



Transforming lives and landscapes

Agroforestry can improve the livelihoods of smallholder farmers as well as provide many services to the environment.

The World Agroforestry Centre conducts research into how trees on farms can address poverty and environmental problems in six regions of the world: Eastern, Southern, West and Central Africa; South Asia; Southeast Asia; and Latin America.



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Livelihood benefits	Environmental benefits
<ul style="list-style-type: none"> Fruit and nuts Fuel wood Timber Medicine Fodder for livestock Green fertilizers Assets that can be sold in times of need Additional / diversified income 	<ul style="list-style-type: none"> Carbon storage Prevent wind and soil erosion Watershed protection Shade Increase biodiversity Improve water retention



Conserving medicinal trees

Important medicinal tree species are threatened in the wild by over harvesting.

The World Agroforestry Centre is working with herbalists to identify the most important medicinal species to conserve in the Mount Kenya area. The aim is to help farmers cultivate these trees on their farms so that natural forests are protected and there is an ongoing supply of medicines.

Warburgia ugandensis is a valuable but threatened medicinal tree in East and Central Africa. It has important antibacterial and antifungal properties. Like all species, there needs to be a healthy and diverse population of the trees to ensure genetic diversity.

The World Agroforestry Centre is studying the genetic diversity of *Warburgia* in order to guide farmers on collecting seeds or other planting material from a wide range of parents. This will ensure the species is conserved into the future.



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Keeping biodiversity on coffee farms

If smallholder coffee farmers in the Mount Kenya area continue to have poor crops they may stop growing coffee.

This could have a negative effect on biodiversity because coffee is often grown in agroforestry systems that include a diverse range of trees.

The World Agroforestry Centre is carrying out an inventory of tree species grown within smallholder coffee systems around Mount Kenya. Scientists will analyse how a decline or expansion of this cash crop will affect tree density and diversity on farms. The study will recommend how to support biodiversity conservation on coffee farms.



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Measuring carbon in live trees

If smallholder farmers are to benefit from carbon markets by growing trees on their farms, there needs to be a quick, easy and reliable way to measure wood density and carbon in tropical trees.

The usual way of measuring carbon stored in a tree is to cut the tree down, take samples of different parts of the tree, dry them and then calculate the biomass.

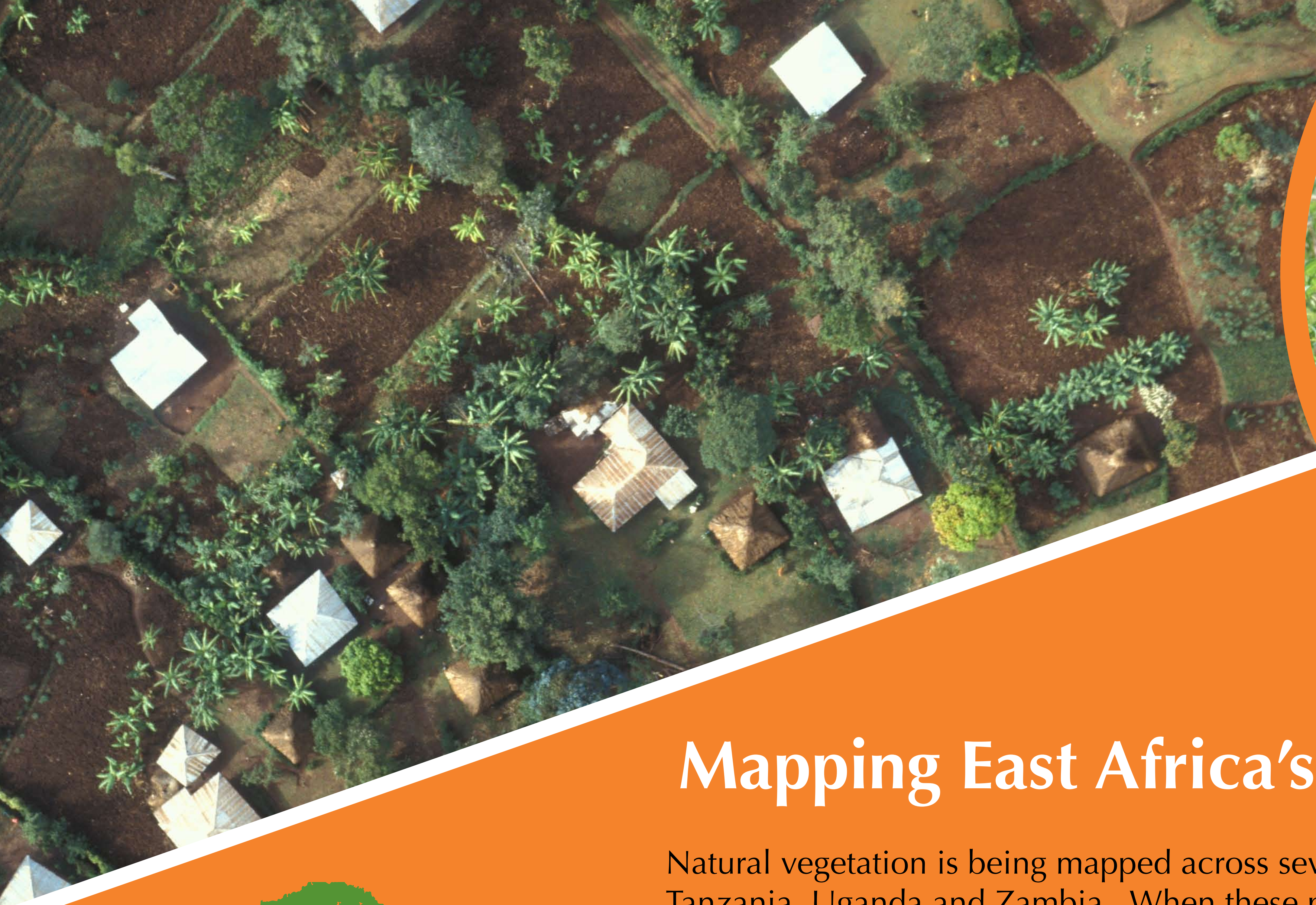
Scientists from the World Agroforestry Centre are developing new models which measure the tree structure, allowing timber volume to be calculated without harming the tree. If scientists know the timber volume as well as the wood density and carbon content then they can make reliable estimates for the amount of carbon stored in each tree. Working in Kenya's Rift Valley, they also hope to better understand how wood density and carbon vary between and within species.



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Mapping East Africa's vegetation

Natural vegetation is being mapped across seven countries: Ethiopia, Kenya, Malawi, Rwanda, Tanzania, Uganda and Zambia . When these printed and electronic interactive maps are made publically available, it will provide important information on what types of tree species are suitable and how this might be affected by climate change.

The maps will help farmers decide what to plant on their land now and in the future to improve their livelihoods and incomes. They may also help to identify areas that are a priority for biodiversity conservation.

The VECEA (Vegetation and Climate Change in Eastern Africa) project is a collaboration between the World Agroforestry Centre, Forest and Landscape Denmark and botanists from seven African countries. The work is funded by the Rockefeller Foundation.



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