

# Impact of oil palm on land cover and land use in Kalangala and Buvuma – trends and future predictions

The introduction and expansion of oil palm on Uganda's Lake Victoria islands show that on Kalangala, oil palm has replaced much of natural forest, while on Buvuma it will replace subsistence farming and therefore have major impacts on food production and community livelihoods. Adequate and timely land-use planning should have been applied to ensure food security and minimize environmental impacts, and should be emphasized in the future.

This policy brief summarizes detailed research on the impacts of land cover/use planning oversights, and makes recommendation to the main players while forecasting future trends.

## Recommendations

Oil palm has been produced in Kalangala for over 12 years, with many lessons learned. But to ensure mistakes are not repeated in Buvuma where planting is yet to begin, actions are needed by the government, donors and BIDCO.

1. Develop effective land-use planning at landscape level in close consultation with communities and local government, and implement so that the remaining land is optimally used for food and fuel security and alternative livelihoods (agriculture, community woodlots, tourism, forestry, etc.).
2. Ensure that the remaining protected forests are better conserved, and/or that sustainable forest management practices are implemented.
3. Enforce existing laws on protecting wetlands (section 107 of the National Environmental Act, Cap 153), and sensitive areas included in National Environment Act (Wetlands, River Banks Shore Lines) No. 3/2000.
4. Enforce the 200 m lakeside buffer zone and undertake sensitization of what is/isn't allowed in this area. Demarcate with marker stones, especially in Buvuma where plantations are yet to be established, and monitor closely to ensure compliance.
5. Rehabilitate degraded gazetted protected forests and riparian/ buffer zones through enrichment planting, and consider re-planting of forest buffer zones where they have been erased to avoid hard boundaries.

## Main findings

**Kalangala** – Fully stocked tropical high forests have been significantly displaced by oil palm on Bugala Island since 2000, declining from 58% to 20%, while oil palm increased from 0 to 28%. Grasslands were also significantly reduced by more than half. Modelling future changes to 2030 predicted an increase in oil palm from 28% to 36%, with losses in all other land uses. In addition, oil palm plantations surround most remaining tropical high forests, creating hard boundaries without buffers that make the forests more vulnerable to edge disturbance.

**Buvuma** – Conversion of land cover from natural vegetation to (mainly) subsistence farmland has been indiscriminate on Buvuma Island resulting in complete obliteration of some forest reserves, with some now entirely under subsistence agriculture and settlement. The obliteration was accelerated by the announcement of the new oil palm project in 2005. Evictions of communities previously occupying Mabira and Butamira Forest Reserves on the mainland also led to a population influx that decimated natural vegetation and riparian/buffer zones, converting them to subsistence farmland. Actualization of the oil palm project to the proposed scale will reduce agricultural land by 50% (see map on page 3) leaving areas that include unsuitable shallow and rocky areas. This will have serious implications on the supply of food and the general livelihoods of local communities.

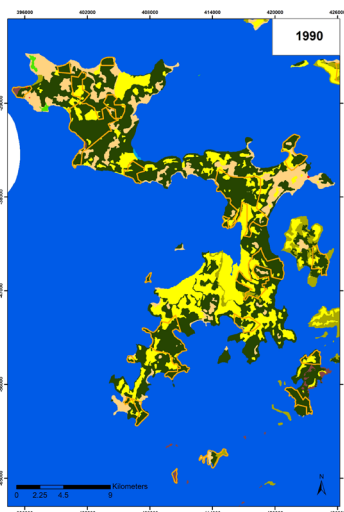
**Comparison of land cover/use between Bugala and Buvuma islands** – There is more riparian/buffer zone vegetation in Kalangala, whereas 68% consisted of natural vegetation including tropical high forest, woodland, bushland, impediments and grassland, Buvuma had only 39% of the coastal buffer zone with natural vegetation with the rest being subsistence farmland. Additionally, remaining forest reserves are generally better protected in Kalangala than in Buvuma, but however, with increasing pressure. Protected forests in Kalangala have relatively fully stocked tropical high forest whereas the few remaining forest reserves in Buvuma are all degraded. Prediction models illustrate that most of the remaining forest in Buvuma would be lost by 2030 even in the event of no oil palm with major implications on ecosystem services. However, the model projects minimal agriculture in the event of full scale implementation of oil palm project, bringing doubts of strained food security and livelihoods.

