



A PLATFORM FOR STAKEHOLDERS IN AFRICAN FORESTRY

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# POLICY BRIEF

## CLIMATE CHANGE AND THE WOODLANDS OF AFRICA

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Even though mature woodlands are considered to be in a steady state with respect to carbon balance, many of these woodlands have been disturbed in the past by man. Under good management, such relatively mature woodlands have the potential to accumulate additional carbon in woody biomass and soil while maintaining existing carbon stocks, and thereby contributing to climate change mitigation and stabilization. Threats to African woodlands include (i) their conversion to cropland, arising from population growth and economic policies, (ii) urbanization, (iii) over dependence on wood-based energy sources, (iv) unsustainable harvesting of wood products, (v) fire and (vi) climate change and variability. From 1990 to 2000, it was estimated that woodland countries in sub-Saharan Africa lost nearly 5 million ha of forest cover annually; that is nearly 1.7% of the forest cover in 2000 (FAO, 2005).

### THE CHALLENGE

Currently evidence suggests that the climate in eastern and southern Africa is warming at a rate of 0.25 - 0.5°C per decade. Undoubtedly, African woodlands will be increasingly subjected to climate drying and warming in the 21st century, perhaps with some marked changes in the distribution and extent of woodlands and their constituent species. But such effects have also got to be seen in the context of equally, or more rapid changes in land use resulting from intensification and increased population pressures. Consequently climate change, fire and increased human impacts on woodlands are likely to be intertwined, and it is difficult to predict with certainty and in detail what the consequences will be. Nevertheless, emerging evidence suggests that climate warming might reduce overall plant production in woodlands of east and southern Africa, while increasing temperatures in southern Africa are

predicted to either extend the growing season in some ecosystems or shorten it in some others.

Adaptation to climate change is primarily aimed at tackling localized impacts of climate change, while mitigation addresses the impacts on the climate system. Adaptation is therefore perceived to have the potential to reduce adverse effects of climate change but not necessarily prevent all the damage caused by it (Hulme, 2005).

### A POLICY SOLUTION

Reliance on wild food sources during times of crop failure is considered an adaptation to climate change; but with the predicted decline in fruit production in many woodland trees due to climate warming (Chapman et al., 2005), the role of this coping strategy is likely to decline. One potential adaptive strategy for dealing with such a future reduction in wild food production is to plant more indigenous fruit trees in order to

increase tree populations and reduce the impact of low fruit production in the wild that is likely to be caused by climate warming.

The most promising adaptation strategies to the declining tree resources in sub-Saharan African countries include natural regeneration of local species, sustainable forest management, and community-based natural resources management (Desanker and Magadza, 2001). However, the success of such strategies generally depend on the ability of local people to exercise power to inventory and manage local resources in systems of community-based natural resources management. Adaptive strategies will have to include changes in harvesting regimes to reduce overexploitation, including imposition of longer cutting cycles for timber, and possibly allocation of larger areas dedicated to forest management, in order to ensure adequate yields to meet local expectations under community-based forest management models.

# EXISTING POLICIES

A number of additional opportunities exist in support of sustainable management of African woodlands. Woodlands in sub-Saharan Africa are thinly populated with an overall density of 1.7 ha of woodland per person in 2000 (FAO, 2005). The lowest density of 2.9 ha per person is found in southern Africa and the highest density of 0.5 ha per person occurs in northeast Africa. A total of 5.2 million ha have been designated as forest protected areas in woodland countries in Africa, which represented only 1.8% of the forest area in 2000. Thus potential exists to increase the proportion of woodland under forest protection.

Woodlands in sub-Saharan Africa regenerate easily following wood harvesting and clearing for shifting cultivation, a major land use in Africa. Regeneration often takes place through either sexual or vegetative means. Carbon accumulation increases with increasing age of re-growth woodland, thereby providing an opportunity for carbon assimilation in African re-growth woodlands that can contribute to mitigation against climate change. But as the re-growth woodland reaches maturity, the carbon stocks also approach a steady state.

## The Call to Action

Currently little is known about the potential of woodlands in Africa to adapt to climate change. If climate warming reduces the productivity of woodland trees, then their role in mitigation against climate change through carbon sequestration may also be reduced. Thus both climate response and mitigation by the woodlands need to be assessed, so that informed strategies and measures can be made to address their role in climate change.

Nevertheless, improved management of forests, e.g. through the protection of forested watersheds, will no doubt contribute to sustainable water supplies for human use, agriculture, fisheries, wildlife and hydropower generation; and ultimately improve livelihoods, food security, and poverty reduction. It will also create a healthy environment while mitigating climate change through the reduction in CO<sub>2</sub> emissions from deforestation and forest degradation, and carbon sequestration from the atmosphere. It is also important to recognize that although climate plays a significant role in determining species' distribution, other variables such as human population density, land use, and soils can have similar, if not more, important roles. Issues of population growth and land use change therefore should be considered in developing forest-based adaptive and mitigation strategies to climate change.

However, establishing effective climate adaptation and mitigation strategies requires that scientists, managers, and policymakers work together to (i) identify climate-sensitive species and ecosystems, (ii) assess the likelihood and consequences of impacts, and (iii) identify and select options for adaptation and mitigation.

## Sources

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- Currently evidence suggests that the climate in eastern and southern Africa is warming at a rate of 0.25 - 0.50C per decade.
- From 1990 to 2000, it was estimated that woodland countries in sub-Saharan Africa lost nearly 5 million ha of forest cover annually, that is nearly 1.7% of the forest cover in 2000.
- Woodlands in sub-Saharan Africa are thinly populated, with an overall density of 1.7 ha of woodland per person in 2000.
- A total of 5.2 million ha have been designated as forest protected areas in woodland countries in Africa.

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