Linkages between Adaptation and Mitigation in Forests: Landscapes, Communities and Policies

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Introduction

- Recent interest in research and policy on linking adaptation and mitigation
  (e.g., Tol 2005; Swart & Raes 2007; Ayers & Hug 2009; Laukkonen et al. 2009)

  - Synergies and conflicts at different scales
    (Klein 2005, Liverman 2008)

- Forests:
  - A sector highly relevant to both mitigation & adaptation
THINKING beyond the canopy

GhG concentrations

Climate change

Impacts

Responses

MITIGATION

ADAPTATION

Ecosystem-Based Mitigation

- Global ecosystem service: Carbon sequestration.
  - Policies: CDM, REDD.

Ecosystem-Based Adaptation

- Local ecosystem services: Water regulation, provision of goods...
  - Policies: EBA.
Ecosystem-Based Mitigation: Examples

Increasing carbon in ecosystems

e.g., Afforestation & Reforestation (CDM)

Avoiding loss of carbon from ecosystems

e.g., Avoided Deforestation (REDD)
Ecosystem-Based Adaptation: Examples

Soil conservation and hydroelectricity in Central America

Increasing rainfall intensity. Soil erosion.
Sedimentation in hydroelectric dams.
Upstream soil conservation = Adaptation.

Forests and local people in Central Africa

Climate events affect local communities.
Forest products less sensitive than agriculture.
Forests = Safety nets.
Better forest management = Adaptation.

Mangroves and coastal areas in Asia

Coast vulnerability (storms, waves, sea level rise).
Protective role of mangroves + provision of goods.
Better mangrove management = Adaptation.
Different scales for exploring the linkages between mitigation and adaptation

1. Landscape scale: Ecosystem Services
2. Local scale: Projects and Communities
3. National and international scale: Policies
1. Landscape Scale: Synergies between ecosystem services

- **Regulating services**
  - Global climate regulation (carbon)
  - Water regulation
  - Soil protection
  - Disease regulation
  - Local climate regulation

- **Provisioning Services**
  - Wood and other fibers
  - Food (plant and animals)
  - Natural medicines

- **Cultural services**
  - Spiritual and religious value
  - Landscape beauty
  - Cultural heritage

*Forests*

- Mitigation
- Adaptation

*(Millennium Ecosystem Assessment, 2005)*
Examples

- **Mapping ecosystem services**
  - (e.g., Naidoo et al., 2008; Egoh et al., 2008)
  - What are the synergies and trade-offs between carbon and local ecosystem services?
  - What are the roles of local ecosystem services in societal adaptation?
    - Still too few research on this

Example in Costa Rica
(Locatelli & Imbach, in prep.)

Hotspots of synergies between carbon and water-related services
2. Local scale: Projects and Communities

- Mitigation projects (CDM, REDD...) can help local communities to adapt to CC through:
  - Providing opportunities for diversification
  - Funding social services
  - Benefit sharing, payment cash/nature
- But possible conflicts
- Ex: Costa Rica (Reyer et al., 2009), Klinki mitigation forest project (voluntary market, “Reforest the Tropics”)
  - Societal adaptation to climate change through:
    - Diversification of incomes
    - Short term incomes
    - Storm and fire risk reduction
Adaptation projects can benefit mitigation:
- E.g., protecting forests (thus carbon) for water
- But possible conflicts:
  - E.g., coastal adaptation based on infrastructures (dikes, dams) can affect adversely ecosystems and carbon

Ex: Colombia (Angela Andrade, pers. comm.)
- Adaptation project (INAP Rio Blanco & Parque Chingaza, near Bogota)
  - Conservation of highland ecosystems, protection of water sources...
  - Contribution to mitigation:
    - Water for hydroelectricity (clean energy)
    - Conservation of carbon in ecosystems

Opportunities of carbon funding: CDM project (hydroelectric plant), possible carbon forest project
3. National and international initiatives

- In theory, synergies adaptation-mitigation can be facilitated by national/international policies and international funds
  - In practice: Not much...
- NAPAs (National Adaptation Programs of Action) (Pramova, Locatelli et al. in prep)
  - Among the 468 projects presented in the 44 NAPAs submitted as of March 1, 2010:
    - 143 include activities related to ecosystems
    - 12 have an explicit mitigation objective and 8 present mitigation as a side benefit
- International standards for carbon projects: adaptation was recently included (CCB)
Conclusion

- Many advantages of implementing one policy or one project for both A&M objectives

- Mitigation needs adaptation
  - REDD or CDM projects more likely to be sustainable if they reduce the vulnerability of forests and forest people to climate change.
  - But the need for adaptation is not yet perceived (Guariguata, Locatelli et al., in prep.)

- Adaptation needs mitigation
  - More funding may be available for mitigation than adaptation.
  - It may be the most appealing reason for adding mitigation to adaptation activities (Evans, Locatelli et al., in prep)
Terima Kasih!

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