

Managing forest functions of tropical landscapes in the context of deforestation

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Connection to One Health Approach

Integrity of forest ecosystems as basis for human health (?)

Problem 1: Forests are important source for livelihoods and therefore heavily exploited in many regions

Problem 2: Forests are also important for conservation of biodiversity and climate mitigation

Guiding question for this presentation:

How can different forest functions be delivered simultaneously in the context of deforestation?





(1) Forest functions, deforestation and development

- (2) Carbon sequestration and biodiversity or income and productivity? Examples from a landscape and a land users perspective
- (3) Governance: protected areas or incentives for conservation and restoration?



(1) Development and ecological footprint



Ecological footprint (ha/person)



(1) Development and ecological footprint



Global Footprint Network, adapted from Morse & Vogiatzakis (2014)

(1) Forest integrity and development



In order to influence this curve, change of development paradigms are required

Major drivers in Madagascar:

- Poverty, weak governance, demography
- Fuelwood, subsistence agriculture



(1) Forest functions: urgency or importance - a matter of prioritization





Take home message (1)

 No empirical evidence for sustainable development: new approaches are needed which lead to landindependent welfare (education)

• Change of paradigms requires an agenda of experimentation, the courage to fail, working with plan B and C

- No environmental health without adressing demograpic trends and poverty
- Forest functions of societal interest (biodiversity, carbon sequestration, one health) have to be balanced with need of local people. Balance urgency AND importance



(2) Combining conservation of biodiversity and carbon sequestration with production and income

How to combine conservation and production?



Example from Ecuador: cocoa in monocultures and agroforestry systems

a land user perspective

a landscape perspective

Spatial distribution of ecosystem services?



(2) Fragmented populations in protected areas of Costa Rica (landscape perspective)





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(2) Income from dominant land uses in Costa Rica vs. landscape friction (land user perspective)





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Consequence for achieving multiple functions: Either need for enforcing mixed landscapes or compensation payments





(2) Net revenues of dominant land uses in Costa Rica vs. landscape friction (land user perspective)





(2) Can agroforestry systems store carbon and provide income? Example from cocoa production in the Amazon

- Potential to reduce deforestation by means of compensation payments from carbon market is given
- → or enhance tree cover over cacao and compensate via certification schemes
- → but it is case sensitive and requires efficient institutions



Take home message (2)

- Biological corridors are measures to connect fragmented forest patches and isolated subpopulations
- It is hard to find land use types which offer societal functions (biodiversity, carbon sequestration, one health) and income for local people.
 - ➔ fostering land uses mixes
 - → compensation payments are required



(3) Problems of governance, law and order or incentives?

Examples from Zambia

 Protected areas, the role of state and costumary governance for forest resource use

Example from Ecuador

- Payments for conservation: sense or nonsense?



(3) Forest resource use as livelihood strategy for households in the Copperbelt region, Zambia

- Average total annual household income in rural Copperbelt area: 590 US \$
- Average income in Zambia: **2100 US \$** (<u>www.zamstats.gov.zm</u>)
- Dependency on forests: 54%
- Charcoal makers have 500 US \$ higher income than than fuel wood collectors

→ Charcoal as mean to escape from extreme poverty to poverty

• But specialised charcoal sellers = 32 % of the population



(3) Landscapes with protected areas under high human pressure

Wood products extraction per person (in m³ equivalent per person) in the Copperbelt region,

Forest product	Landscape with	Landscape without
	protected area	protected area
Fuelwood	0.23	0.22
Charcoal	4.03	2.43

- → a limited proportion of the land users receives benefits
- → all with suffer from resource depletion



(3) How important are protected areas and clear tenure? (Example from Zambia)



→ Customary control can be more effective than state control



Take home message (3)

- Charcoal use can be an important source for livelihoods but the benefit must be shared more equally
- More productive systems are required to reduce the pressure from natural forests
- Charcoal value chains alone are not a game changer, but can be the basis for (basic) investment pools for advanced value chains.
- Protected areas are under extreme pressure due to weak control. Empowerment of local governance systems can be promising (e.g. landscape approaches)



(3) Pathway towards local governance structures

Ten principles for a landscape approach Landscape focus

- 1) Multiple functions
- 2) Multiple stakeholders
- 3) Multiple scales

Willingness and commitment

4) Common concern entry point (resource scarcity, health, future for kids?)

Learning and adaptation

- 5) Continual learning
- 6) Participatory and user-friendly monitoring

Development work

7) Negotiated and transparent change logic8) Clarification of rights and responsibilities9) Strengthened stakeholder capacity10) Resilience

(Sayer et al. 2013)

What is missing? Benefit mechanisms:

- Results-based payments (e.g. REDD+, one health?)
- Corporate social responsibility for private sector/Certification
- Independent fund for investments in sustainable development activities

Structural components:

- Independent board for monitoring and evaluation
- Common institutional roof for landscape initiatives under established quality criteria

Technical capacity buildung

- Seed management
- Nurseries
- Silviculture



Incentives for land users as alternatives to protected areas: What means payments for environmental services (PES)?

- (1) a voluntary tool
- (2) A well-defined service (carbon sequestration, conservation, one health)
- (3) ES buyer (private, state, international community) and ES provider (land user/community, association)
- (4) The ES provider secures ES provision conditionality



(3) Are incentives for conservation an alternative solution to protected areas? (Example from Ecuador)





Landscapes with PES for conservation of intact forest



Landscapes *without* PES

Forest type

Intact Forest Logged Forest Plots-based assesment of forest condition Are there direct effects of PES on forest integrity?

...or are there indirect effects due to increasing land use pressure on adjacent forest types?

N = 72 plots (60 x 60 m)

(3) Are incentives for conservation an alternative solution to protected areas? (Example from Ecuador)



ANOVA, Fisher LSD p<0.05.

- No direct effect of incentives, PES areas are placed in areas without risk for deforestation or degradation

(3) Are incentives for conservation an alternative solution to protected areas? (Example from Ecuador)



In addition: Deforestation rate decreased in surrounding landscapes from -1.09 to -0.18% in surrounding landscapes

- ANOVA, Fisher LSD p<0.05.
- No direct effect of incentives, PES areas are placed in areas without risk for deforestation or degradation
- But clear indirect efect, less deforestation & more careful logging

Take home message (4)

- Incentives systems are potential instruments for overcoming conflict between income for local people and fostering environmental services
 - ➔ For Madgascar: incentives for restoration (climate funds, one health funds?)
- But the incentive system design needs to guarantee effectiveness
- If effect should not be temporarily limited, permanent transformation mechanism is required
 - ➔ e.g. complementary to direct payments, investment in sustainable development (value chains, education)



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Contact:









Mis en ceuvre par



Programme de protection et exploitation durable des ressources naturelles (PAGE 2)

Implications on the ground: The long way after planting





Implications on the ground: The long way after planting





What is the solution?





Challenge and opportunity to link with international agreements

- Bonn Challenge (pledge 4,000,000 ha)
- Convention on Biological Diversity CBD and the post 2020 global biodiversity framework
- REDD+ from readiness to results-based action
- 2030 Agenda for Sustainable Development

