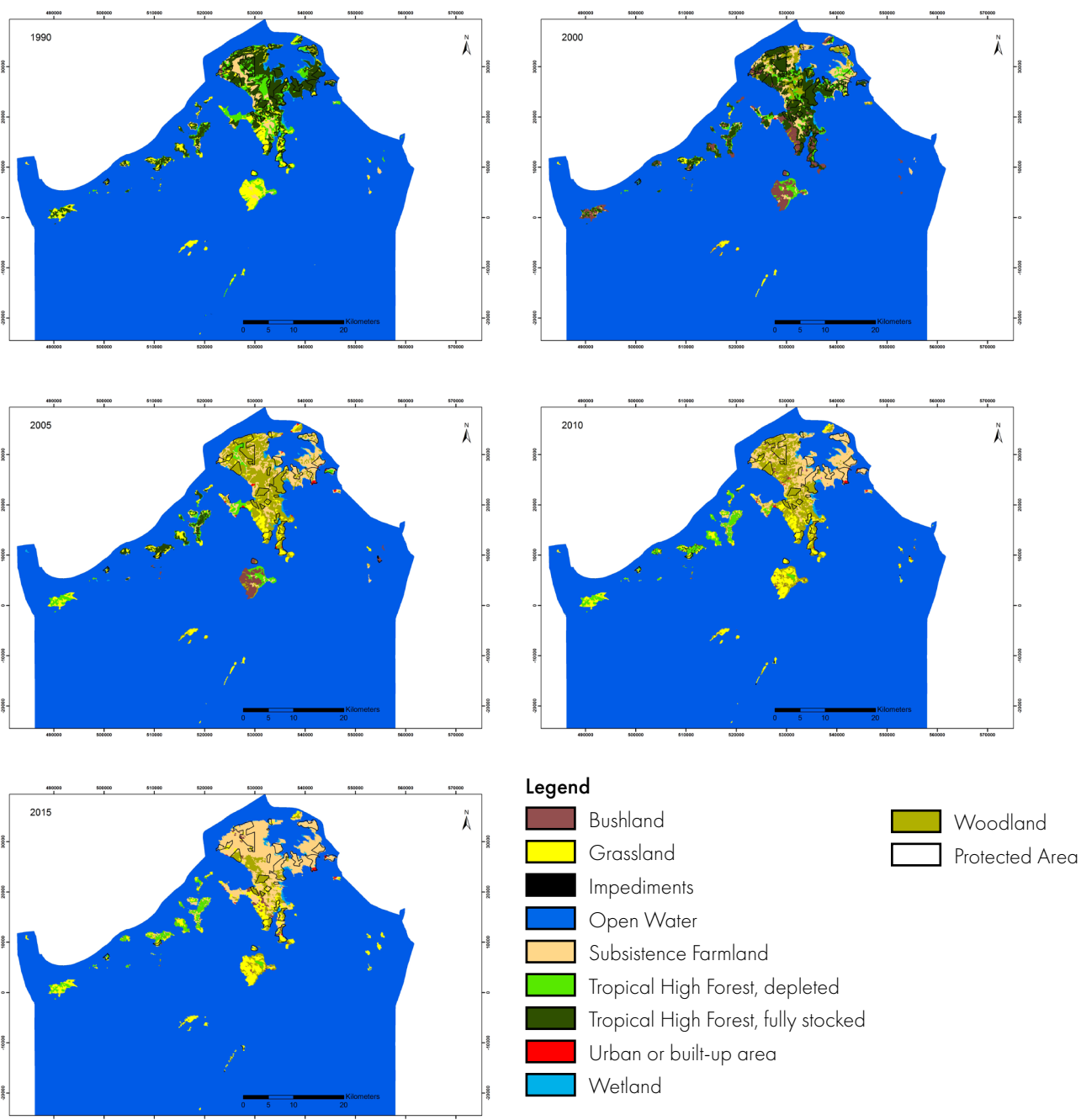
Table 4: Percentage land use/land cover, Buvuma district (1990-2015).

Land use %	1990	2000	2005	2010	2015
Tropical high forest, fully stocked	47	45	6	1	0
Tropical high forest, degraded	19	11	8	8	7
Uniform farmland	0	0	0	0	0
Subsistence farmland	8	15	22	32	52
Woodland	1	8	40	34	15
Bushland	0	15	5	2	3
Grassland	21	13	13	19	21
Wetland	4	3	4	4	3
Urban or built-up area	0	0	1	1	1
Impediments	0	0	0	0	0

Table 5: Percentage land use/land cover, Buvuma island (1990-2015).

Land use %	1990	2000	2005	2010	2015
Tropical high forest, fully stocked	53	50	0	0	0
Tropical high forest, degraded	19	9	4	1	0
Uniform farmland	0	0	0	0.1	0
Subsistence farmland	8	18	28	42	68
Woodland	1	10	54	42	15
Bushland	0	8	0	2	3
Grassland	12	10	10	10	11
Wetland	6	4	4	5	4
Urban or built-up area	0	0	1	1	1
Impediments	0	0	0	0	0

Figure 3: Land use, Buvuma district (1990-2015)



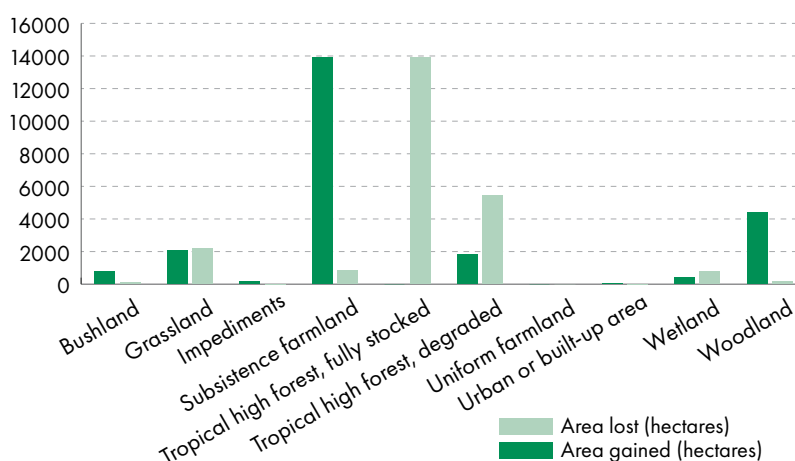
Comparing 1990 with 2015, overall gain and loss of spatial coverage for each land cover/use class is observed. Whereas subsistence farmland gained the most, fully stocked tropical high forest, lost the most to other cover types. Degraded tropical high forest depleted and

wetland lost twice as much area as they gained, with major increases also for woodland and urban or built-up areas, which were almost non-existent in 1990. See Table 6 and Figure 4.

Table 6: Area gained, lost or stable, by land use, Buvuma district (1990-2015)

Land use	Area gained (hectares)	Area lost (hectares)	Stable area (hectares)
Tropical high forest, fully stocked	0	13922	-
Tropical high forest, degraded	1810	5429	158
Uniform farmland	0	0	-
Subsistence farmland	13913	843	1509
Wetland	425	760	486
Bushland	763	94	-
Woodland	4382	154	3
Grassland	2053	2170	4106
Impediments	146	3	-
Urban or built-up area	32	6	-

Figure 4: Area gained and lost by each land cover/use between 1990 and 2015 in Buvuma district



Comparing Kalangala and Buvuma

Land use on both the main islands and the two districts/island groups is changing drastically, with important implications. In 1990, both districts were defined by extensive tropical high forest cover. But today, Kalangala district is defined by oil palm plantations that cover 31% of the main Bugala island. Buvuma, on the other hand, is defined by subsistence farmland that covers 68% of the island. Another contrast is whereas most of the forest reserves in Kalangala district are still covered by fully stocked tropical high forest, most of those in Buvuma district have been converted to other land uses, mostly subsistence farmland and woodland.

Although identifying, ranking and quantifying drivers of change will require further studies, some general

observations can be drawn from this analysis. The main driver of change in Kalangala district is clearly the expansion of oil palm plantations that have replaced tropical high forest, grasslands and subsistence farmland. And as oil palm plantations takes over the main island, communities are moving out to smaller islands for settlement and cultivation, thus leading to clearing of more forest there.

Buvuma island presents a different scenario. Fully stocked tropical high forest which in 1990 covered most of the district, has since been entirely replaced by subsistence farmland and woodland. The main drivers of change are the increase in subsistence farming, the harvesting of trees for timber, fuelwood and charcoal making. Planned

introduction of oil palm plantations on Buvuma island also appears to have indirectly influenced land cover change, because on learning that land has been set aside by the government for oil palm, the local community aggressively started extracting timber and non-timber forest products from all forested areas leading to deforestation and degradation.

Implications

For biodiversity conservation

Significant areas of natural vegetation have been lost in both districts leading to reductions in both plant and animal biodiversity. Koh and Wilcove (2008) describe similar impacts in Indonesia. The most affected species are those that require undisturbed vegetation as their main habitat. Chemical use in oil palm plantations may also be having a wider impact, but which would require confirmation from further research. In Buvuma district, all protected areas have been cleared, due perhaps to a lack of knowledge of protected area boundaries and/or lack of law enforcement. Some endemic and IUCN Red List species in these districts may now be locally extinct especially in Buvuma where all fully stocked tropical high forest has been converted to other land uses.

For food security

Conversion of high forest, other natural vegetation and agricultural land into oil palm plantations means that there is less land for food production and for the collection and use of timber and non-timber products. In addition, the population is increasing due to immigrant labour to work in the oil palm plantations, and food prices have already increased in Kalangala district (KADINGO, 2009). There is therefore a need for appropriate land use plans for both districts to guide sustainable oil palm production while ensuring food security. Buvuma district still has most land available for agriculture and is currently food secure, but this may not be the case in the future as half of the main island, the main agricultural area, has already been allocated for oil palm. Meetings with the local communities involved are urgently required to ensure that farmers refrain from converting all their land into oil palm plantations and that there is increased food production on remaining land.

For water quality

Negative impact on water quality include eutrophication, siltation, erosion and increased soil load and possibly also from agrochemical contamination especially where the lake buffer was cleared. These may not be immediately felt because of the large water mass of Lake Victoria that surrounds the islands, but cumulative impacts are likely especially in areas that easily silt. Smaller islands will need

special attention in terms of planning and management where there are higher risks of the magnification of environmental impacts from forest clearance due to the increased perimeter-area ratio.

For climate change

The loss of vegetation, especially tropical high forest which holds a high proportion of carbon stocks may have climate change implications. There is therefore a need to establish monitoring stations and also for preparing communities for any changes that may occur, especially by ensuring food security.

Conclusions

Land use in both Kalangala and Buvuma districts has changed greatly. The type of change, however, differs between the two districts. Whereas forest in Kalangala district has been converted to oil palm plantations, in Buvuma district it has been converted to other land uses, mainly subsistence farmland and woodland. Although the main island in each district has been affected the most, the changes are also spreading to the smaller islands. In Kalangala district, oil palm plantations have already been established on some of the smaller islands. In Buvuma district, the trend of land use change observed on the main island between 1990 and 2015 is beginning to manifest on the smaller islands. If this is not stopped, all of the natural vegetation could be eliminated in the next 5-10 years at current rates of conversion. Five main recommendations are proposed:

1. Undertake biodiversity surveys to ascertain which species of conservation concern still exist in the landscape.
2. Conduct fine-scale mapping as a prerequisite, as currently available maps are of too coarse a resolution for well-informed land use planning of areas not yet converted to oil palm plantations.
3. Carry out a full assessment of the drivers of land use/land cover change, this resulting information which will be essential for designing informed land restoration interventions.
4. Enforce laws and regulations that guide the management and use of protected areas, and increase their size.
5. Increase the provision of fuelwood, by working with local government to develop by-laws that enforce the establishment of household or community woodlots for domestic use, and encourage BIDCO to establish woodlot areas to supply future fuelwood needs for heating oil boilers.

