

Tropical forest management for
climate change mitigation,
sustainable
development and biodiversity
conservation: Are we dreaming?

K. MacDicken

Center for International Forestry Research
(CIFOR)

Tropical forest carbon stock change drivers

- ✦ Landuse change is key – fluxes almost irrelevant
- ✦ Complex ecologies, high C turnover rates
- ✦ El Nino-induced fire regimes expanding
- ✦ High levels of poverty, high rates of population increase
- ✦ Dysfunctional institutions (rules, regulations, organizations)
- ✦ Degradation and inappropriate deforestation increasing due to the above

Conflicting objectives: Interactions galore...

✦ Net carbon sequestration increased

- ◆ Low cost options sought
- ◆ Long-term storage desired

✦ Biodiversity conserved

- ◆ Often increases costs
- ◆ May reduce livelihood options

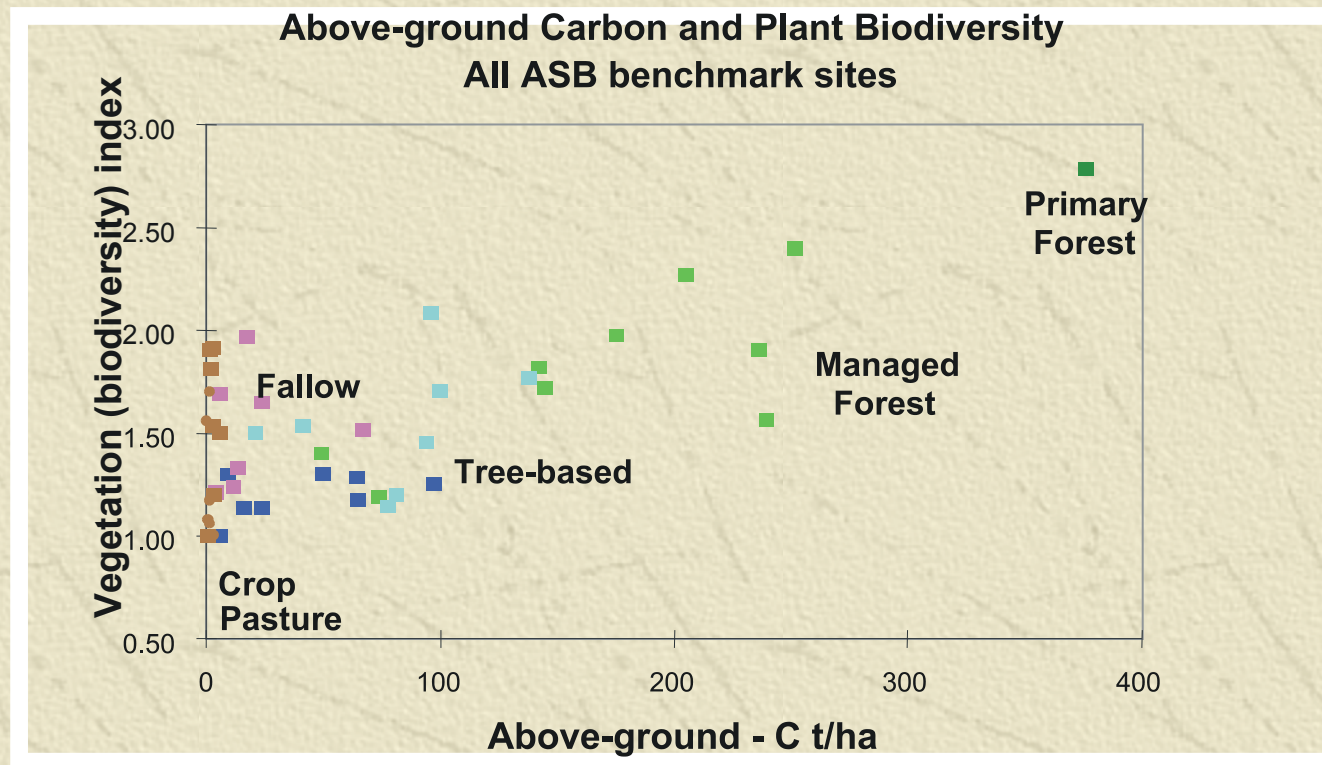
✦ Sustainable development enhanced

- ◆ Landuse flexibility sought
- ◆ Stable income desired

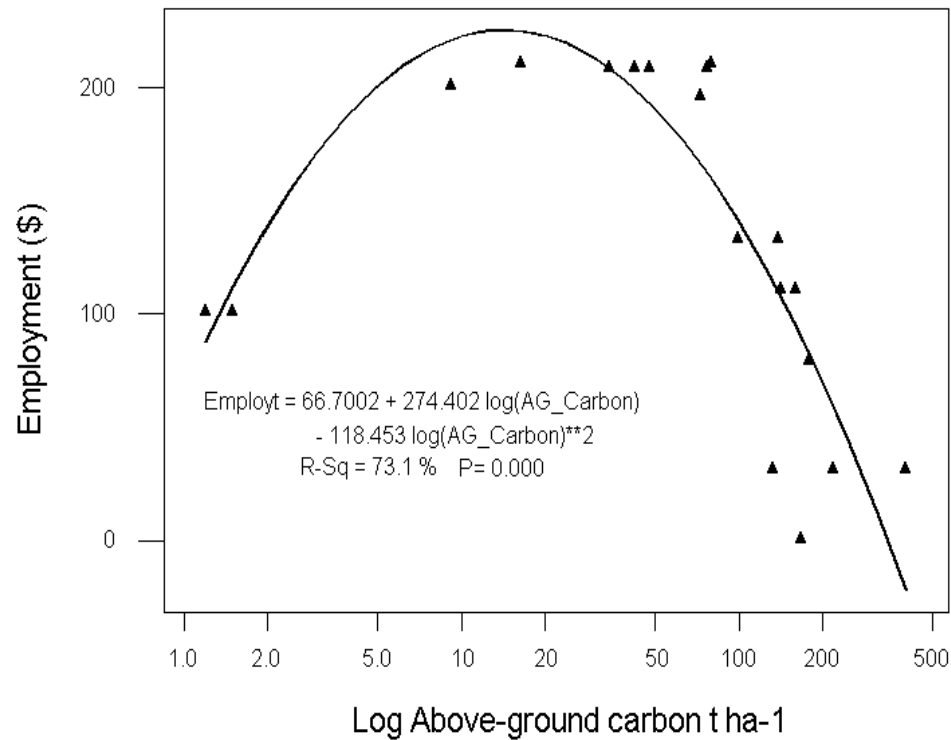
Biodiversity conservation

- ✧ Opportunities limited until forest conservation included
- ✧ Museum taxonomists vs. local people
- ✧ Relationship between C stocks and biodiversity within biome?

