# The fate of tropical forests associated to the demographic explosion in Africa.

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**Abstract**

1. A large proportion of Africa's population relies on forests for livelihood. In the context of Africa's demographic explosion, what would be the fate of tropical forests on this continent at the end of the 21st century?

2. Using three different deforestation data-sets (from FAO Forest Resources Assessment, Global Forest Watch and JRC TREES project), we modelled tropical deforestation accounting for population growth in Africa. We used data at the national level for all African countries.

3. Fitting a linear mixed model (R2 $>$ 90% for log-transformed variables), we showed that the absolute deforestation (in ha) increased significantly with the area of remaining intact forest (in ha) and the population size (in number of people). We also estimated a historical mean absolute deforestation (in ha) per country, independent of the forest and population sizes.

4. Using our model and the United Nations population projections until 2100, we forecasted the likely evolution of the forest cover for each African country following a "business-as-usual" scenario.

5. Our results show that most African countries should experience a decrease of the deforestation speed after 2050 due to the demographic transition and a reduction in arable land availability. Despite this dynamics, we show that many countries with high biodiversity (such as Madagascar, Mozambique, Uganda and Tanzania) are likely to lose more than 50% of their forest during the 21st century, with different percentages of residual intact forest per country at the end of the century. Gabon, Cameroon and Central African Republic are the only countries that should experience a moderate decrease of their forest cover ($<$ 25%).

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6. Conclusion: Such projections are alarming for local populations, biodiversity conservation and climate-change. To avoid this scenario, policy makers and stakeholders should take rapid decisions to effectively curb deforestation in African tropical countries.

**Keywords:** Africa, biodiversity, demogaphic growth, tropical deforestation, scenarios