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Environmental impacts of oil palm plantations in Kalangala



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Summary

Land use changes in the Ssesse islands, Kalangala, have created a shift from six land use types (forests, small scale agriculture, grasslands, swamp forests, wetlands and wooded grasslands) to eight, including built up areas, and oil palm plantations. The sudden rise in built up areas now covering 10% of the land was almost entirely at the expense of grasslands. By 2006, large areas of forest, grassland, wetlands and wooded grasslands had also been cleared for oil palm plantations, resulting in loss in biodiversity. Kalangala district is known for its unique *Pitadeniastrum-Uapaca* forests that support a high diversity of birds and butterflies, but accurate data is deficient and biodiversity surveys are recommended. Threatened species

include two critically endangered mammals, the Ssesse island sitatunga or bushbuck (*Tragelaphus sylvestris*) and the endemic Lake Victoria rat (*Pelemys isseli*), and eight Red List butterfly species of which four are critically endangered (*Acraea simulate*, *Epitola miranda*, *Euptera elabontas*, *Neptis puella*), two endangered (*Teratoneura isabellae*, *Thermoniphas togara*) and two vulnerable (*Pentila incospicua*, *Thermoniphas plurilimbata*). There are also five endemic or endangered plant species: *Casearia runssorica*, *Lasianthus seseensis*, *Lagarosiphon ilicifolius*, *Uvariadendron magnificum*, and *Sabicea entebbensis*. Besides habitat destruction, soil degradation has been reported, and agrochemical pollution of lake waters.

Introduction

Kalangala forests are unique and support species that are suffering pressure from growing populations, clearance for agriculture, and extraction of wood for timber and fuel. Then in 2000, the government planned to convert 100 km² of the 296 km² of Bugala island to oil palm plantations, with 65 km² as nucleus estate owned by BIDCO and the remaining 35 km² earmarked for planting by outgrowers. However, a project of this magnitude in such a fragile ecosystem should have aroused environmental concerns at the outset. There are alternatives though, as the unique species assemblage offers an opportunity to explore the potential for ecotourism. But to do so, it is essential to maintain biodiversity, and as such, the environment in its entirety must be conserved. To date, reports by environmental groups contradict those of BIDCO and partners regarding the extent of environmental degradation. Environmental impacts of developmental projects tend to pose more threats to the environment than benefit, if negative impacts can be reduced through mitigation measures.

Oil palm expansion has led to forest degradation, resource conflict and food insecurity because it has left much less land for growing food crops. For oil palm and forest conservation to co-exist, enrichment planting with native species in degraded parts of forests and in other degraded vegetation types should be promoted. Already, Oil Palm Uganda Limited (OPUL) has done so in some of the 200 m lake buffer areas that had been degraded by lumbering and charcoal burning (Basaalidde, 2012) but much more needs to be done. This review collated information on conflicting reports of environmental impacts of oil palm production in Bugala island, including a consultative workshop including key stakeholders from Kalangala and Buvuma districts.

Historical changes

According to Langdale-Brown et al. (1964), the vegetation of Bugala island half a century ago consisted of a mosaic of *Themeda-Loudetia* grass savannas and *Pitadeniastrum-Uapaca* medium altitude moist evergreen forests. In Uganda, such savannas occur on skeletal hill soils, which are characteristically nutrient poor and dominated by *Themeda triandra*, *Loudetia kagerensis* and *Loudetia simplex*. Such grasslands are widespread in Uganda, but the Bugala forest type is unique to the Ssesse Islands, distinguished from mainland forests by the abundance of *Uapaca guineensis* and other dominant trees such as *Piptadeniastrum africanum*, *Maesopsis eminii* and *Canarium schweinfurthii* (Thomas, 1941). However, by the mid-1900s, forest patches had already been cleared for agriculture “leaving just a

fringe of trees round the edge” (Langdale-Brown et al., 1964). On Buvuma island, the main vegetation types include *Celtis-Chrysophyllum* medium altitude moist semideciduous forest, moist *Hyparrhenia* grass savanna, and undifferentiated semideciduous thickets.

Recent land use change in Bugala from natural vegetation to monoculture plantation has caused biodiversity loss as a result of habitat destruction, and that has extended into central forest reserves. But BIDCO and partners refute this, claiming that protected forests are better preserved than before because of new incomes from oil palm, and that farmers are turning away from activities that degrade forests (Basaalidde, 2012). But this logic is questioned because only 1,770 people out of 40,000 are actually involved in oil palm growing. And fishing used to be the main economic activity, but with the current ban, fishermen are turning to farming. Yet most cleared land is already cultivated, adding pressure on remaining forests as jobless people clear new areas for charcoal burning and growing crops.

Further encroachment on remaining forests may lead to the extinction of some endemic and critically endangered species recorded from central forest reserves where biodiversity studies have been focused, confirming the critical need for their conservation. There is a need to generate species maps for endemic, rare and threatened species, locating their presence and to create awareness among communities who currently do not know their conservation value. In addition, efforts must be made to conserve rare and endemic species ex-situ, to maintain some germplasm for re-introduction into the wild in case wild populations do not survive, such as by collecting seeds for storage at the National Plant Genetic Resources Centre and cultivating live specimens in botanic gardens in Entebbe or Makerere University.

The black and white colobus monkey (*Colobus guereza*) is already believed to have been eliminated from Bugala island (Richard Ssemmanda, 2017, pers. com.) probably due to over-hunting and habitat destruction, attributed to oil palm which exposed the species to hunting. Although known to be resilient to habitat degradation, they can disappear entirely from forest patches that are subjected to high levels of disturbance (Fashing, 2002). The Ssesse islands are moderately diverse in bird species (89 species), the majority of which (45%) are forest dependent, hence clearing or fragmenting forests displace such species. Other important birds are restricted range species and migrants which have breeding grounds in the islands. Of the few small mammals, the Lake Victoria rat (*Pelemys isseli*) and the Ssesse Island sitatunga (*Tragelaphus sylvestris*) are listed as critically endangered (WCS, 2016). Sometimes call a bushbuck, this member of the antelope family is unlike other sitatunga in being a

forest and not wetland species (Kityo, R. mammologist, 2017, pers. com.), and as such, its existence is threatened if the clearing of natural forest continues. Worse still, on the premise that the population is healthy, the Uganda Wildlife Authority issued a hunting concession which coupled with poaching, further aggravates the threat. Local people report that this sitatunga is now only rarely seen. There is a relatively rich diversity of butterflies in Sseese, with 63% of them being totally forest-dependent species, 19% of restricted range, with four critically endangered species. Little documentation on the diversity of reptiles and amphibians is noted except for one regarding the sebal python, though the conservation status was not established due to lack of data (Both Ends, 2015).

Soil, water and air pollution

Besides habitat destruction, soil degradation has also been reported, and pollution of soil and lake water from nitrate fertilizers, agrochemicals and effluent from the palm oil mill factory is feared. Spraying of chemical sprays must be limited directly to plants but whereas reports claim that oil palm outgrowers do not follow regulations on fertilizer and pesticides application, OPUL itself state that they are following regulations (Wambi, 2009). It is also reported that oil palm is being grown within the 200 m buffer zone of the lake shore from where chemicals would much more easily transferred to the lake, and over use of fertilizers leads to nitrate leaching and can cause health disorders (Deepajan and Navindu, 2000; Kristensen et al., 1996). Plantation management must ensure that fertilizers are not over used and that farmers do not misuse them in their homes, with a need to conduct regular tests on underground water and soil to determine nitrate concentrations. Also, the palm oil mill in Bugala releases gases into the atmosphere, causing a stench near the factory. Use of chemical sprays must also be regulated and monitored as an avenue through which air could be further polluted. The effects of herbicides can vary from disruptions of soil microorganism biology function to nitrogen cycling (Rose et al., 2016). KADINGO (2009) lists agrochemicals used in oil palm plantations but their effects are not yet known, though some areas lack ground cover presumably from herbicide application which exposes soil to high evaporation rates, erosion and compaction.

Tests of water quality presented by OPUL to the district local government indicate that water quality is safe for both consumption and aquatic life. Independent tests should be regularly carried out to monitor compliance by OPUL to environment protection but unfortunately, the district local government is not able to do such supervision. Aquatic flora and fauna are threatened by reported instances of water pollution due to changes in pH, temperature, dissolved oxygen, nutrient levels and turbidity, leading to

impacts that influence the distribution and abundance of aquatic life. If the lake is polluted, water will not only be unsafe for human consumption but will also lead to the loss of biodiversity. For example, the endangered water plant, *Lagarosiphon ilicifolius* that is known from only two localities in Uganda could become extinct in the country because the other locality in Lake Mulehe is already silting up. Fish diversity in Lake Victoria is known to have decreased due to over fishing, predation and pollution (Balirwa et al. 2003, Hecky et al. 2010), and the situation will be further aggravated if oil palm activities pollute the lake further. Loss of species, particularly fish, from Lake Victoria, will affect the overall ecosystem functioning and also have socio-economic impacts.

Establishing oil palm plantations on forest land releases carbon and so contributes to the emission of greenhouse gases, and mature oil palm plantations contains much less carbon than fully grown tropical forest. Also, in the case of oil palm, the carbon sinking process is broken every 25 years and the stored carbon is released back into the atmosphere because few long-lasting products are made out of oil palm wood. Therefore, over time, oil palm plantations cause a net loss of carbon-sequestering forest land compared to sustainable annual harvests from a natural forest cover.

Improving the situation

Forest monocultures generally support lower wildlife diversity than mature natural forests as the latter develop micro-habitats such as dead wood, tree fall gaps, ground litter and their associated flora and fauna that do not occur in oil palm plantations (e.g. Obidzinski et al., 2012). Invertebrates prefer particular host trees, and mammals and birds whose presence depends on such invertebrates for food and such trees for shelter are lost under forest monocultures. However, Cannel (1999) suggests that management options can enable plantations to support a richer biodiversity and these should be investigated. Large areas of land were opened up exposing soil to erosion, but rather than using leguminous cover crops, allowing natural ground cover to re-establish would have been preferred to maintain biodiversity and stabilize the soil, making it unnecessary to use herbicides that may cause further soil degradation.

Preserving the island's forest reserves would conserve wildlife and which would serve as the basis for development of a valuable and sustainable ecotourism industry. The rich biodiversity also provides ecosystem services including birds and insects for pollination, rodents contributing to soil aeration, reptiles checking rodent populations, and large mammals controlling the spread of plants by grazing and browsing. National biodiversity

surveys (Forest Department, 1996) found Ssesse Island species to have above average to average conservation value, although species diversity was rated average to low, though a new inventory is needed to update this 20-year old data, considering how much has changed in that time.

The vegetation of Buvuma island is similar to that of Bugala, though the woody vegetation in the former is semi-deciduous whereas that in Bugala is evergreen. Buvuma district once had a dense forest cover represented by 26 gazetted forests, seven of which are local forest reserves, but currently there is rapid deforestation taking place. It is therefore critical that before oil palm planting starts, to collect and document baseline data as hard evidence on biodiversity and map all critical habitats and species, as well as environmental data on water and air quality, soil parameters, and a valuation of the carbon content of the forests on the island. Subsequently, independent monitoring will be needed and not just that conducted by BIDCO/OPUL) to assess future impacts. This is lacking for Bugala island, and outgrowers also need to be sensitized on the environmental effects of agrochemical misuse and other poor agricultural practices. And all monitoring processes and results must be truly transparent, to build trust between stakeholders and to amicably handle issues of environment protection.

Lessons learnt

Arguments that oil palm is just another form of forest that offer the same environmental services as natural tropical forest are simply not true, for two main reasons. Firstly, tropical forests are very diverse in species of different taxa because of the variety of habitats they present, and secondly, tropical forest species are deeper rooted and so can draw up ground water from far below the surface, but as shallow rooted trees, oil palm do not contribute so well to the water cycle. It is necessary to conduct a thorough inventory of wildlife diversity in plantations to allow direct comparisons with that of natural forest that were replaced. Where expansion of plantations is anticipated, a comprehensive review of biodiversity information is recommended for use in monitoring. Also, it is not clear whether endemic and threatened species still occur after expansion, so biodiversity information should also be updated in Bugala island where plantations are already established.

Knowledge gaps should also be filled for a better understanding of effects of plantations on the environment. First, the list of agrochemicals recommended by the National Environmental Management Authority (NEMA) should be made available to farmers and general public, and soil, water and air need to be analyzed to determine

the extent of pollution so that remediation procedures can be planned. Second, there is need for a revised documentation of biodiversity in oil palm areas and where plantations are planned to provide an informed basis for arguments on conservation and so clear species-specific strategies can be drawn. Baseline data will also allow comparisons to show effects of plantations on distribution and abundance of biodiversity. Diversity within plantations also needs to be documented, including the mapping of species and critical habitats to inform the development of the land use plans, required to guide conservation efforts.