**Implications** – To improve the living standards of communities without compromising the natural resource base or hindering implementation of planned projects, an integrated approach is required that factors in food security and ecosystem services through participatory land use planning including all stakeholders. Rehabilitation of degraded forest reserves and riparian buffers through restoration efforts can further enhance community buy-in.

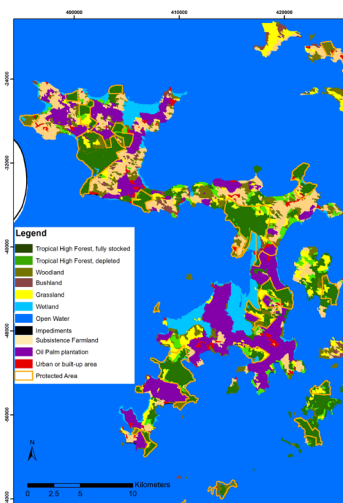
### Bugala island, Kalangala

The most significant changes in Bugala island, Kalangala district, between 1990 and 2017 was the reduction in fully stocked tropical high forest, declining from 58% of total area in 1990 to just 20% by 2017, while oil palm increased from 0 to 28% in the same period.

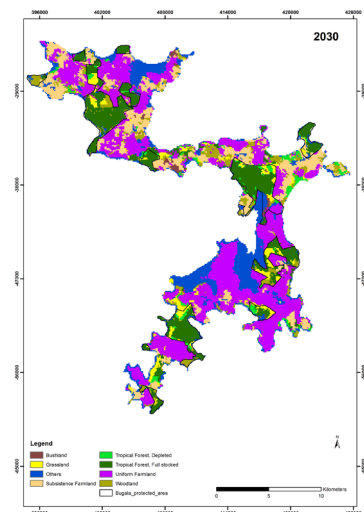
1990



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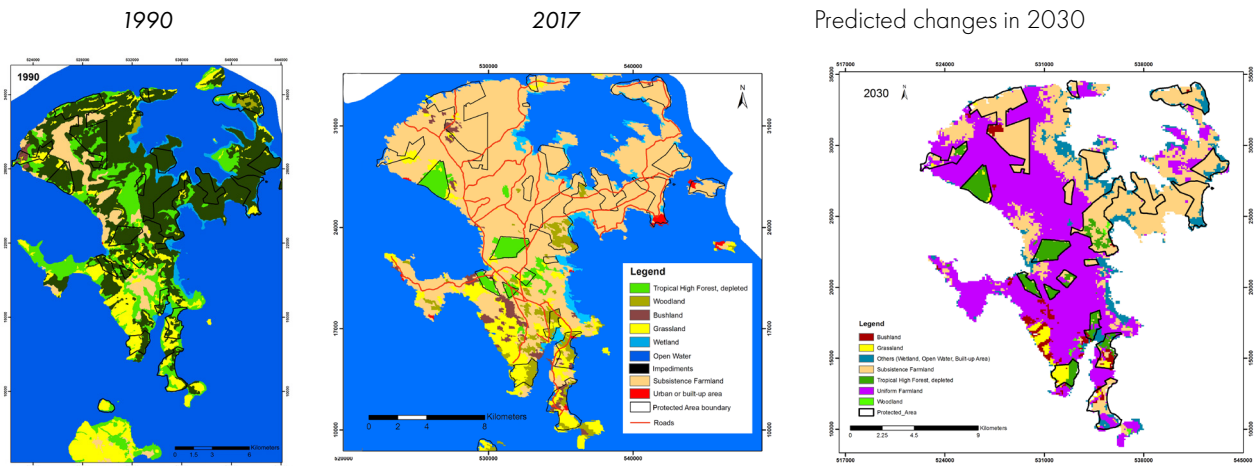


Predicted changes in 2030



## Buvuma island, Buvuma

On Buvuma, the largest changes were the increase of subsistence farmland from 8% to 72% between 1990 and 2017, while the 53% of fully stocked tropical high forest in 1990 had been entirely eliminated by 2005.



## Methodology

This assessment undertaken in July-August 2018 involved the collation of Landsat satellite images obtained from the National Forestry Authority, verified by extensive ground-truthing in both districts, and other field observations. The CLUMondo model using logistic regression was used to make predictions on future land use changes. This contributes to our understanding

of the impacts of oil palm development in Kalangala, and especially on conversion of natural forests and non-compliance regarding respect for the 200 m riparian buffer zone. Projections should be used to guide further developments, especially regarding the proposed implementation of the new ten-year National Oil Palm Project (NOPP).

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