

## **Climate Change and Mitigation: Forestry and land-use change**

In forest ecosystems, large amounts of carbon are stored in living and dead biomass including the soil organic matter. Forests also have a high capacity for sequestration of carbon dioxide from the atmosphere via photosynthesis into biomass which, when harvested, may be used for substitution of fossil fuel energy or be stored in long-lasting products. This can be renewable if the forest biomass re-grows. Both mechanisms play a key role in climate change mitigation.

However, there is a trade-off between these mechanisms: forest management designed to maximize the sustainable production of harvested biomass (e.g. through planting of fast-growing monocultures, use of fertiliser, whole-tree and stump harvesting) is likely to reduce net ecosystem carbon storage. This dilemma is currently of major global interest, e.g. due to the loss of other ecosystem services (such as biodiversity conservation) following conversion of natural forests to e.g. fast growing monoculture plantations or dedicated short rotation energy crops. The aim of the project is to evaluate the mechanisms by which alternative forest management systems influence short- and long-term ecosystem carbon storage and sequestration rate.

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