Taking lessons from West Africa, oil palm plantations and forest conservation and environmental protection can co-exist if certain recommendations are followed. Smallholder production should be promoted, rather than expansion of monoculture plantations. This approach would ensure that there is enough land left for food production and other enterprises. In this way, encroachment on natural forests as a result of food insecurity as has occurred in Bugala island, will be prevented in Buvuma. Edwards et al. (2014) found no significant effect of the proximity of natural forest to oil palm yield, but there was a positive effect on proximity to forestry plantations. Therefore, the wood lots could cause an increase in oil palm yield whereas the natural forest would have no negative effect on yield.

Farmers should receive regular training courses on the safe use of agrochemicals and benefits of environmental protection could be shown through awareness-raising, and community participation in inventories, monitoring and remediation work. Production from plantations can be increased by improving yields per hectare, instead of converting more land. The 200 m buffer zone should not be violated, with enrichment planting, preferably using indigenous species. Planting of wood lots for domestic and commercial use would also relieve pressure on natural forests, and through collaborative forest management groups, sustainable use of forest products would be promoted. The districts need to develop land use plans to harmonize development and conservation with enrichment planting in forests and other degraded habitats to be promoted, while maintaining a natural ground cover rather than introducing alien cover crops. And lastly, both in-situ and ex-situ conservation programs should be initiated for endemic and threatened species, including the maintenance of tracts of natural forest and grasslands within plantation areas, collecting germplasm for preservation in gene banks and botanic gardens.

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Impacts of oil palm on forest products and implications for the management of remaining forest fragments



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Summary

Kalangala forests are acknowledged as biodiversity rich, with 45 restricted range and 3 regional endemic species. Checklists generated in field assessments include 114 species of trees and shrubs, 89 birds, 6 mammals, 122 butterflies and 38 moths. In addition to conservation and other ecological values, forests provide socio-economic benefits for local livelihoods through environmental services, such as from tourism, fuelwood, rattan, round wood and timber. Deforestation has led to the loss of more than half of all forest cover in Kalangala with significant negative impacts on ecological and social landscape functions, and the risks are likely to be extended as oil palm plantation are scaled out to the Buvuma islands (Nsamba-Gayiiya

and Kamusiime, 2015). Although considerable efforts to engage stakeholders have now been made, partners were not engaged enough initially, nor proactive in anticipating and responding to concerns. As such, forest loss is of particular concern, but reliable and current data is lacking on the conservation status of Kalangala ecosystems that would enable stakeholders to manage the often-conflicting needs of development and conservation promptly and proactively. This assessment therefore recommends that long term monitoring is essential for land use planning that includes small-scale forest enterprises and sustainable financing strategies to maximize ecological and social benefits from oil palm in landscapes such as those in Kalangala and Buvuma.

Current status of forest products

Fuelwood

Wood fuel is used in all sectors of the economy, and more importantly, close to 100% of rural households and 98% of urban households use biomass energy for cooking (MEMD, 2014). The commercial value of fuelwood on the Ssesse islands (the Kalangala landscape) also includes charcoal and firewood for smoking fish and brick making (Manyindo, 2003). With the forest cover lost for oil palm, getting firewood has become a problem as wood is ever-further away or because of management restrictions in protected areas such as forest reserves. The new ferry has also increased the trade in charcoal to the mainland, aided by the rise in demand due to the government's decision to raise electricity tariffs in 2001, and large areas of forest are being cleared for this purpose (Mununuzi, 2002).

Tourism

In the Integrated Tourism Master Plan, the Ssesse Islands were categorised Grade B, an area of exceptional scenic attraction (MTWA, 1993). Many islands contain undisturbed forests with swampy margins, a paradise for birds, butterflies, monkeys, snakes and a favoured habitat for the sitatunga antelope though numbers have been seriously reduced by poaching (KDLG, 2005). But due to limited tourist facilities, many Ssesse islands are only visited by local people and campers. The white sandy beaches and the beautiful environment enhance the islands potential for tourism with boat cruises, beach recreation, water sports, sport fishing in the world's second largest freshwater lake, bird watching, primate viewing, butterfly watching, forest trekking, cultural tourism and community tourism. Adventure-based tourism thrives on the conservation of wildlife and its habitat, whereas the establishment of oil palm plantations in the Kalangala landscape has led to the loss of biodiversity. The inability of the government to provide sufficient resources to develop the sector, and the failure of the communities to play a significantly proactive role in protecting natural and cultural resources exacerbates the situation.

Timber

The timber industry was the second most important economic activity on the islands and could employ up to 1500 people (KDLG, 2005). Pit sawing started in late 1980s, and commercial timber trees include *Uapaca guineensis* (Mukusu), *Lovoa trichilioides* (Nkoba), *Maesopsis eminii* (Musizi) and *Cordia africana* (Mukebu), sold as round wood for local boat and furniture-making or exported to the mainland. Exploitation occurs in both protected and unprotected forest estates, with Mugoye and Towa the major productive reserves (Manyindo, 2003), whereas others such as Nkose have been virtually depleted of tree cover due to uncontrolled exploitation.

Rattan

The single African species of this climbing palm, *Calamus deerratus*, is widely distributed in the understory of lowland and sub-montane areas, in swamp and riparian forests and in open areas where it forms dense thickets (Sunderland, 2012). Stems are harvested as a source of rattan cane, used for manufacturing furniture and baskets, and for house construction, mostly from Masindi, Mukono, Mpigi and Hoima districts (Hassan and Mungatana, 2013). But as production declined in these districts, Ssesse island forests began to attract attention, where rattan provides a real opportunity for supporting sustainable development alongside forest conservation, though high demand is likely to impact the handicraft industry due to shortages created by over-harvesting, but loss of habitat through logging and conversion of forest to agricultural products including oil palm represents the major threat to this species (WWF, 2001).

Biodiversity

The value of Ssesse Islands forests in provision of environmental services is indispensable. Analyses of biodiversity in Uganda have as such relied on either the National Biomass Study map with 13 landscape categories (MWLE, 2003) or the earlier analysis by Langdale-Brown et al. (1964) which determined 22 vegetation types and 96 subtypes in Uganda, though most vegetation has been modified by cultivation of oil palm, and many of these vegetation types have been significantly reduced in quality and range over time. The islands were surveyed in 1993 as part of a national forest biodiversity inventory, and although some species were poorly sampled in relation to the 64 other forests visited. Bennun et al. (1996) estimated that 187 of Uganda's 1007 bird species are forests specialists, and many are closely associated with only one particular forest type. Ssesse island forest reserves were ranked in the top 10-15% for the conservation of trees, shrubs and small mammals. Davenport et al. (1996) identified a total of 45 restricted range species, and three species that are endemic to Lake Victoria islands, including the tree *Lasianthus sesseensis* (also Polhill, et al., 1954), the small mammal *Pelomys isseli*, and a rare butterfly *Acraea simulate* (also D'Abbrera, 1980) along with two closely related species *Thermoniphys togara bugalla*, and *Acraea epaea angustifaciata*. Biodiversity in the Kalangala landscape provides biological resources to the benefit of local communities, including food, medicinal resources, wood products, ornamental plants, recreation and tourism, and cultural values. But most remaining natural areas are found only where they are protected from encroachment and other disturbances in officially designated protected areas or areas of protected private/public land.

Implications for forest management

There is increasing fuel wood scarcity, so people having to walk further to collect adequate quantities, and more pressure on remaining forests. This is exaggerated by the increased population and a construction boom with private houses, schools, health units and commercial buildings being built, with demands for timber but also for fuel for the increase in brick-making, resulting in higher prices and more illegal fuelwood extraction. And due to the conversion of so much forest to oil palm plantations and unsustainable timber harvesting and over exploitation of residual forests, there is less timber and a reduced supply of rattan.

Ecotourism is an important tool for sustainable development, and is a growing niche within the larger national tourism industry that should be promoted. But there are fewer tourists now as a result of cutting down large forest areas that has destroyed the habitats for birds. Bugala Island will never be the same again. It is the diversity that lures tourists to Kalangala and it would have been better if nature remained undisturbed.

Biodiversity loss puts Kalangala communities at risk, although little was known about species richness and diversity on the Ssesse islands before current developments. Extensive changes in land use led to the destruction of ecological niches for various species including herbal medicines, grass for thatching, food, firewood, round wood, firewood, rattan, and tourism. And findings form a good basis for promoting of landscape restoration on the Ssesse and Buvuma islands based on experiences in northern Uganda.

The Government of Uganda, through the Ministry of Water and Environment in partnership with the International Union for Conservation of Nature (IUCN) with technical support of the World Resources Institute (WRI) and other government agencies conducted a study to comprehensively assess the potential for forest landscape restoration in Uganda. The study identified sites in the different landscapes of the country where degraded land is located, determining the size of degraded land and the most optimal restoration options or interventions (MWE, 2016).

Recommendations

Although oil palm development is delivering socio-economic benefits on Bugala island, the challenge is how to ensure that the development does not adversely affect the environment. Up to date and reliable information on the conservation status of Ssesse island ecosystems and wildlife populations, as well as for the Buvuma islands, is key to helping local authorities to manage conflicting

development and conservation needs promptly and proactively, ensuring returns from investments without compromising sustainability. In order to do, the following recommendations are put forward.

1. Conduct a full biodiversity inventory for the Ssesse islands, and a detailed baseline biodiversity inventory for the Buvuma Islands before any oil palm plantations are established.
2. Organize regular environmental and sustainable development monitoring, with potential implementing partners including, Makerere University and the National Forest Authority amongst others.
3. Implement a formal land use planning procedure, based on experiences from the Ssesse Islands, to reduce ill-considered land use conversion and encourage optimal utilization of land resources in Buvuma Islands.
4. Promote small scale forest enterprises for income generation across both Kalangala and Buvuma landscapes, typically being rural, household-based businesses using limited technology, skills and capital investment. These can include rattan cane-based, timber or charcoal industries.
5. Community conservation components of protected area management programs in frontline communities are reinforced across both Kalangala and Buvuma districts. There has to be an increased support for Collaborative Natural Resources Management and community forest interventions.
6. Establish a sustainable conservation financing strategy to ensure that programmes in Kalangala and Buvuma have the resources to support payments for environmental services, carbon trading, and ecotourism.
7. Implement forest landscape restoration programmes in support of national targets in Uganda's Vision 2040, National Development Plans (I & II) and the National Forestry Plan (to 2022).
8. Improve infrastructure to boost tourism in Kalangala, including the building of roads, water supplies and accommodation.

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Gender-based impacts of commercial oil palm plantations in Kalangala



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Summary

“Women have been most affected by the collapse of the local economy and have since organized themselves in small groups to offer advice to one another, working together to resolve family and community conflicts” (FoE 2012). This paper examines gender-based impacts of commercial oil palm in Bugala island, Kalangala district, where large scale oil palm development is ongoing, and informs on a similar forthcoming project in Buvuma. Findings are based on a literature review, viewed through the five dimensions (land rights, productive resource, household labour, employment and decision making) of an analytical

framework for gender impacts of foreign investment in agriculture, and provides information on the impacts of oil palm on social and gender related issues including HIV. The outcomes of agricultural investments for men and women often differ in rural areas where gender inequalities are persistent. Barriers to women’s access to productive resources such as production inputs, credit and training reduce female agricultural producers’ yields by 20-30% from their full potential. Oil palm has taken over the landscape, altering women’s relationship with the forest as opportunities such as handicrafts production have gone.

The reduction in local food supply has meant more food has to be imported, leading to increased food prices and more malnutrition among children. In summary, there was 'gender blindness' and a lack of gender sensitive analysis of the impacts of large land deals on land ownership, accessibility, and disempowerment of women and girls thereby reinforcing the existing gender inequality. Also, that although the oil palm project is promoted as a poverty-reducing endeavour, it has caused displacement, food insecurity and deforestation all these affect the mostly women, children and other disadvantaged groups. Thus, with oil palm expansion in Kalangala, local communities lose out to the interests of corporate capital.

The national gender context

Uganda recognizes the central role of agriculture for food security and income, and that employs some 80% of the country's population, with a majority being women, though society is dominated by patriarchal structures that traditionally gives women access to land only through their relationships with men as daughters, wives, or mothers (Bamuhangi et al., 2011). Uganda is however, a signatory to regional and global obligations on gender equality and women's empowerment, and the 1995 Republic of Uganda Constitution offered a turning point by recognizing the equality of men and women and by making provisions for ensuring women's participation in decision making at all levels through affirmative action provisions. The National Gender Policy developed in 1997, updated in 2007, provides guidance for nationwide gender mainstreaming across key ministries. But despite the conducive legal and policy framework and affirmative action measures, gender inequality in access, control and ownership of productive resources still occurs, with disparities due to high poverty levels, low literacy rates, negative cultural practices and institutional weaknesses.

