

# How trees and people can co-adapt to climate change

Reducing vulnerability in multifunctional landscapes

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*Four months after the devastating December 2004 tsunami in Aceh, Indonesia, the exchange of local coconut germplasm symbolised the resilience of people and trees*

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Both people and trees can adapt to change at various time scales, but the current rate of climate change implies that active planning is needed.

This book focuses on the relationship between rural development and the roles of trees and agroforestry in climate-change adaptation and mitigation.

Rewards' schemes for environmental services in multifunctional landscapes, which provide incentives for maintaining or restoring multifunctionality, hold promise for contributing to a reduction in vulnerability to climate change. Rewards may well be an efficient and equitable way of investing international funds that promote ecosystem resilience and climate-change adaptation and mitigation.

Priority areas for action are identified based upon hypotheses for further research. These include

- the roles of trees in modifying micro- and meso-climates;
- institutional expansion of the (already tested) rapid appraisal methods that acknowledge multiple knowledge systems and perceptions;
- analysing the risks to local livelihoods in ecological and environmental economics frameworks posed by climate change and trade globalisation;
- new approaches to integrate the space-time dynamics of landscape functions in socio-ecological-political-economy systems; and
- refining the operational rules for use of climate-change adaptation funds.

Van Noordwijk M, Hoang MH, Neufeldt H, Öborn I, Yatich T, eds. 2011. *How trees and people can co-adapt to climate change: Reducing vulnerability through multifunctional agroforestry landscapes*. Nairobi, World Agroforestry Centre (ICRAF).

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*Climate change, climate variability and adaptation options*

- A. Climate change and climate variability
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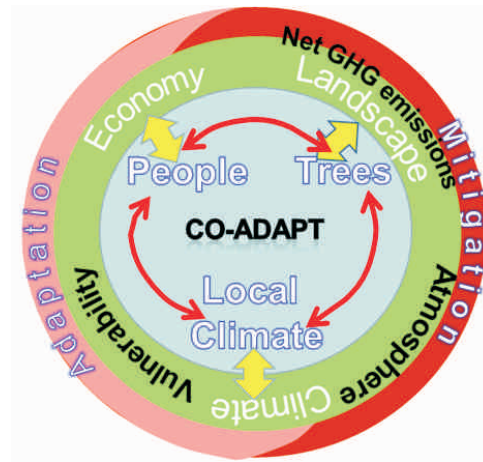
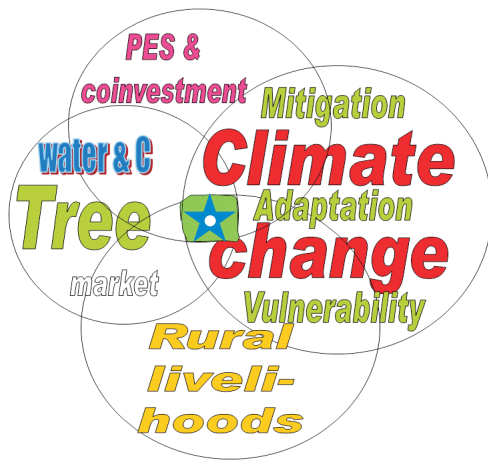
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*Trees as providers of environmental services in multifunctional landscapes are vulnerable to climate change*

- E. Trees as providers of environmental services in multifunctional landscapes
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- G. Supporting multifunctionality: pluralistic approaches, trust building and multilevel institutional reform
- H. Adopt, evaluate and learn in combining carrots, sticks and sermons
- I. Balancing fairness and efficiency in rewarding environmental services' providers
- J. Increasing resilience and sustainability by support of social and ecological buffers
- K. Research priorities



The book frames a new *Agroforestry Mitigadaptation Hypothesis*

**Investment in institutionalising rewards for the environmental services that are provided in multifunctional landscapes with trees is a cost-effective and fair way to reduce vulnerability of rural livelihoods to climate change and to avoid larger costs of specific 'adaptation', while enhancing carbon stocks in the landscape.**

And reviews the evidence for its contributing unitary statements:

- A. Multifunctional landscape mosaics with trees provide environmental services**
- B. Rewards for environmental services can enhance multifunctional landscapes with trees providing such services**
- C. Rewards for environmental services require institutionalising and funding**
- D. Vulnerability of rural livelihoods to climate change needs to be reduced**
- E. Specific 'adaptation' is costly when compared to overall vulnerability reduction**
- F. Carbon stocks in the landscape can be enhanced through multifunctional landscapes with trees**
- G. Investment in institutionalising is a cost-effective and fair way to achieve goal D (relative to its alternative as mentioned in E)**

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