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Can Small-scale Farmers Sustain Household Energy Requirements from On-farm Produce? A Case from the Uluguru Mountains of Tanzania

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Abstract

Uluguru Mountains are part of the Eastern Arc Mountains of Tanzania (EAM) an ecosystem of global importance among the 25 most important "biodiversity hotspots in the world". The EAM and its watersheds cover an area of 343,229 km^2, carrying most of the national forest nature reserves, which according to the Tanzania Forest Act of 2002 is covered by the highest level of habitat protection. These conservation measures have major impact on the livelihoods of surrounding communities who are dependent on forest services such as fuel-wood, timber, thatching grass, or forages. Excluding rural communities from these forest resources without alternative income and energy sources is a major challenge to livelihoods and sustainability of conservation programs, because for years such communities have accrued up to 70 % of income and over 90 % of the household energy requirement for cooking from forests resources.

Tandai, a village within the Uluguru Nature Reserve (UNR) and Kitumbatu forests margins represents the case described above where the surrounding forests are under high protection. The two forests reserve areas are characterised by high biodiversity with UNR carrying more than 135 endemic species of plants. Formation of the Uluguru Nature Reserve (24,115 ha) in November 2008 has huge implications on the livelihoods of the village population as they are not allowed to extract any kind of forest products from the forest reserves.

Tandai village household energy demand in terms of fuel wood is estimated at 5 Mt per year, which has to be obtained through on-farm production or from the forest reserve. Some farmers own small woodlots serving as sources of firewood for cooking, timber for construction purposes or for selling. The alternative is to buy wood from outside and/or switching to alternative biomass energy sources such as locally produced liquid biofuel. To analyse the energy demand and supply patterns and its constraints a sample of 350 households (37 % of total households) from Tandai village is used to undertake wood value chain analysis and assess the bio-energy production potential of existing on-farm agroforestry systems as part of a project studying biofuel energy technological efficiencies in Tanzania.

Keywords: Agroforestry, bio-energy, conservation, forest degradation, fuel-wood, small-scale farmers

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