Addressing gender inequalities in employment would increase GDP growth by 1.2% annually (Government of Uganda, 2010). But women remain concentrated in the lowest paying sectors, linked to low levels of education, with 50% in the three lowest paying sectors compared to 33% of men according to the Uganda National Housing Survey (2016). And women continue to be oppressed due to cultural practices such as gender-based violence, bride price, widow inheritance, socio-cultural discrimination regarding property inheritance, preference of boy to girl child education and unequal sharing of domestic responsibilities. Gender-based violence is of particular concern, leading to reduced economic productivity at all levels, increased risk of acquiring HIV and AIDS, trauma and other health and psychosocial problems.

General gender impacts

A baseline survey in Kalangala in 2006 found extensive poverty among rural households, mostly Kibanja subsistence farmers supplementing their incomes by fishing (dominated by men), timber, charcoal and petty trade (mostly by women). Few women own land. Introduction of commercial agriculture caused a dramatic appreciation in land prices, further marginalizing the poor who cannot afford to acquire land. Although women in Kalangala have formal land rights, they still face constraints in accessing arable land because of limited control over family income, and their relative weakness in addressing male authority and political circles. Therefore, they rely predominantly on intra-household negotiations.

CSO consultations report that local people were not informed nor meaningfully engaged in the design and execution of development schemes, marginalizing large sections of the rural population especially women and children. Then in its first project progress review report, IFAD (2010) noted that initial project objectives were geared more towards large-scale estate production, but failed to include poorer sections of society which was to be corrected. It reported positive outcomes from foreign investment including new employment opportunities, higher prices for farmers, improved access to local processing facilities, and programs for community and infrastructural development. However, although oil palm is promoted as a poverty-reducing endeavour, critics note that these investments have also been associated with large-scale human displacement, loss of autonomy over livelihoods, land conflicts, community food insecurity, deforestation and environmental destruction. All disproportionately affecting women, children and other disadvantaged groups.

Oil palm is like any other cash crop grown for export; where as many rural communities have traditionally relied on subsistence agriculture, growing cassava, corn, potatoes and millet, as well as plants for medicinal uses. This has caused huge concerns of food insecurity and has mainly affected women who are the major providers of food in the households (Piacenza, 2012). People living on Bugala Island used to grow beans, yams, peas, maize, and bananas and some of these crops were used to supply food to neighboring islands. But the island now has to import almost all its supplies of bananas, rice, beans and maize flour from the main land. This has led to an increase in living costs for the people on the island, making it difficult for some members of the community to be able to feed themselves (FoE, 2012).

Large-scale investment projects that invest in community well-being, e.g. by building schools, medical facilities, wells or other access to clean drinking water, help women

to better care for their families. But in Bugala, KOGPT encountered obstacles to delivering on their corporate social responsibility; notably weak law enforcement and non-participatory approaches to project design, land and water allocation (IFAD, 2010).

Oil palm and land ownership

Since oil palm was introduced to Kalangala, the investment has been geared more towards large-scale estate production but failed to include poorer sections of society including women, youth and children among others. A 2006 baseline survey in Bugala Island found extensive poverty among rural households; most were Kibanja tenants with less than one hectare of land, engaged in subsistence farming supplemented by fishing, dominated by men, timber felling, charcoal burning and petty trade, mostly by women. Few women owned land (IFAD and IDS, 2015). Patterns of land control shifted considerably after the introduction of oil palm, with privatization of former public land to a private firm and so removing a resource that used to be at the disposal of the community. Furthermore, the project led to accumulation of one third of the island's territory land by BIDCO and an increasing amount by wealthier outgrowers, with women and single parent households losing access to land (Piacenza, 2012). To be engaged in oil palm production as a smallholder, the project required individuals to prove legitimate control over land.

The introduction of commercial agriculture caused a dramatic appreciation in land prices, further marginalizing more people who are now less able to acquire land. From a gender perspective, this caused an individualization of family land, a process that had positive and negative effects on women's empowerment depending on their negotiating power within the household. Even though women in Kalangala have formal land rights, they still face several constraints in accessing arable land because of limited control over family income, and their relative weakness in addressing male authority and political circles. Therefore, they rely predominantly on intra-household negotiations.

To encourage women to participate, KOPGT relaxed initial requirements for registration as an oil palm grower. In the absence of a land title or a certificate of occupancy, a letter from the local council and five witnesses are sufficient to attest tenancy by occupancy, if the landowner did not reclaim the land. In addition, the project has encouraged men to give user rights to their wives and daughters so they can participate in their own right as independent farmers. The project has also instituted a maximum size of landholding for which an individual farmer is supported by the project.

The project also worked with the district government to provide public land for the benefit of women who do not have access to land (Piacenza, 2012), to offset the marginalization of landless and women who do not share the benefits generated by oil palm because of their weak position in the community, the excessive burden of household work and the weak bargaining position vis-à-vis their husbands. For women, strong bargaining power within the household can determine a share of family land on their name but in the context of oil palm, no direct action was taken to build women's confidence and negotiation ability at household and community levels (Piacenza, 2012).

Impacts on the division of labour

Women in Uganda are largely responsible for subsistence farming, food purchasing and preparation, and ensuring adequate household nutrition. Between these domestic, farming and community activities, women endure a 'triple work burden' that is unremunerated and under-appreciated. According to KOPGT, 35% of registered farmers were women (Both Ends, 2010), and as such met the IFAD target of involving at least 30% of women, considering the male/female sex ratio of Kalangala District is 136:100. But the strong male prevalence in Kalangala is mostly due to positive net migration, meaning that most men living there do not live within permanent/settled households. But overall, oil palm has reinforced gender divisions as it failed to introduce a less gender biased off-farm employment for women. Furthermore, women can typically only access the lowest paid jobs due to gender divisions inhibiting them from engaging in the most lucrative tasks such as harvesting and pruning. These tasks are considered too hard for women, who usually collect just the loose fruits that fall on the ground during harvest (Piacenza, 2012). These developments notably affect younger women, who with no opportunities left, migrate to cities, undermining the social fabric of communities.

Impacts on employment

Most workers on the company's plantations are from outside the island community (Piacenza, 2012), as the company states that there are too few islanders to meet the demand for labourers. But for local communities, plantation work does not represent a viable alternative due to the working conditions and low pay rates. These jobs are only considered viable for those with no alternative, due to having no access to arable land or education (CAO, 2012). OPUL's workforce is also very much male-dominated because the recruitment process favours men, social prejudices regarding women's ability

to work in plantations, and few gender-sensitive company policies. Moreover, such jobs appear to offer little security.

The original design of the project contained several pro-poor measures but these were apparently dropped during implementation so BIDCO could meet its economic requirements (IFAD, 2010). Securing salaried employment could have represented an important outcome for the poorest women in Kalangala, especially those with limited access to arable land. However, strong gender division in the labour force and the lack of specific gender provisions in recruiting and organizing workers have left women with few jobs and wages that are not even above the poverty line. For the local inhabitants, relatively few people have found alternative livelihood opportunities; either as small-scale palm oil growers or as laborers on the palm oil estates (since the companies hire predominantly migrant workers).

On a positive note, investments by BIDCO, and interventions by VODP have created employment for more than 3,200 workers directly employed by BIDCO and by smallholder households (World Bank, 2010). However, there is no disaggregated data that shows the number of women or those from marginalized groups.

Impact on access to resources

Although rural communities' customary land rights are protected under the Ugandan constitution, in practice, these rights are being violated. Communities are being displaced and are losing vital access to natural resources, including land for farming, firewood and other forest products. As oil palm has taken over the landscape, women's relationship with the forest has altered, with reduced opportunities in the production of handicrafts, felt particularly by older women (Piacenza, 2012). Also, an IFAD-financed fund provide loans to farmers for the first 4 years as oil palm becomes establishment, but these support only farmers that already have access rights over land, and planting a perennial crop reinforces their rights and is a way of maintaining access which less numbers of women have. However, with forethought, this provision could have facilitated a greater participation of women and other socially marginalized groups (Piacenza, 2012).

Prior to the arrival of oil palm, the forest allowed for nutritional and livelihood diversification, particularly for women who are the food gatherers. The reduction in local food supply has meant more food has to be imported to the island, leading to increased food prices and high chances of malnutrition among children especially for the very poor families that can't afford to buy sufficient quantities needed and varieties, and as the only work is casual and low paid, local people struggle to make

ends meet (FoE, 2012). Forest also provided 'waves of opportunities' for communities who could frequently switch from one income source to another, depending on resource availability, market prices, seasonality, etc., as a resilience strategy for coping with external shocks.

Impact on decision making

Effective participation of local communities and safeguarding their entitlements are a vital precondition for natural resource management and sustainable economic development. This is especially true in the design and implementation large scale land based investments, when only men and women farmers that controlled land prior to investments have success stories to tell (FoE, 2012). But CSO consultations reveal that local people and civil society were often not informed, consulted or meaningfully engaged (FoE, 2012; Piacenza, 2012). Uganda is a signatory to international environmental and human rights conventions, but indicators show that further efforts are needed to implement them, by improving living conditions, including those large segments of society that still face serious under-nutrition and lack the most basic needs such as safe water, healthcare, and absence of violence. Harsh, socio-economic and ecological realities on the ground are underlined by key indicators for sustainable development, including levels of under-nourishment, prevalence of corruption, rate of deforestation and governance (FoE, 2012).

Impacts of oil palm on HIV

Complainants state that BIDCO employees working on oil palm plantations were almost exclusively from outside Kalangala, leading to an influx of migrant workers. Oil palm workers attract commercial sex workers to plantation areas given their available cash income, leading to an increase in prostitution and sexually transmitted diseases in an area already having a high level of HIV/AIDS infection (IFAD, 2010). This exacerbates violence and the spread of HIV, increasing levels of insecurity for women, including domestic violence, prostitution, early marriages, migration and increased workload. But although an environmental impact assessment in 2004 predicted that the project would increase risks of HIV/AIDS, food insecurity, cultural erosion, loss of sacred places and cultural conflicts (NAPE, 2012), the project went ahead with little evidence that the identified threats had been considered.

Recommendations

The Ugandan National Gender Policy provides an overarching framework and useful guidelines for achieving gender equality in government programmes. As such, the Vegetable Oil Project should have conducted a gender analysis before it started, to provide a clear gender vision and to highlight gender indicators of change. However, this was not done, objectives for the Oil Palm Project in Kalangala are expressed in gender neutral terms (FoE, 2012), and reports do not disaggregate data to see how the project has impacted differently on men, women youth, boys and girls, people with disabilities, people living with HIV, nor how it has contributed to an increase in HIV infection, widowhood and orphans on Bugala island.

It is critical that a gender sensitive approach is adopted from project conceptualization stage, with an understanding of key aspects of: women's and girls' positions regarding vulnerabilities, differences for new economic opportunities, and gender-specific implications of potential increases in national and districts budgets. Interventions can then be tailored, acknowledging the barriers that only women and girls face, including traditions regarding who markets produce, which crops are 'women's crops', who controls proceeds of crop sales, etc., and investing in knowledge and skills and changing social norms that allow young women to share in emerging opportunities. The government of Uganda must also endeavour to remain accountable and compliant to the existing gender related legal frameworks to ensure that the different categories of people derive equal benefits from agricultural related commercial investments.

Subsequent projects must consider the integration of gender mainstreaming approach informed by a comprehensive gender analysis. This should inform revision of the already developed National Oil Palm project. The government must remain accountable to its own commitments to address gender inequality as enshrined in the National Gender Policy, and in this case, the National Gender Machinery should be a central partner in the design and execution of further oil palm project.

A recent project document attempts to address gender and social issues considered as significant risks (IFAD and GoU, 2017), although impacts are limited because consideration is only happening now, in the second phase. To avoid similar issues occurring in the planned oil palm project in Buvuma, IFAD, the government and BIDCO must undertake a comprehensive gender analysis during participatory planning, and ensure compliance with national, regional and international treaties through a thorough assessment of legal and policy frameworks prior to project start.

