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How sustainable is fuelwood use in Africa?

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If properly managed, the use of fuelwood for heating and cooking is often considered as sustainable; Africa, may be an exception to this rule. The reliance on fuelwood in Africa as a primary energy source by a significant proportion of the population, combined with rapid population growth means that population growth equates to increased pressure on woody biomass resources, even if technological advances in other energy sources (such as solar, wind, improved stoves) reduce the per capita demands for this fuel. Furthermore, a changing climate may change the spatial and temporal patterns of woody biomass production.
In this study we used simple models to predict the future fuelwood consumption on the basis of population growth estimates from the UN [UNDESA, 2012] combined with established fuelwood consumption patterns from FAO [FaoStat, 2012], and changes in accessible biomass for Africa for the next70 years, in response to climate change scenarios [Hijmans et al., 2005; Ramirez and Jarvis, 2010].
We combine estimates of the currently available woody biomass [Saatchi et al., 2011], and demand in an indicator which we refer to as depletion time. This is a measure of the time needed before all biomass is consumed, assuming no regrowth – a depletion time of 10 years will call for very fast growing sources of woody biomass to meet need, whereas areas with a depletion time of more than 200 years may be satisfied with much slower growing sources. The depletion time for any given country may change as the need for fuelwood changes, and the availability of biomass changes.
Currently, about 10 African states have depletion times under 50 years, and about 20 states have depletion times of over 200 years. By 2050, our estimates indicate that at least 15 countries will have depletion times under 50 years, and some of them even under 10 years, and at least 5 countries will have slipped out of the 200+ year class into shorter depletion times … indeed over 15 countries show depletion times accelerating by a factor of 3 to 5 between now and 2050. For these reasons, we do question fuelwood as a sustainable future energy source in Africa.
This study is based on simple models, and we must acknowledge that these initial results are most likely negatively biased for several reasons. With the main results we will discuss the possible shortcomings and relate our results to some studies with more positive assessments of the fuelwood sustainability.

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