Biodiversity x C in Sumatra

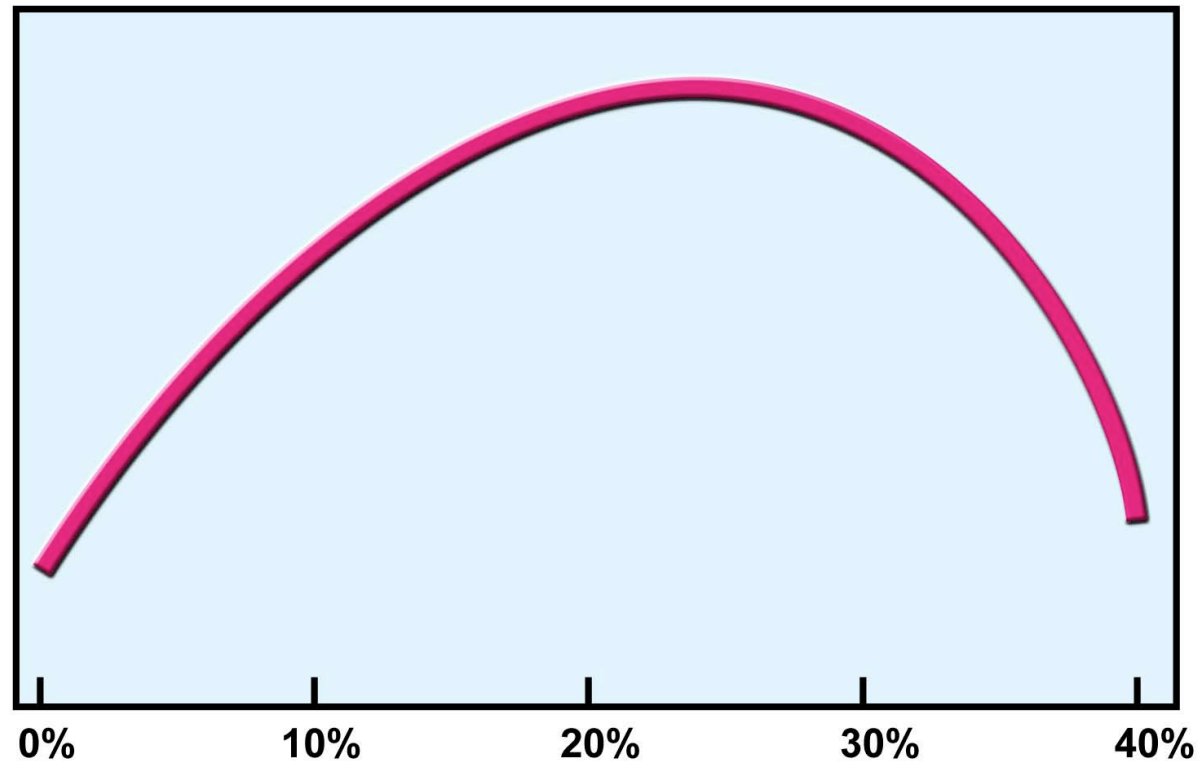


Employment x C stocks in Sumatra



Owner benefits from natural forest corridors

Profitability of Concession



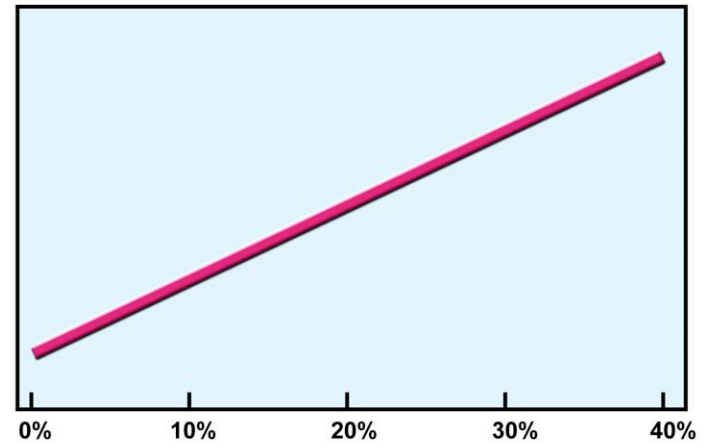
Proportion of Concession in NFC

show supporting factors

show stakeholder benefits

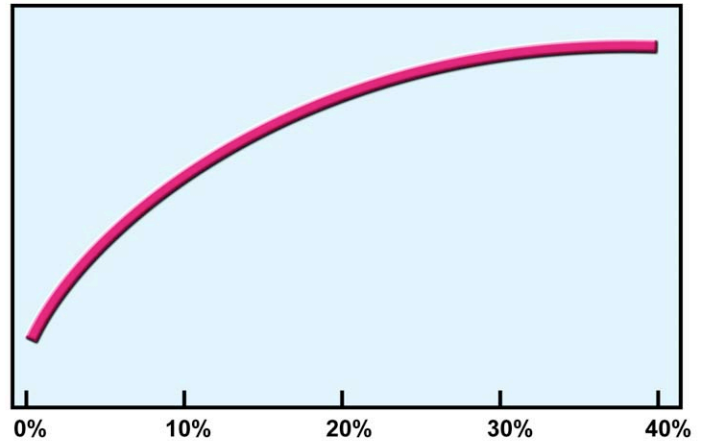
Stakeholder Benefits

Cumulative importance value of 10 most important tree species used by local community (for non-timber purposes) in NFC