They must ensure technical and financial resources for enforcement and follow up, in addressing concerns highlighted by the gender analysis, including recruiting dedicated gender experts to keep track of implementation and adherence to gender principles, and project design must address the concerns of women, girls and people with disabilities, involving that institutions establishes groups and platforms for engagement without any form of discrimination. In addition, the following recommendations are proposed.

1. Provide equal employment opportunities for both male and female without any discrimination creating enabling environment for female employees. This will involve ensuring that the recruitment procedures are in place and conform to the gender equality principles enshrined in the National Gender Policy 2017.
2. Create opportunities to lift the position of women in society and design and provide services that improve the conditions of women by reducing the care burden that hinders their participation in investment projects.
3. The government to make deliberate efforts to coordinate and seek support of the Ministry of Gender, Labour and Social Development, including the Equal Opportunities Commission, in the design and implementation of important and long term projects.
4. Participatory monitoring and evaluation needs to include marginalized groups, women, youth, people with disabilities and people living with HIV, and ensure that their concerns are addressed accordingly.
5. Regular review meetings organized by the company and local government to create a conducive space for marginalized groups and CSOs that represent them to voice their concerns, and the option of participating in monitoring and evaluation initiatives to improve accountability and help address emerging gender issues.

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Comparison of the economic and social benefits of central forest reserves and oil palm plantations in Kalangala



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Summary

This paper presents a comparative assessment of total economic values from central forest reserves and those from oil palm production. It includes short, medium and long term land use considerations to assess how to improve the integration of forest management, commercial agriculture and other non-forestry industrial land uses. Findings show that the actual projected annual value from oil palm plantations in Kalangala is 186 billion Ugandan Shillings (UGX) (US\$52 million) of which 73% was captured through revenues from nucleus estates and 27% through outgrowers. However, this total was only 11% of the total

economic value held in the central forest reserves, estimated at UGX 1,673 billion (US\$465 million) per annum. However, of this, only UGX 2.3 billion (US\$640,000) is captured from sales of timber each year. The rest is made up of derived values such as pollination, wildlife habitat and other ecosystem services, and carbon stock values priced under REDD+ but which is not yet operational. And most of the standing stock of timber must be maintained, though communities would benefit more if the annual harvesting quota was increased. Tourism values are a realistic value, however, noting the growth of this sector and its

integration through ongoing engagement. But in short to medium terms, economic benefits from oil palm in Kalangala district greatly outweigh those from the central forest reserve. The key recommendation is to establish optimal land use plans that factor in land use before and after integration of oil palm, including a considered business model that increases direct economic benefits from forest reserves.

Introduction

Oil palm has potential for employment creation in the nucleus estate and the processing factories, and direct income generation for outgrowers and suppliers to BIDCO, of oil palm fruits but also food and wood fuel. Independent of employment, there are contrasting scenarios for land use changes that impact on the forest and other uses within the landscape. A comparison of forest land cover and oil palm plantations based on spatial analysis shows that the current oil palm estate is 8,099 hectares, 73% (5,950 ha) of which is nucleus estate and 27% (2,149 ha) of outgrower plantations. Of the total forest cover of 11,521 ha in 2016, 60% (6,861 ha) was in central forest reserves, and 40% (4,660 ha) on private land. But this was considerably smaller than in 2005 when total forest cover was 26,784 ha, when more than two-thirds (17,923 ha) was on private land while 8,861 ha (33%) was on forest reserves. But between 2001 and 2016, 6,636 ha of this forest was deforested and 10,130 ha degraded (NFA, 2009; NEMA, 2011), mostly from private land in Kalangala, giving way to additional land for oil palm plantations, wood fuel production and opportunist agricultural encroachment. This assessment compares the total economic value from central forest reserves with values obtained from oil palm production, to support long-term land use planning and government engagement on the stated role, agreements for oil production, environmental management, and how more can be done to conserve the remaining central forest reserves.

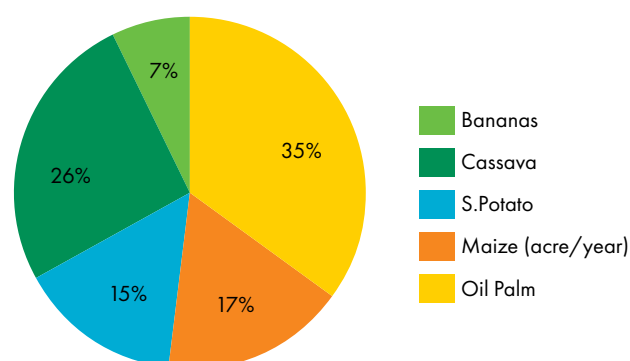
The study was undertaken on Bugala island, the largest in Kalangala district where historically, fishing has been the main economic activity. However, in mid-2000's commercial oil palm growing was introduced on Bugala island as an alternative economic activity and now covers up to 10,000 ha. The government of Uganda acquired 6,500 ha for the establishment of the nucleus estate, of which 3,000 ha was public land leased to the oil palm project through the Kalangala local government. The government then mobilized private land owners and communities to sell a further 3,500 ha to the government on a 'willing seller-willing buyer' basis. It was reported that about 45% of the total plantation area were previously forested, and the rest were grasslands (MAAIF, 2015).

The study relied heavily on a review of analyses of existing secondary data (CIU, 2015; NFA, 2009; NEMA, 2011; NatureUganda, 2008; UBOS 2016; among others). Primary data was collected through a spatial analysis and follow up engagement with Kalangala district technical staff and field observations, with images of the Kalangala islands downloaded from Landsat used in spatial analysis to determine areas under central forest reserves and oil palm plantations. The economic analysis undertaken was through use of benefit transfer techniques based on earlier assessments conducted by Care International in Uganda (CIU, 2015), Biomass Survey (NFA, 2009), and economic evaluation works (NEMA, 2011). The report also considered more recent valuation estimated based on USAID (2017), and collaborative data from the Landsat datasets.

Total economic value of oil palm production

An economic assessment conducted for crop production in Kalangala district (CIU, 2015) showed that oil palm is by far the highest income earning crop for farm households on the island. Out of the total average income attributed to crops, oil palm accounted for 35% of gross margins, followed by cassava and sweet potatoes (Figure 1). Oil palm was also the leading commercial crop, and bananas and maize which are also important commercial crops came in fourth and fifth among the main crop income sources for farmers. It should be noted that the indicated income refers only to oil palm on private land, with that from nucleus estate evaluated separately.

Figure 1: Main crops grown by smallholder farmers in Kalangala district, by gross margins (CIU, 2015).



The total gross income from oil palm was estimated at UGX 186 billion (US\$52 million) based on 2015 oil palm production and crop prices (CIU, 2015) and using a 12% discount rate. The gross margin estimates are based on an oil palm production area of 8,099 ha obtained based on Landsat spatial data, and the full cost of gross margins of oil palm production was based on a perpetual production of at least 50 years of oil palm production, i.e. exceeding

the 25 years of primal production. Annual gross margins per hectare for oil palm production in Kalangala district were estimated at UGX 2.76 million (US\$760) which multiplied by the total area of oil palm gave a total gross margin of UGX 22,348 billion (US\$6.2 million). The economic value of the current oil palm estate considered only the crop. The 'knock-on' multiplier effects of income earned by communities and the wider rural economy was ignored in this assessment, though it is nonetheless expected that income from the oil palm activities contributes considerably to socio-economic activities in the islands.

Total economic value from forest reserves

Using benefit transfers based analysis, the total economic value of the 6,861 ha of central forest reserves, assumed as all being tropical high forest, was estimated at UGX 1,673 billion (US\$465 million), based on an 8% discount rate for natural resource management activities. The total economic value comprises the value of standing timber,

timber flows, carbon stocks, potential tourism values, pollinator services and habitat values for wildlife (Table 1).

The flow values currently captured, however, comprise of only UGX 2.3 billion (US\$650,000), being solely those from timber flows. The pollinator values and habitat values are contributions to the ecosystem that are beneficial for regulation of the farming landscape including the oil palm and for maintenance of wildlife within the forest estate on the island. Carbon stock values stand at UGX 132 billion (US\$37 million) and these can be tapped through implementation of REDD+ (Reduced Emissions from Deforestation and Forest Degradation) payments through voluntary and regulated carbon markets. These latter two schemes are based on the additionality in forest cover and as such, these flows are not available to local communities. The standing stock of timber is also a value that is considered as wealth for long-term sustainability of the forest. Ideally, this value would not be touched, however, through deforestation and/or other unplanned disturbances the standing stock of timber could be degraded.

Table 1: Ecosystems and ecosystem service value

Ecosystem service value (ESV) component	Full value at 8% discount rate (million UGX/ha)	Full value at 8% discount rate (million UGX for 6,861 ha of Kalangala forest reserves)
Land value	3.1	20,926
Standing stock of wood	212.8	1,459,952
Value of timber flows	0.3	2,333
Value of carbon stock	19.2	131,731
Tourism value	0.8	5,632
Pollinator service	0.2	1,180
Habitat value	7.4	51,046
TOTAL	243.8	1,672,849

Adapted from USAID (2017)

Implications

The actual value projected from oil palm plantations in Kalangala captured from production of oil palm is UGX 186 billion (US\$51 million) much less than the wealth held in the central forest reserve estate estimated at UGX 1,673 billion (US\$460 million). Taken as such, the economic value of oil palm production is only 11% of the total economic value of the central forest reserves. The situation faced by communities and land managers in Kalangala district currently is that while the full value of the oil palm production can be captured either through the revenue of the nucleus estate and that of the outgrowers at a current ratio of 73%: 27%, respectively, most of the wealth from the forest estate is presently not captured. Indeed, only

UGX 2.33 billion (US\$65,000) of wood flows can be captured under the current practices.

The value of pollinators and habitat management are regulatory values that are derived and would even benefit the oil palm plantation. Carbon stock values would be prices under REDD+, which is not yet operational. The standing stock of timber is for maintenance purposes and the communities would only benefit more directly from the forest plantations, and/or if the sustainable forest harvesting quota was increased. Tourism values are a realistic value; however, the growth of the sector and its integration within the forestry sector, specifically the forest sector is an ongoing engagement, in the earliest stages.

In the short to medium term, the economic benefits or flows from oil palm in Kalangala far outweigh the flows of ecosystem services from central forest reserves on a per hectare basis. The emerging question of appropriate land use goes beyond the total economic value of central forest reserves, versus oil palm, into impacts of oil palm production versus forest reserves on communities.

In a study on the economic evaluation of the de-gazettement of Mabira central forest reserve for sugar cane production, Moyini et al. (2008) show that long term flows (wood, carbon, hydrology etc) outweigh the short term benefits of sugar cane production. The compatibility of oil palm production and existing livelihoods was also explored in another study on food security and forest conversion (CIU, 2015), with results showing that oil palm is considerably less compatible with existing livelihoods and food security, however, in the short to medium term, socio economic and political gains from faster economic growth cannot be entirely discounted. The emerging question from these comparisons of total economic value of oil palm compared to that from central forest reserves is one of determining an appropriate and optimal land use, where the medium term and long term economic flows are compatible with sustainable livelihood and ecosystems and ecosystem services.

Ways forward

From these conclusions, the following recommendations are proposed. (1) MAAIF and the local government should establish an optimal land use plan or system for Kalangala. This should factor in land use before and after integration of oil palm. (2) The Kalangala district local government and the National Forest Authority should consider a business plan for central forest reserves which can also enhance the economic benefit derived from them. (3) BIDCO, MAAIF and the Kalangala district local government should ensure that there are socio-economic safeguards from oil palm production and which should be clearly articulated and implemented for the adversely affected communities. (4) BIDCO, MAAIF and NEMA should consider biodiversity offsetting for oil palm production, and to undertake ex-post environment impact assessments, develop environmental and social management and monitoring plans and introduce transparent auditing activities.

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Assessment of short term gains from oil palm plantations in Kalangala, against long term benefits of forest conservation



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Summary

In Kalangala district, jobs have been created by oil palm and infrastructure has improved, but it is debatable whether the wellbeing of rural people has benefitted, and impacts on the national economy are uncertain. Most well-paying jobs are taken up by people from outside the district, and menial jobs are paid below the going rates. Outgrowers claim to be taking home less than they had expected and fishing is considered more lucrative. Regarding food security, private land owners may have willingly sold land for oil palm development, but some had tenants who were evicted without fair compensation or resettlement. It is also increasingly difficult to find grazing land for domestic livestock or

farming land to cultivate food crops. Access to fuelwood and construction materials is also becoming a problem, with running battles with National Forestry Authority officials as unauthorized harvesting escalates in forest reserves. Forest cover is reduced. Fish breeding grounds are polluted by deposition of eroded soil on shore land. The sanctity of lakeshores and natural forests has been violated as government officials looked on, or even looked away. This suggests that there is a need for an independent monitoring programme of long term environmental and social impacts, and that governmental commitments to resolve and enforce its own environmental laws are tested.

