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Will savannas survive outside the parks? A lesson from Zambia

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Miombo woodlands cover the transition zone between dry open savannas and moist forests in Southern Africa. They cover about 2.7 million km2 in southern Africa and provide many ecosystem services that support rural life, including medical products, wild foods, construction timber and fuel.

In Zambia, as in many of its neighbouring countries, miombo woodlands are currently experiencing accelerating degradation and clearing, mostly with charcoal production as the initial driver. Domestic energy needs in the growing urban areas are largely satisfied by charcoal, which is less energy-efficient fuel on a tree-to-table basis than the firewood that is used in rural areas, but has a higher energy density and is thus cheaper to transport.

This study uses data from inventories and from eddy covariance measurements of carbon exchange to characterize the impact of charcoal production on miombo woodlands. We address the following questions: (i) how much carbon is lost at local as well as at national scale and (ii) does forest degradation result in the loss of a carbon sink? On the basis of our data we (iii) estimate the per capita emissions through deforestation and forest degradation in Zambia and relate it to fossil fuel emissions. Furthermore, (iv) a rough estimate of the energy that is provided by charcoal production to private households at a national level is calculated and (v) options for alternative energy supply to private households are discussed.