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Oil palms and primates can hardly co-exist in Africa

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ABSTRACT

The recent conversion of land to oil palm crops has produced catastrophic effects in Southeast Asia. Shocking images of orangutans left with no home, together with health awareness campaigns, have already reduced the consumption of palm oil based products, and steered food companies towards product lines "palm oil free". But will this be enough to preserve primates populations?

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Future trajectories of global population growth, and the associated demand for vegetable-based oils (biofuels) for human consumption make it evident that the expansion of oil palm cultivation will hardly slow down in the next 50 years. It is forecasted that a substantial portion of such expansion will take place in Africa, which has, to date, played a minor role in the large-scale palm oil industry, and that might see this as an important opportunity for economic development.

Where in Africa will this most likely happen? What will be the impacts of land conversion on natural habitat? Is there room for reconciling the economic development - and satisfy the global demand - while minimizing the detrimental effects on biodiversity? More specifically, is there any land whose conversion to oil palm crop could offer a fair compromise between profit and conservation targets? To tackle all of these questions we investigated the issue focusing on African primates, looking for potential 'areas of compromise', i.e. lands combining high suitability to grow oil palm (i.e. ensuring high yield under regular agricultural practices), and low conservation priority for primates (i.e. hosting a small number of not endangered species).

We found that such areas of compromise across the continent cover only 0.13 Mha. This indicates that Africa could contribute to just 0.2% of predicted

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future land demand (accounting for both alimentary use and biofuel production) without experiencing harsh effects on its biodiversity. It should also be considered that primates play fundamental roles in ecosystems (for example as fruit dispersers), making them important proxies for species richness and community complexity. Thus, it is reasonable to assume that our findings can be extended to the overall African biodiversity.

This worrisome result, however, represents only a static picture of the potential impact of oil palm plantations on Africa's ecosystems. Expansion will not happen at once, and not all land where oil palm can grow will be converted to this crop. Furthermore, the way expansion will take place (i.e. where, and when) will have a huge importance for conservation, potentially leading to very different trajectories of primates' habitat losses. For example, under the most optimistic (and fairly unrealistic) scenario, land conversion to oil palm will happen with the explicit target to minimize ecological impact on primates. That is, lands having fewer, less vulnerable species will be converted before land hosting higher diversity and/or more vulnerable species. Other scenarios might include more realistic assumptions, where profit oriented thinking prevails over conservation considerations. For instance, it is likely that land highly suitable and capable of securing high yield, will be the first choice for investors, but other factors, such as transportation accessibility might drive the expansion quite far from conservation targets. By exploring multiple, alternative scenarios we have found a strong confirmation to the warning message provided by the extremely small extent of areas of compromise. Even if conservation targets will be given high priority in the plannings, the effects on primates will be explosive, with more than five primate species losing 1,000 ha of range for every 1,000 ha of land conversion, and could get as high as 11 in a scenario where maximizing yield is the most important criterion, regardless of primate diversity/vulnerability.

These findings provide strong arguments that converting land to oil palm crops will have unavoidable, detrimental effects on African biodiversity. This leaves us short with possible solutions. Unless, of course, we go for the most obvious one: reducing global demand, so to limit the need for additional land. As shown by a starting change in the market, with the 'palm oil free' stamp increasingly appearing on many products, consumers have the power to help achieving such target. However, replacing oil palm with less productive oleaginous (soya, rapeseed), should not be considered as a solution, because it would potentially require more land elsewhere. Making environmentally responsible choices in our daily habits does not mean changing a commercial snack for a seemingly 'greener' one. Renouncing (junk) food we do not really need is the way to go. Palm oil can be found in half of all packaged products sold in the supermarket, but how many of those do we really need? Renouncing to at least some of them could be a healthy choice for both humans and the planet. This could be an important game changer but, unfortunately, our simulations reveal that it will not provide a final solution to the issue. The future of oil palm production will be also strongly affected by the largely uncertain future of biofuel demand, over which consumers' power is much more limited than over deciding whether or not to have an afternoon snack.