Introduction

The Government of Uganda aims to transform the agricultural sector from subsistence farming to commercial agriculture, and create employment especially for youth and women, increasing household incomes and ensuring food security (MAAIF, 2016). But in contrast, agricultural expansion has a main driver of forest loss with cover reduced from 4.9 to 1.8 million hectares between 1990 and 2015, or an average annual forest loss of about 122,000 hectares (Government of Uganda, 2011). Forests on private land have been most affected, as owners have tended to see more benefits from converting forests to farmland rather than retaining them for long-term conservation values (MWE, 2016). In Masindi and Hoima districts, forests have been converted to sugarcane plantations, while in Kalangala and Buvuma districts, forests are being converted mainly to oil palm plantations. The objective of this study was to consolidate information about the short and long term benefits of expansion of oil palm plantations in Kalangala district, to effectively support lobbying and advocacy work regarding sustainable land use options to improve local wellbeing. The study assessed benefits and drew lessons on the impacts of forest conversion and commercial oil palm growing, and suggests approaches that enable equitable oil palm development, while respecting the rights and aspirations of local people.

Positive and negative impacts

The start of commercial oil palm production in Kalangala in 2006 heralded hopes of job opportunities and increased household incomes. The decision to invest in oil palm in the Bugala island landscape was based on an IFAD study showing that Malaysia's oil palm plantations directly employ large numbers of people, compared to only few who generate any income from natural forests (MWE, 2011). On the other hand, there were those who prophesied doom if large expanses of natural forests were converted to commercial agriculture. This study provides insights into social-economic impacts of oil palm in Kalangala based on a review of documents from government departments and agencies such as MAAIF, the National Forestry Authority, Kalangala district local government and local CSOs, with additional information obtained from key informant interviews, and provides lessons for improving practices in Buvuma district where oil palm growing will soon begin.

Diversification of economic activities

According to IFAD (2011), 60% of the population in Kalangala was employed in fishing and related activities, although there has been a decline due to over-fishing. However, since the start of oil palm production at the

nucleus estate in 2004, and on smallholder farms in 2006, oil palm has been adopted as a new economic activity. Shops and other small businesses have emerged in growing urban centres, with workers coming in search of jobs, more trade, tourism and other income-generating opportunities that have accompanied the increasing population. As such, oil palm demonstrated its potential to improve local incomes and wellbeing. Initially, people would process oil from the palm kernels for sale, and by 2008, the number of small traditional mills in rural centres had grown from 6 to 33. Anecdotal information from oil palm growers indicates that a farmer who produces about 160 litres of oil per day can earn UGX 240,000-320,000 (US\$ 100-130) per month, a substantial contribution to household income (Kiyini, 2014, pers. Comm.). Household incomes are also enhanced through sale of palm kernels to OPUL and outgrowers can earn UGX 200,000 to 1 million (\$80-400) per month depending on the size of their plantation, the yield, and deductible costs for inputs obtained on loan from OPUL (Ashaba, 2014, pers. comm.). OPUL also directly employ about 1,800 workers (FoE, 2015), including local women for tending nurseries and weeding. However, most plantation workers come from other parts of Uganda, as local people still prefer fishing to working in oil palm plantations.

Diversification of agricultural crops and expansion of land for food crop production

The establishment of commercial oil palm plantations enabled communities to open up large areas of forest, which promoted cultivation of other agricultural crops such as cassava, potatoes and bananas, especially by intercropping between oil palm lines, facilitated through funds provided by OPUL. Since the 1960's, farming was only carried out on a small scale, covering less than 5% of the total land area of the island (Abonyo et al., 2006), and poor productivity meant that communities depended on food imported from the mainland. However, this practice of clearing more land for food production is not sustainable in the medium and long term.

Development of infrastructure

Commercial oil palm plantation growing has promoted the development of infrastructure. Kalangala Infrastructure Services Company was established to develop the road network and solar power. A 1.5 MW thermal power plant burning oil palm bagasse and oil has been built and electricity now lights up Kalangala town. The company has constructed a road from Bugoma where the ferry from Bukakata on the mainland docks, and five feeder roads since 2004 linking the district capital to sub-counties in the hinterland. New roads have greatly improved access to rural areas in Bugala, but these developments have not yet extended to the more remote areas of the district. For example, feeder roads in smaller islands are still few and in poor condition, hampering market access and service

delivery. Support from OPUL has also contributed to the reconstruction and maintenance of some schools and health centres.

Land conflicts

Kalangala district local government gave 3,500 ha of former public land for commercial oil palm growing which affected local communities who lived and depended on such land. Furthermore, private mailo land owners sold off their land for oil palm development on a willing buyer–willing seller basis, but such land had tenants who depended on it for their wellbeing. Many people were therefore evicted from both public land and private mailo land without fair compensation or resettlement, and became landless. Consequently, there have been numerous land conflicts between OPUL and people who were evicted (NAPE, 2011). About 90 people who used to live and work on land acquired for oil palm plantations testified that they had been displaced with no compensation or alternative livelihood options (FoE, 2016), and some community members filed a lawsuit claiming restitution for their grabbed land and fair compensation for damages (FoE, 2015). Other forms of land conflicts arise from land speculation, encroachment and community conflicts, as wealthy landlords from the mainland have tried to acquire more land on the island without regard for prior land tenure arrangements.

Poor working conditions

Commercial oil palm highlights employment creation for local communities as one of the benefits. However, jobs created pay poorly, leaving workers with barely anything for subsistence, and are therefore unattractive to local people who prefer fishing. A fisherman may earn UGX 50,000-70,000 (US\$20-30) a day, for example, cannot opt to work as a casual worker for OPUL who earns a basic wage of UGX 2500 (US\$1) per day including UGX 500 (US\$0.20) for lunch. Since food is expensive in Kalangala, workers must spend part of their daily wage to buy lunch, reducing the wage rate even further. An external project evaluation also confirmed that wages paid by OPUL are below the going rate of UGX 3000 (US\$1.20) on the island for unskilled labour (IFAD, 2011). And yet, the evaluation report stated that the wage rate was above UGX 2000 (US\$0.80) paid on sugar plantations and some mainland factories but this cannot justify the OPUL rates. Local fishermen tended to despise OPUL jobs from the outset, and as a result, over 90% of OPUL workers come from other parts of the country (FoE, 2015). Poor remuneration also explains high employee turn-over, even with migrant labour.

Food insecurity

As nearly 60% of farm land has been converted to oil palm plantations, this has clear impacts for food security in the long term. Intercropping was initially received by

farmers with excitement and satisfaction, but they later realised that this was a very temporary intervention since it was only possible within the first 4-5 years when the palm trees are still young. The lifespan of palm trees is 25-30 years, which means that for over 20-25 years, land cannot be used for food production. Some outgrowers planted most of their land to oil palm and so now suffer food insecurity. In addition, food prices increased rapidly following the introduction of oil palm due to the rapid population growth (KADINGO, 2009. Increasingly cases of theft from gardens are reported (Kiyini Kibi Kisitu, 2014, pers. comm.) and due to food scarcity, many households often have only one meal a day. Food availability was expected to increase in households earning an income from oil palm activities, but there is limited evidence to show that the extra incomes are used for purchasing food or enhancing food production.

Social issues

Commercial oil palm plantations have attracted a large influx of immigrants looking for jobs even sometimes outside from Uganda. Associated with the increased population are increased concerns of anti-social behaviour in villages and landing sites near the nucleus estate associated with alcohol, prostitution and theft (IFAD, 2011). It has also been reported that HIV/AIDS is spreading in the nucleus estate labour force and farming communities. In addition, even where the cash income has temporarily increased, married women have suffered, especially when the money earned from oil palm is diverted from procuring household essentials and food security to satisfying the personal interests of their husbands in reckless and luxurious living, leading to family conflicts and marital breakdown. In some cases, children are involved in palm oil production and this prevents them from going to school whereas child labour is prohibited by national and international law.

Increased pressure on reserves and remaining private forests

With public and private forests cleared for oil palm growing, there is increasing pressure convert remaining forests to cultivate crops. National Forestry Authority staff in Bugala have reported violent encounters with people illegally harvesting timber, firewood and making charcoal, especially for fish smoking. Similar problems are reported by private forest owners under the Ssesse Islands Nature Conservation and Tourism Association.

Effects on wetlands

Wetlands in Kalangala act as buffers protecting the lake, play important roles as breeding grounds for fish, and act as water reservoirs and water purification sinks among other ecosystem functions. Most were largely undisturbed in 2005 (KDLG, 2005), but when establishing oil palm plantations, OPUL did not always observe Section 30(1)

of the National Environment (Wetlands, Riverbanks and Lake Shore Management) Regulations, 2000, that states that “All shores of lakes specified in the seventh schedule to these regulations shall have a protection zone of two hundred metres measured from the low water mark”. Instead, the government allowed OPUL to acquire an additional 606 ha by reducing the protection zone to only 100 metres, and in practice, cultivation and especially private plantations, go right up to the lake shore. Coastal forests used to serve as a windbreak against violent winds coming from the open waters of Lake Victoria, and clearance of these has therefore made the island more prone to cyclone damage.

Lessons learnt

Commercial oil palm plantations have the potential of contributing to socio-economic development of local economies. This is particularly visible in Kalangala, given that infrastructure had to be developed to efficiently run the business. Also, commercial ventures now tend to come with ‘community projects’ not directly related to production but aimed at satisfying the conditions for financiers and the choices of consumers. Therein lies the essence of corporate social responsibility, which in Kalangala, focused on infrastructure, especially roads and electricity. Projects packaged on the basis of perceived contributions to the national economy do not always lead to improved wellbeing at local level, and can negatively affect livelihoods. This certainly seems to be the case for rural people in Kalangala where many promised benefits have not yet come, where many who live next to plantations cannot afford to buy the oil which is produced on their doorstep. Large-scale land acquisitions have increased land-related conflicts as communities have lost access to land and other natural resources, aggravated by inadequate support development of alternatives in terms of diet, income and health care.

Oil palm like all commercial crop plantations, exposes smallholders to food insecurity if certain issues are not effectively addressed during project planning and implementation. In Kalangala, commercial oil palm development does not appear to have encouraged smallholders and outgrowers to put aside sufficient land for food crop production. Many community members sold most of their land, found out only later that they did not retain enough land to produce food for basic household needs and could not fall back on public land because it had been given away for oil palm plantations. It is therefore essential that food security issues are properly anchored in commercial oil palm expansion programmes. There must also be adequate focus on social and environment considerations in the planning of rural projects designed primarily for economic development. “With hindsight, the importance of adequate opportunities

for securing land, effective environmental management, and addressing farmers’ incentives and constraints should be incorporated into the design of the second phase. This should include a full social and environmental impact assessment, a new environmental management plan with emphasis on communications, and activities to promote livelihood enhancement in the oil palm communities” (IFAD, 2011).

Squaring the circle

When the oil palm project was conceived, there were high hopes that it would benefit the national economy and local communities. Infrastructure has been improved, especially roads and electricity, and jobs have been created, but the extent to which this has positively impacted on the national economy is, to say the least, uncertain. and the extent to which the wellbeing of the rural people has improved is debatable. Most of the well-paying jobs are taken by people coming from outside the district, unskilled labourers are being paid below the going rates, while fishing is still pays better than jobs at OPUL. Those who grow oil palm are taking home much less than they had expected and impacts of infrastructure are not yet being felt in more remote rural areas. On the social side, the project seems to be struggling with its relations with people living next to OPUL plantations. The people used to depend on this land for their wellbeing and yet there is no concrete support for them to adapt, posing a danger for food security. Access to forest foods, herbal medicines, fuelwood and construction materials has become problematic, leading to running battles with National Forestry Authority officials as unauthorized harvesting in forest reserves escalates.