Density of NFC in concession

Density of primates in concession *



Density or Connectivity of NFC in concession

* No primates within plantation stands

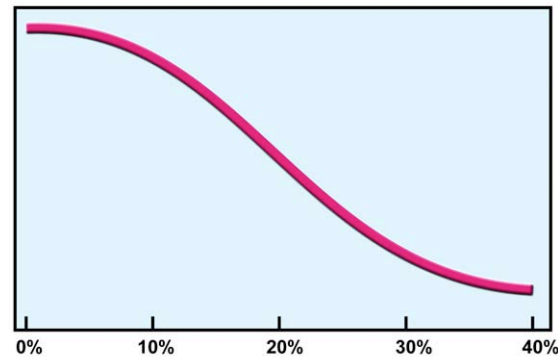
show supporting factors

show owner benefits

Supporting factors

Pest incidence

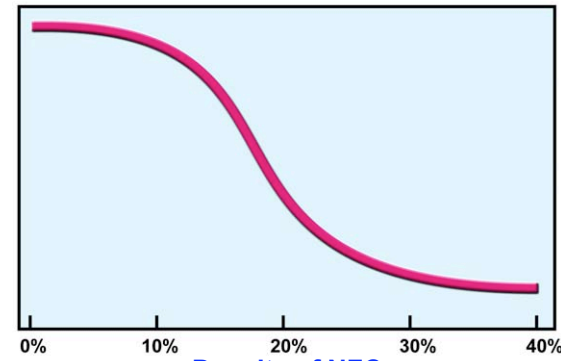
Pest incidence per ha plantation stand



Density of NFC in concession

Wind damage

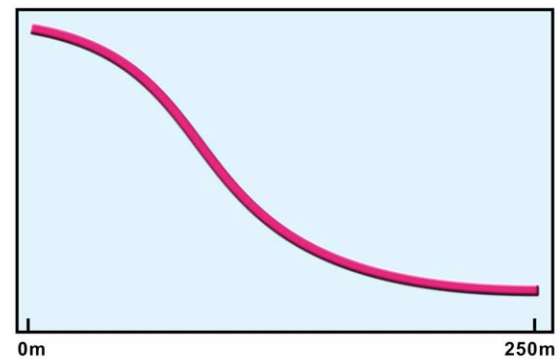
Windfall (ha fall/ha plantation stand)



