Carbon offset, participation & sustainability

a case study from the Gaurishankar Conservation Area, Nepal

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Overview

- Participatory carbon offset project started in Feb 2016 in Nepal
- Funded by BOKU University's carbon compensation scheme
- 20-year target 19200 t CO_2
- Research on socio-economic and natural sciences informs implementation

Situation analysis - 1

- Area epicentre of 2015 earthquake – severely affected
- Heavy dependence on natural resources
- Degraded forests with diminished flow of ecosystem services
- High poverty incidence
- Lack of labour force due to men working abroad

Stakeholder engagement - 2

- Local administration and community members of two blocks in Dolakha district
- National Trust for Nature Conservation Nepal
- Gaurishankar Conservation Area Administration
- Tribhuvan University
- BOKU University

Project design

CO_2 sequestration through community-based activities:

- Afforestation of degraded land 5 t CO_2 ha^{-1} a^{-1}
- Sustainable forest management 1 t CO_2 ha^{-1} a^{-1}
- Agroforestry 1 t CO_2 ha^{-1} a^{-1}
- Improved cooking stoves 0.3 t CO_2 $stove^{-1}$ a^{-1}

Community interventions - 3

- Establishment of a community nursery raising indigenous species
- Mapping of areas for afforestation / forest rehabilitation
- Afforestation (planned)
- Grazing exclusion (planned)

Long-term commitment, participation and interventions fine-tuned by multi-disciplinary local scientific evidence and accompanied by capacity building lead to

better climate change mitigation & adaptation outcomes and increased resilience.

Main challenges

- Poor governance, lack of ownership, limited communication between stakeholders
- Challenging institutional landscape with recently created protected area
- Open access limits willingness to invest in some areas

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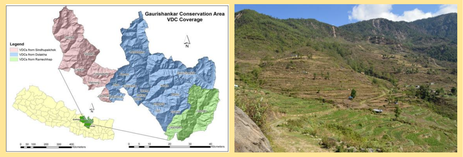

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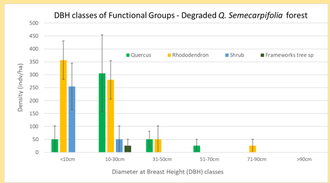

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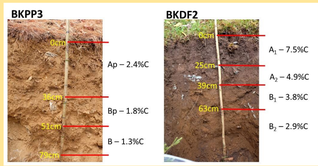

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Accompanying research

- What are the social and economic implications of carbon projects?
- How big is the carbon sequestration potential, how do biodiversity and other ecosystem services (protection, hydrological ES) evolve?
- How can we strengthen the resilience of communities?

Socio-economic studies

- Assessment of resilience of two communities with contrasting natural resource base
- Transformative learning in natural resource management
- Understanding of the functioning social-ecological systems
- Stakeholders' influence on knowledge transfer

Regeneration ecology of *Quercus* species - 4

- Assess the regeneration status of project areas
- Impact of site factors on regeneration performance
- Develop guidelines for the management and restoration of *Q. semecarpifolia* and *Q. lanata* forest

Carbon inventory - 5

- Above & below groud carbon stocks
- Pine plantations 560 (+-128) vs. 313 (+-53) m^3 ha^{-1}
- Sequestration rate 12 t CO_2 ha^{-1} a^{-1}
- Timber volume pine plantations: 560 (+-128) vs. 313 (+-53) m^3 ha^{-1}
- Degraded forest: 68 (+-16) vs. 93 (+-59) m^3 ha^{-1}

Capacity building - 6

- Nursery management
- Silviculture
- Forest fire management