Pursuit of economic goals can seriously compromise long-term environmental benefits, and oil palm development has seriously tested the government’s commitment and resolve to enforce its own environmental laws. The sanctity of lakeshores and natural forests was violated as government monitoring systems failed. As noted by IFAD (2011), “the project should have explored the implications of the nucleus estate expansion earlier and in greater depth, anticipated potential land shortages and concerns by environmentalists, and proactively addressed these problems... [and] the importance of adequate opportunities for securing land, effective environmental management and addressing farmers’ incentives and constraints should be incorporated into the design of the second phase. This should include a full social and environmental impact assessment, a new environmental management plan with emphasis on communications, and activities to promote livelihood enhancement in the oil palm communities.”

The limited current information needs to be augmented by research for better planning and implementation. Three broad objectives for oil palm research in the next few years were defined by IFAD (2015), being: (i) to develop improved agronomic management practices for oil palm production in different ecological zones; (ii) continue planting trial plots in suitable areas for oil palm; and (iii) develop management options for non-uniform ripening; to identify and develop integrated pest management packages for key insect pests and diseases.

Questions remain as to why those who promote oil palm do not effectively mitigate negative social and environmental impacts? Was it not possible to prepare local people for these possible eventualities, since the impacts are not limited to oil palm growing only? The Social and Environment Impact Assessment should have anticipated them, and the Environment Monitoring Plan should have been designed to monitor them, with the Project Managers taking steps to mitigate any unforeseen impacts as they emerge. Indeed, the impacts are similar to those of growing any other tree plantation crop, and therefore the strategies used in forest plantation stewardship could easily be adapted.

Recommendations

1. Generation of empirical data for informed decision making

Is oil palm increasing household incomes and community wellbeing? Is oil palm altering the environment in this island ecosystem? Long-term research to answer such questions would be best done through partnerships between Ugandan and external universities. And for research findings to be translated into action on the ground, key stakeholders must be actively involved, including OPUL, Kalangala Oil Palm Growers Trust, Kalangala Oil Palm Growers Association, Kalangala district local government, the National Forestry Authority, private land owners, the labour force, and the rural local communities.

2. Impact assessment

The government and OPUL should immediately initiate talks with private owners of remaining natural forests to support their restoration and effective management. In the past, effective monitoring of implementation of environment management plans that should have come with EIA processes was not possible because the monitoring committee was composed of government officials at central and local government levels. As such, conflict of interest became rife. An independent organisation should be invited by financing agencies to monitor implementation of the

environment management plan, prepared along ISO standards.

3. Community wellbeing

Criteria and indicators must be developed and used to monitor whether oil palm expansion is enhancing the wellbeing of local communities as part of national development. These should be developed together with the affected and interested parties, including investors, CSOs, local communities and government, among others, and monitored by an independent auditor. It is also in the interests of OPUL and the government to finance the development and implementation of such criteria and indicators, with international CSOs mobilising technical support. If developed soon, a decision can be included in the government's 2018/19 annual work plan. In areas where oil palm is expanding, the government should ensure that alternative arrangements for compensation are discussed and agreed with affected families to minimise the dangers of men receiving cash and abandoning their families, or spending cash on pleasure to the detriment of their families. OPUL and the government must consult widely with affected people and stakeholders, and incorporate activities that enable affected people to adapt to new realities where forest products are less available.

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Mitigating negative impacts of oil palm expansion in Kalangala, and complementary livelihoods options



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Summary

This paper identifies mitigation measures to oil palm expansion, and suggests complementary livelihood options. Findings showed negative impacts of monoculture oil palm plantations from unclear land acquisition processes, increased pressure on remaining land; emigration of especially men, and reduced food security. There were also social issues related to increased immigrant labour, child labour and burdens on women. And whereas there has been infrastructure development, it is vital to establish social and environmental sustainability before oil palm plantations are expanded, with lessons drawn from Bugala island. The government is changing

its perception of large scale oil palm plantation agriculture, and is considering other options for improving livelihoods, based on experiences in Kalangala district. This paper proposes complementary options, including agroforestry with high value crops like vanilla, cardamom, black pepper, as well as coffee, honey, vegetables and pineapple, livestock, and ecotourism. Training will be crucial for smallholder farmers to develop and maintain sustainable livelihoods. Natural forest areas and native tree species nurseries must be established to conserve beneficial species, and better land use planning and zoning of Buvuma island is needed to reduce the loss of natural forests.

Background

In the 1970s, Bugala island had more than 13 natural tropical forest reserves, very fertile soils and abundant water resources (FoE, 2012). The Kalangala district state of environment report (2005) noted that in 2000, forests still provided a variety of ecosystem goods and services, and local communities benefitted from timber, medicinal plants, firewood (Republic of Uganda, 2005), and wood for making boats for deep water fishing and transport. However, since then, up to 10,000 hectares of oil palm has been planted on Bugala island (FoE, 2012, 2013), impacting food and nutrition security, biodiversity and soil quality. Also, natural forests which used to be communal are now either gazetted government forest reserves or privately owned with restricted community access. Deforestation for oil palm has also come with other environmental, social, political and economic consequences for which mitigation measures are urgently needed.

The study included a field visit to Bugala island, interviews with opinion leaders and farmers involved in oil palm or other agricultural activities, 'scenarioing praxis' (Ison et al., 2014), and a review of reports on oil palm impacts, mitigation measures and alternative livelihoods options with ex-post-scenario following a landscape approach (Kusters, 2015). This was followed by a stakeholder workshop and meeting of researchers which gave very useful comments. Results provide guidance to development planning for Buvuma island and other areas targeted for future expansion of the oil palm industry.

Impacts and issues

While some farmers willingly sold their land for oil palm development, others said that they were 'hoodwinked', and not adequately compensated for their land (FoE, 2012, 2013). This indicates that land acquisition processes were unclear, though all citizens have a right to land and democratic means to implement land and other public policies (Olson and Lyson, 1999). This apparently implies a failure to recognize fundamental human rights as stipulated in the 2008 United Nations Declarations on the Rights of Indigenous Peoples (UN, 2008). Furthermore, displacement has led to increased pressure on remaining land for settlement and agriculture, and many smallholder farmers who became landless have had to camp in landing sites, with a shift to (over)fishing due to limited land availability for small scale agriculture and few available jobs, with 95% of oil palm plantation workers being from other parts of Uganda (FoE, 2013) or foreigners. Emigration of especially men has resulted, creating a labour-force vacuum affecting food security and leaving broken families behind.

Forests provide a wide range of benefits ranging from food income and watershed protection (Lipper, 2000), but oil palm expansion has led to deforestation, reduced soil quality, species diversity and increasing carbon emissions (Kaimowitz and Angelsen, 1998). And when forest biodiversity is impacted, many other livelihood options are disturbed. For example, to visit a doctor costs at least US\$2 excluding the cost of drugs and transport, whereas herbal remedies previously available from the forest were free or low cost. Firewood and timber have become scarce with people now dependent on purchased charcoal for cooking at a cost of US\$10 a sack which few can afford. Also, a single piece of hardwood timber once available from the forest can now cost UGX 80,000 (US\$22), imported from DR Congo.

Current oil palm development on Bugala island has disrespected environmental law by failing to conclude an environmental impact assessment and by not consulting with stakeholders (FoE, 2012, 2013). The aim of large scale industrialized agriculture is to meeting food requirements of growing populations, and of course, for investment profits. But as seen from the identified consequences, local people often do not benefit. For instance, priority is given to investors and large scale farmers, though 96% of Ugandan farmers are smallholders with less than two hectares of land (Niwaqaba, 2017). This implies that it would be wise that the government changes its perception of blindly promoting large scale oil palm plantation agriculture, and considers other options of improving livelihoods. But for the emergence of viable long term good practices, there is a need for extensive research and consultation with community leaders, farmers, farmer groups and other market players.

Community views

Farmers on Bugala island found that the best way to mitigate negative impacts from oil palm expansion was to form farmer associations. They would then have a unified and much stronger voice for negotiation, lobbying and advocacy to pursue their aims of no further conversion of forests and forest land to oil palm, to restore degraded landscapes, to advocate for holistic land use planning approaches, and to consider small scale rather than large scale plantations. Kalangala district leaders feel that to mitigate negative impacts of oil palm monoculture, it is important to focus on adequate land use planning, with 'zoning' to separate oil palm from areas left as natural forests or devoted to cropping or animal husbandry. And whereas oil palm spared gazetted forests, the pressure on remaining natural forest resources resulted in massive degradation of gazetted, private and cultural forests, including the near extinction of some very valuable timber

species such as *Manilkara.butugi* (nkalati), *Lovoa brownie* (nkoba) and *Cordia* spp. (mukebu) that were used to make fishing boats.

Some smallholder farmers grow cassava, sweet potatoes, vegetables especially cabbage and aubergines (eggplant), and some fruit trees like mango and jackfruit (Namanji, 2012), improving incomes and food security. Livestock husbandry was identified as the best alternative livelihood option with 15 respondents. The raising pigs, cattle and fish was recommended, on small plots with little investment required, and offers multiple products, quick returns, and sources of protein previously provided only by fishing. The second best alternative was crop cultivation with nine respondents, of coffee and food crops such as maize, banana, cassava, tomato, pumpkin, groundnut, potato, with a good market demand guaranteed due to increased population and pressure on land. The third best alternative was developing different small businesses with two respondents, which is possible without the need for land which is now in short supply.

Agroforestry, sustainable farming and ecotourism

Results indicate a need to advocate the benefits of agroforestry, mixed cropping, and establishing tree nurseries. The case of Sezibwa Agroforestry provides an excellent example, with native trees mixed with high value crops like cocoa, vanilla, cardamom, black pepper, coffee and vegetables. And with its characteristic aroma, Ugandan vanilla is now sought after, and the estate also has a network of several hundred smallholder outgrower farmers. And where many high value native timber trees have been removed, there is growing demand for timber on the islands and mainland. Furthermore, bananas are currently brought into Kalangala from the mainland and sell for not less than UGX 15,000 (US\$3) per bunch. So, farmers can earn good income from such agroforestry systems that offer viable alternatives to oil palm. These could be sustainable if farmers are trained, but on Bugala island, smallholder farming has not performed well because the sandy clay loam soil does not retain water and crop growth is more dependent on rainfall. Also, less available land does not allow rotational agriculture and fallowing as was the case before, so there are additional needs to improve soil fertility.

The 84 islands, beaches and wildlife of Kalangala have high tourism and ecotourism potential. Naidoo and Adamowicz (2005) established that the tropics had high species diversity but low conservation costs compared to the developed world, and in their study on Mabira forest reserve, it was established that investments in an ecotourism centre increased the number of tourists,

with nearby local communities sharing proceeds from the centre. In addition, development in the ecotourism industry creates local jobs. This implies that in areas such as Buvuma Island, instead of deforestation for oil palm plantations, it would be more sustainable to increase forest reserves coupled together with agroforestry provisions that would attract tourists as a way of providing alternative livelihood options. Tourists would also provide a sound alternative market for high value agroforestry products.

Ways forward

Sustainable Development Goal 2 is to 'adopt economic strategies that increasingly build on sustainable best practice technologies, appropriate market incentives, and individual responsibility...and sustainable food systems' (Sachs, 2012). To support this, there is need for advice on sustainable farming for food security and which can be done through offering trainings on sustainable farming systems. This way, people are empowered to utilize their land sustainably without being misled to sell land to large scale industrialized agriculture. In addition, it combines "improving living standards and ecological imperatives" (Sachs, 2012).

However, as the above stated options have failed to materialize to date, the government is resorting to mobilizing smallholder farmers to form associations to produce palm oil with a guaranteed market to BIDCO. This would imply a shared ownership of the project, which would probably help to solve some of the land disputes, empower smallholders towards self-enforcement of effective land rights, and improve incomes through community-commercial agricultural projects. Such an approach worked in Liberia where the indigenous people refused to surrender their land to oil palm companies, but instead, planted oil palm which they sold to the company. However, this option should be taken with caution because oil palm requires high initial investment and is difficult to manage.

The following recommendations could maximize mitigation measures and complementary livelihood options.

1. Organize communities into inclusive multi-sectorial association for roles in environment committee, with direct involvement of local leaders and extension workers.
2. Establish natural forest areas to conserve species at risk, using if possible mechanisms that benefit from carbon credit schemes, and improve land use planning and zoning to limited loss of natural forests to infrastructure development.

