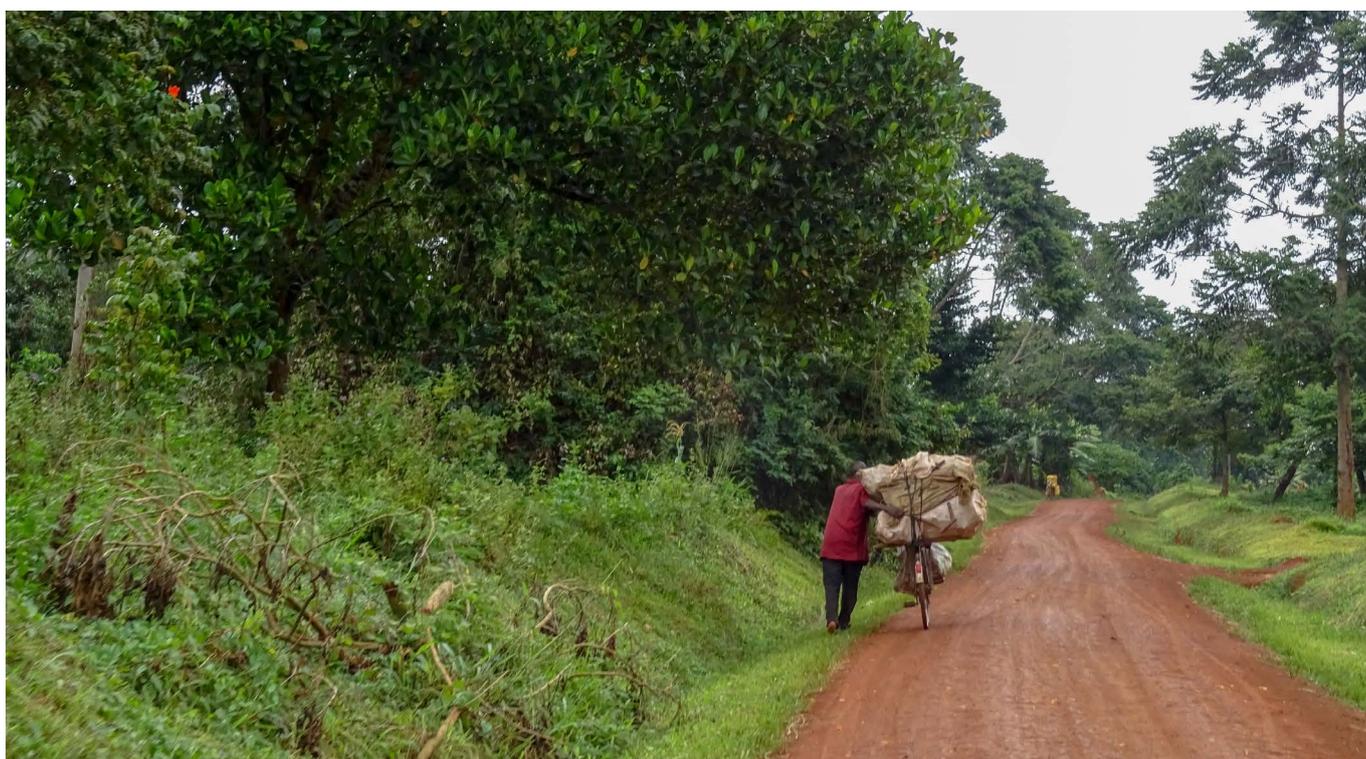


Comparison of the economic and social benefits of central forest reserves and oil palm plantations in Kalangala



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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.

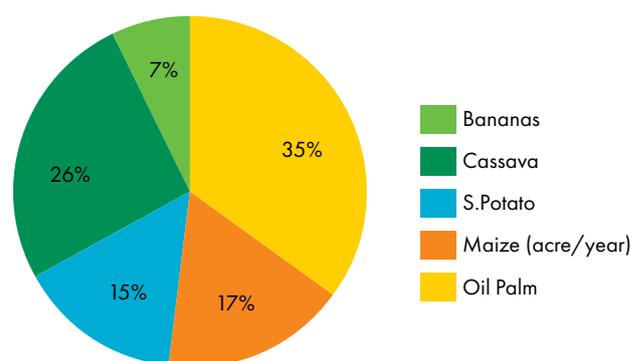
The study was undertaken on Bugala island, the largest in Kalangala district where historically, fishing has been the main economic activity. However, in mid-2000's commercial oil palm growing was introduced on Bugala island as an alternative economic activity and now covers up to 10,000 ha. The government 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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