Density of NFC

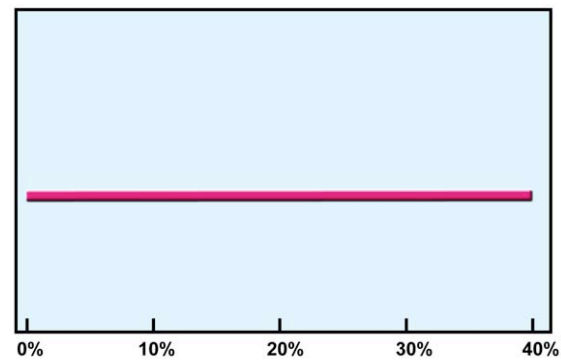
Sedimentation of streams

Sedimentation rate



Width of NFC

Occurrence of invasives/fires



Density of NFC in concession

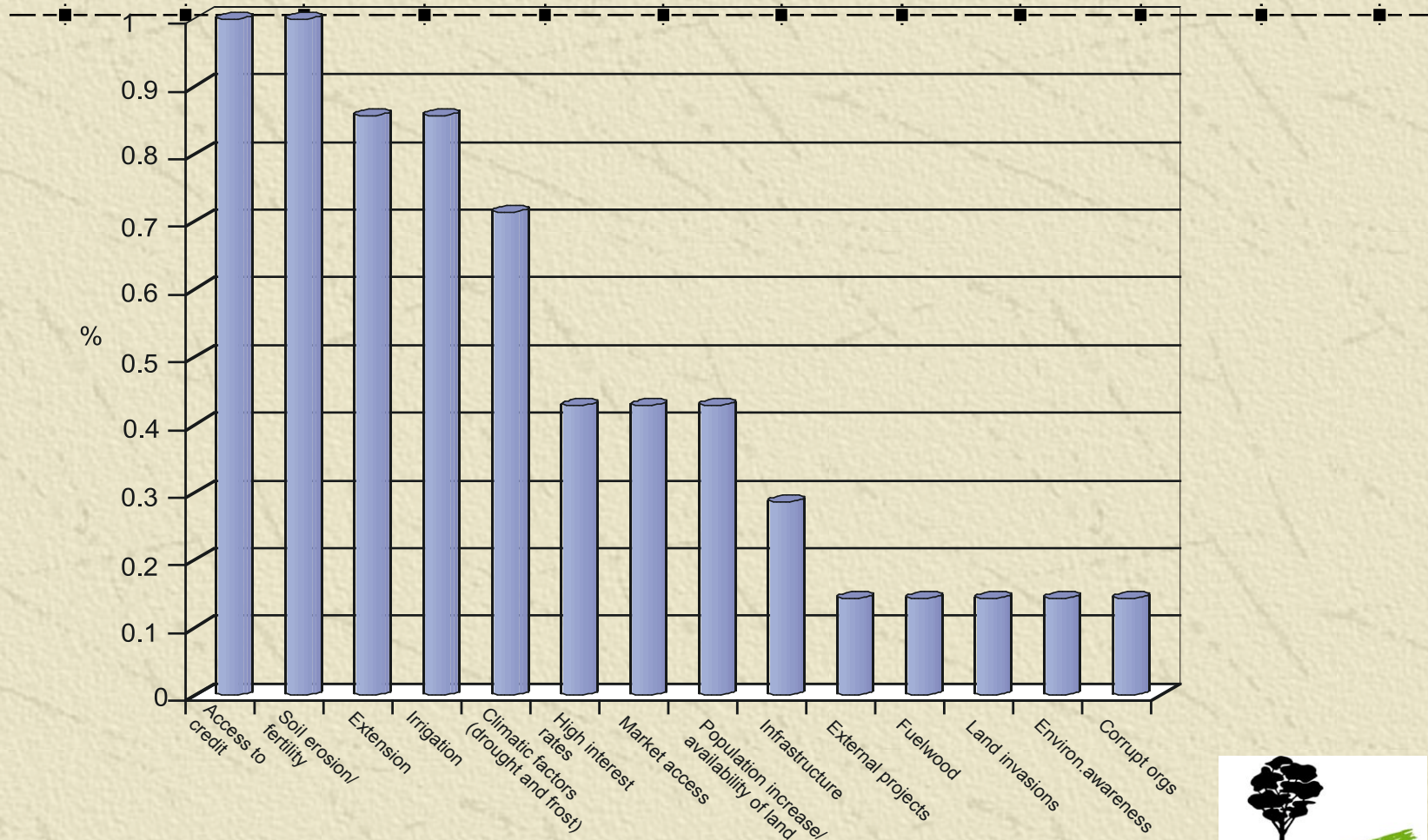
show
stakeholder benefits

show
owner benefits

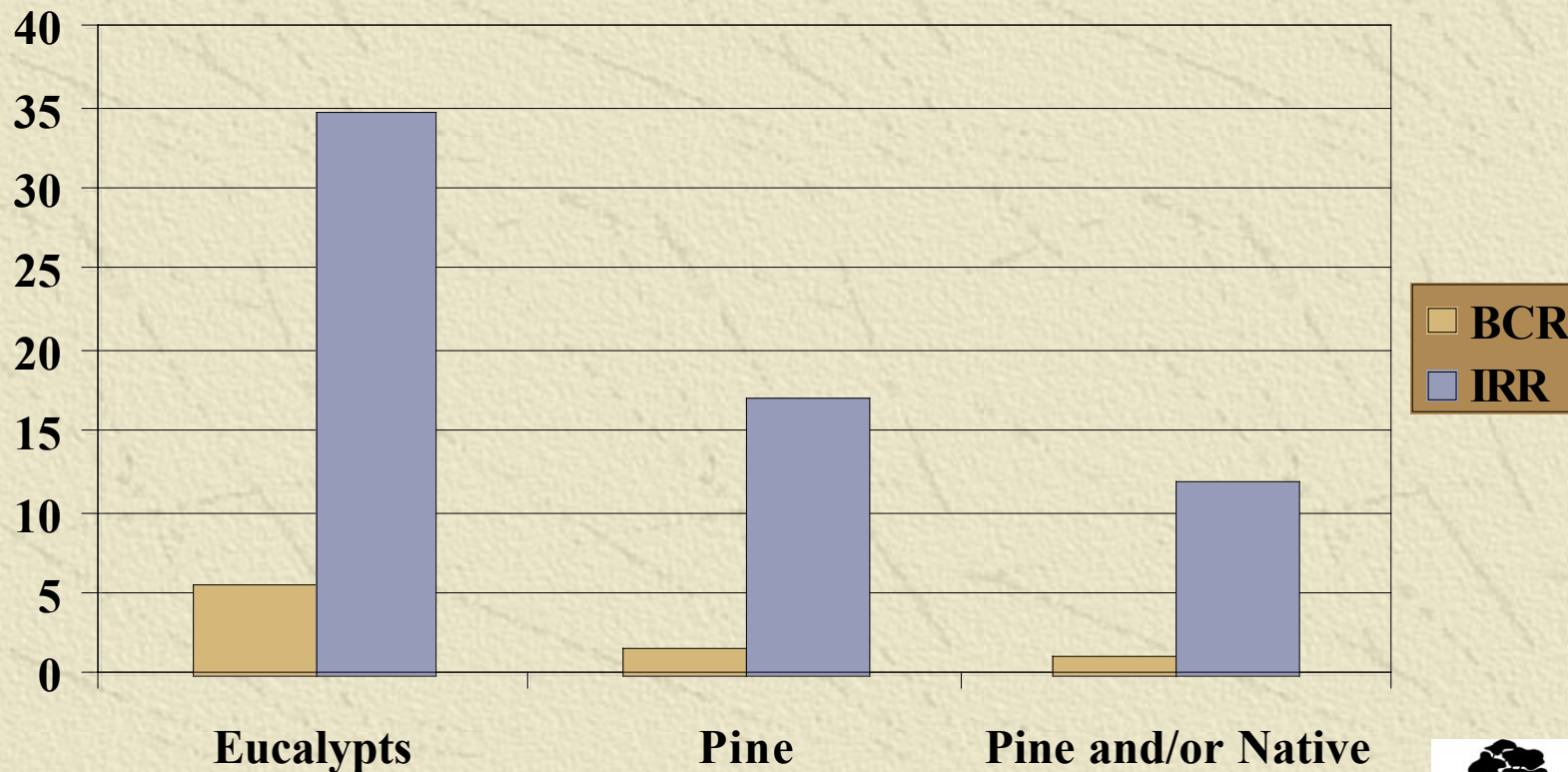
Sustainable development

- ✦ Defined by host countries
- ✦ Ineffective as an exclusionary criteria
- ✦ Generally assumed to include benefits to local people
- ✦ Incredibly complex, difficult to achieve in most parts of the tropics

Pre-project constraints to community development - Ecuador



Exotics x native species: Profafor project in Ecuador



Impacts of NKCAP on local communities

✦ 'Costs' of project

- ✦ Loss of benefits provided by concessionaires
- ✦ Loss of access to the land on the east side of the river

✦ 'Benefits' of project

- ✦ Sustainable community development and leakage prevention program - sustainable forestry management, health, education, infrastructure
- ✦ Employment in forestry support programme, eco-tourism, monitoring and verification, park protection
- ✦ Improved pastures

Impacts of Profafor on project beneficiaries

✦ Benefits of project

- ✦ establishment subsidy
- ✦ training in forestry management
- ✦ reduced land invasions and theft

✦ Costs of project

- ✦ removal of cattle from area under plantation
- ✦ low opportunity cost of land and labour
- ✦ capital costs to individual landholders

Dealing with conflicting objectives

- ✦ Recognize and quantify tradeoffs
- ✦ Reduce expectations
- ✦ Focus on “no-regrets” solutions for now
- ✦ Work towards realistic win-win
 - ◆ exotic plantations with natural forest corridors
 - ◆ benefit sharing with active involvement of local communities