3. Create more awareness about the value of existing tree species and their market potential, prepare silviculture knowledge of native forest species and share with communities, and establish native tree species nurseries for restoration and agroforestry, and make them accessible especially to women.
4. Provide secure land tenure to forest communities through certification of sustainable management, such as RSPO for palm oil, and FSC for timber.
5. Promote agroforestry, and provide knowledge and planting materials for alternative shade tolerant high value crops like coffee, cocoa, cardamom, vanilla, black pepper, rattans, and yams, and develop forest ecosystems into an ecotourism product.

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Implications of land tenure laws for ensuring the sustainable management of forested landscapes alongside planned oil palm expansion in Buvuma



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Summary

This paper examines land tenure, laws and regulations, acquisition and management, implications for sustainable management of forested landscapes amidst expanding commercial agriculture. The study draws lessons from the experience of large-scale oil palm development in Bugala island, Kalangala district, and uses these to highlight issues related to land use changes and land use planning that should be considered or applied in Buvuma island, where large scale oil palm development is foreseen. The predominant land tenure systems in Buvuma island

are mailo, freehold and leasehold, with almost no customary tenure. However, historical injustices created by mailo land tenure need to be streamlined, along with lawful and bona fide occupancy needs for tenants to avoid unnecessary land conflicts amidst expanding commercial agriculture.

Land tenure

Uganda's land tenure has been provided for by the Constitution and other laws. Article 237(3) states that "Land in Uganda shall be owned in accordance with the following land tenure systems: customary; freehold; mailo; and leasehold", buttressed in Section 2 of the Land Act (Cap. 227) which states that "Subject to Article 237 of the constitution, all land in Uganda shall vest in the citizens of Uganda and shall be owned in accordance with the following land tenure system: (a) customary; (b) freehold; (c) mailo; and (d) leasehold.", and the Land Act goes on to explain the meaning of each.

- Customary tenure – a system of land tenure regulated by customary rules, which are limited in their operation to a particular description or class of persons...
- Freehold land tenure – holding of registered land in perpetuity subject to statutory and common law...
- Mailo land tenure – the holding of registered land in perpetuity and having roots in the allotment of land pursuant to the 1900 Uganda Agreement and subject to statutory qualifications...
- Leasehold land tenure – the holding of land for a given period from a specified date of commencement, on such terms and conditions as may be agreed upon by the lessor and lessee...

Most land in Buvuma is under mailo tenure, followed by freehold from public lands, and leasehold, with customary land almost non-existent (Oloka-Onyango, 2017). In Buvuma and Buganda islands, the 1900 Agreement that created mailo created a landless class of squatters on what was originally their land, referred to as "lawful and bona fide occupants" of mailo, freehold or leasehold land who shall enjoy security of occupancy. In a bid to harmonize relationships between lawful and bona fide occupants and landlords of mailo, freehold and leasehold land on which the former enjoyed security of tenure, the government was required to enact a law to "regulate the relationship between the lawful and bona fide occupants of land referred to in clause (8) of this article and the registered owners of that land"; and to "provide for the acquisition of registrable interest in the land by the occupant."

In July 1998, parliament passed the Land Act, "...to provide for the tenure, ownership and management of land; to amend and consolidate the law relating to tenure, ownership and management of land; and to provide for other related or incidental matters." As mandated under Article 237 of the Constitution, the Land Act has defined lawful and bona fide occupants as a "lawful occupant", or "bona fide occupant". It is key to note, that "a person

on land on the basis of a license from the registered owner shall not be taken to be a lawful or bona fide occupant under this section." Similarly, "any person who has purchased or otherwise acquired the interest of the person qualified to be a bona fide occupant under this section shall be taken to be a bona fide occupant for the purposes of this Act." Just like lawful and bona fide occupants, a tenant by occupancy on a registered land shall enjoy security of occupancy on the land, may be issued with a certificate of occupancy, and also has the option of purchase. This is the common land tenure arrangement in Buvuma district where large scale oil palm development is foreseen.

Laws and regulations

Several laws and regulations govern land tenures in Uganda, mainly determined by the land tenure itself, the nature of the land, and the land use. Natural resource law is another relevant branch that primarily concerns the planning, rational exploitation, use, control and protection of various natural resources, focusing on the regulation of forestry, wildlife, mineral, oil and gas, marine and fisheries resources. In the context of Buvuma island and oil palm, natural resource management play a crucial role, and related law also handle contemporary legal issues in ownership, trusteeship, sustainable use and regulation of natural resources. Legal and policy frameworks for managing natural resources such as forests, wetlands, water, fisheries are largely regulated by law, and the Constitution and Land Act offer guidance. Parliament shall, by law, provide for measures intended (a) to protect and preserve the environment from abuse, pollution and degradation; (b) to manage the environment for sustainable development; and (c) to promote environmental awareness.

The above follows constitutional requirements which state that the "government may, under laws made by Parliament and policies made from time to time, regulate the use of land." In a bid to operationalize national law, Parliament passed the National Environment Act in 1995. Laws since passed under this include Environmental Impact Assessment Regulations (1998), National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations (1999), National Environment (Waste Management) Regulations (1999), and National Environment Regulations Wetlands, Riverbanks and Lakeshores Management, (2000). All of the above were intended to balance competing interests on land use (Kasimbazi, 2012). Lastly, the Land Act states that "a person who owns or occupies land shall manage and utilize the land in accordance with the Forests Act, the Mining Act, the National Environment Act, the Water Act, the Uganda Wildlife Act and any other law." Land use in

Uganda is regulated by a number of laws and regulations, some of which are analysed in more detail below.

Acquisition and management

The Constitution, the Land Act and other laws and regulations, regulate acquisition and management of land. The 1965 Land Acquisition Act makes “provision for the compulsory acquisition of land for public purposes and for matters incidental thereto and connected.” The Constitution states that land in Uganda belongs to the citizens of Uganda, and shall vest in them in accordance with the land tenure systems provided for in the Constitution. Then, notwithstanding clause (1) of this article, the government may, subject to Article 26, acquire land in the public interest; though conditions governing such acquisition shall be as prescribed by Parliament, and (b) government as determined by Parliament shall hold it in trust for the people and to protect natural lakes, rivers, wetlands, forest and game reserves, national parks, and any land reserved for ecological and touristic purposes for the common good of all citizens (Constitution of Uganda, 1995, Article 237). The acquisition of land in Buvuma has also been distorted by land dealers and brokers who tend to work for profit (Serunkuma and Batte Lule, 2017). Land injustice remains not only a challenge in Buvuma with the introduction of oil palm but is also a nationwide challenge (Ojok and Ameny, 2017). Land grabbing and injustice usually pits the poor against the rich individuals or companies (Kabura and Tuhaise, 2017).

Land in Uganda belongs to its citizens, thus, any acquisition whether by the government or a private entity must comply with the requirements of Article 26. (1) Every person has a right to own property either individually or in association with others. (2) No person shall be compulsorily deprived of property or any interest in or right over property of any description except where the following conditions are satisfied, by (a) the taking of possession or acquisition is necessary for public use or in the interest of defence, public safety, public order, public morality or public health; and (b) the compulsory taking of possession or acquisition of property is made under a law which makes provision for (i) prompt payment of fair and adequate compensation, prior to the taking of possession or acquisition of the property; and (ii) a right of access to a court of law by any person who has an interest or right over the property.

Article 26 of the Constitution is buttressed by Section 42 of the Land Act that states that “Government or local government may acquire land in accordance with article 26 and 237(2) of the Constitution”. But this has been the subject of intense media debate after the introduction of the Constitution (Amendment) Bill, 2017 that proposes

to insert a new clause in Article 26 to allow national or local government to forcefully take possession, via court compensation (Uganda Law Society, 2017). The proposed amendment was criticized as being unconstitutional by constitutional law experts (Oloka-Onyango, 2017), though it remains clear that any land acquisition by government or private entities must meet requirements of Article 26 of the Constitution. But in the case of *Advocates for Natural Resources Governance and Development & Anor v. Attorney General*, the Constitutional Court declared Section 7 of the Land Acquisition Act unconstitutional and inconsistent with Article 26(2) of the Constitution.

In *Sheema Cooperative Ranching Society and 31 Others v. Attorney General*, the High Court held that the government did not follow the (proper) procedure of compulsory acquisition of the suit land laid down in the law and, as such, the acquisition was unlawful. In *Bataringaya v. Attorney General*, the defendant’s compulsory acquisition of the plaintiff’s land was found to be inherently unlawful insofar as it was done without prior adequate compensation as required by Article 26 of the Constitution. And lastly, in *Onegi Obel & Anor vs. Attorney General & Gulu District Land Board*, the High Court emphasised the importance of following due process as given in the Constitution and the Land Act before government can take over land for public works. The courts of law have played a pivotal role in ensuring there is adequate compensation for compulsory acquisition of land in Uganda at least by way of redress (Nakayi and Twesiime-Kiryia, 2017).

The Land Acquisition Act does not provide for prior payment of compensation before government compulsorily acquires or takes possession of any person’s property (Resty, 2015), and must be seen in conjunction with Article 2(2) of the Constitution which states that “If any other law or any custom is inconsistent with any of the provisions of this constitution, the Constitution shall prevail, and that other law or custom shall, to the extent of the inconsistency, be void.”

Similarly, in interpreting laws such as the 1965 Land Acquisition Act which pre-date the 1995 Constitution, they must follow Article 2(2) and Article 274, which stated that existing law shall be construed with such modifications, adaptations, qualification and exceptions as necessary to bring it into conformity with the Constitution. Second, ‘existing law’ means that written and unwritten law existed before the Constitution, including enacted Acts, Statutes or statutory instruments made before that date, and all entities in charge of acquiring land for oil palm plantations in Buvuma must heed the above laws. In addition, understanding the effects of oil palm expansion on Bugala for land use planning is very relevant for Buvuma island

where a similar project is soon to be rolled out. Oil palm has replaced tropical forests leading to deforestation and a reduction to biodiversity (Vijay et al., 2016). And in Buvuma where large-scale oil palm development is foreseen, land-use change is one of the greatest threats to biodiversity.

A summary of legal instruments, subsidiary legislation and cases

Legal instruments

- Ankole Landlord and Tenant Law of 1937
- Busuulu and Envujjo Law of 1928
- Constitution of the Republic of Uganda, 1995 (Amended)
- Forests Act, Cap 147
- Land Acquisition Act 1965, Cap 226
- Land Act, Cap 227
- Mining Act, No. 9 of 2003
- National Environment Act, 1995, Cap 153
- National Forestry and Tree Planting Act, No. 8, 2003
- Toro Landlord and Tenant Law of 1937
- Uganda Wildlife Act, 1996 Cap 2000
- Water Act, Cap 152

Subsidiary legislation

- Environmental Impact Assessment Regulations, 1998.
- National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999.
- National Environment (Waste Management) Regulations, 1999.
- National Environment Regulations Wetlands, Riverbanks and Lakeshores Management, 2000.
- National Forestry and Tree Planting Regulations, 2003.

Cases

- Advocates for Natural Resources Governance and Development and Anor v. Attorney General, Const. Petition No. 40/2013.
- Bataringaya v. Attorney General, High Court Civil Suit No. 250/2011.
- Sheema Cooperative Ranching Society and 31 Others v. Attorney General, High Court Civil Suit No. 103/2010.
- Onegi Obel and Anor v. Attorney General and Gulu District Land Board, High Court Civil Suit No. 0066/2002.

Conclusions

Based on experiences in Kalangala, the introduction and expansion of oil palm growing in Buvuma district is likely to lead to widespread evictions. Furthermore, research findings point to the fact that oil palm expansion on Bugala has already had an effect on Buvuma district where large-scale oil palm development is foreseen but not yet initiated. The question of tenure security on land in Buvuma and Buganda under the mailo tenure system is largely historical and a creation of the colonial era (West, 1964), and there is an urgent need to harmonize Uganda's land laws with investment needs, and the government's own Vision 2020 (Mugambwa, 2002). Uganda's land tenure, laws and regulations regarding land acquisition and management have multiple implications for the sustainable management of forested landscapes amidst expanding commercial agriculture. Uganda has the laws and regulations to address the key issues, but implementation in Bugala appears to have failed thus far, but the lesson learnt should be used to help Buvuma. Land owners and land users in Buvuma must be made aware of the national laws and regulations relating to land use and access in Uganda, and seemingly unconstitutional land laws such as the Land Acquisition Act need to be re-interpreted in line with the Constitution, and ultimately, may require amending.

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