COMMON PROPERTY FOREST MANAGEMENT: IMPLICATIONS FOR REDD IN ETHIOPIA

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PRESENTATION OUTLINE

- INTRODUCTION
- FOREST MANAGEMENT, REDD AND LIVELIHOODS
- METHODOLOGY

  -Data

  -Empirical Strategy
- DISCUSSION OF RESULTS
- CONCLUSION

INTRODUCTION

- CC is perhaps the most critical environmental problem facing humanity today.
- About 20% of global greenhouse gas (GHG) emissions can be attributed to deforestation and forest degradation.
- Deforestation, forest degradation and burning of biomass for cooking and heating are key contributors to climate change.
- Forests play critical roles in

  -adaptation to climate change-e.g. water management

  -conserve or sequester carbon- help in reducing global warming.
- In Africa/Ethiopia-most of the rural population depend on a variety of forests resources .

- The challenge:

  How to reduce deforestation/ forest degradation in order to use forests for adaptation/mitigating climate change without compromising the livelihood of the local people.

- Factors for deforestation and forest degradation in Ethiopia.

  E.g. poorly defined property rights .

  -4.6 % forest cover, 0.8 % deforestation per year

-Reacting to these issues, a forest proclamation was issued in 2007 and the first-ever federal forest policy approved the same year.

Both documents allow a variety of institutional arrangements for investment in forests

-CPFM, private woodlots, and on-farm trees.

- A more promising institutional arrangement is common property.
- Efficiency- has largely been defined in terms of

  -direct household-level benefits and

  -better management is generally supposed to increase forest value (timber and non-timber forest product) .
- Such a vision of CPFM is insufficient given the importance of better forest management for climate change mitigation and adaptation
- Adoption of CFM – important for REDD+(Cronkleton et al.2011)
- However, little understanding between CPFM and climate change by various stakeholders
- Objective : to add to the limited literature (e.g. Chhatre and Agrawal 2009) by examining the link between CPFM and carbon stock in the study area.

II. Forest Management, REDD and Livelihoods

- The increased focus on the relationship between forest governance and REDD+ has highlighted the importance of commonly owned and managed forests.

- Concerns - REDD+ will centralize forest control and harm the very poor villagers REDD+ is supposed to help.

  → Unlikely that carbon revenue will be able to replace this incentive

  → The social gains from community forest > the potential revenues from carbon (Bhaskar et al., 2009).

- On the other hand, some scholars argue that community forests can provide multiple outcomes

  – carbon storage, livelihood benefits and biodiversity conservation (Chazdon 2008; Ranganathan *et al*. 2008).

- This literature implies that with effective CPFM households would be forced to restrict their collections

  e.g. Ostrom (1990), Bluffstone et al.(2008).
- CFM has shown a positive impact in reducing deforestation and conserving forests Latin America (Cronkleton et al., 2001).

  ⟶ Clearly-defined and enforced property rights to forest land and resources are a precondition for effective implementation of REDD programs

- Agrawal and Angelsen (2009) have also discussed in detail the role of local level institutions for the success of REDD+.

- E.g. Clear boundaries of forests, local autonomy in designing clear and enforceable rules for access and use of forests, monitoring and sanctioning rule violations, etc

- Related studies: Ostrom, 1990; McKean 1992; Dietz *et al*. 2003.

Awareness:

Create awareness about REDD+ initiative – for successful REDD+ intervention (Mukama et al., 2012 in Tanzania)

- Ratsimbazafy et al. (2011) - local community in the eastern section of Madagascar were still unaware of the REDD issues

- The empirical evidences on the link between forest carbon stock and socioeconomic characteristics of households are also limited.

- Few exs: Jepkemei (2010) -amount of carbon sequestered by trees on farms-depends on HH characteristics.

- Ratsimbazafy et al. (2011)-socioeconomically disadvantaged individuals are the most dependent on the forest

  → most affected by the introduction of restrictive measures.

- In order to reduce deforestation and forest degradation, the underlying causes should also be addressed.

  -Rapid changes in population and market forces- Significant impact on the success of community forestry (Angelsen et al., 2009).

  -Poverty, lack of effective land-use policy, and inadequate infrastructure - limit the realization of additional carbon storage (Singh, 2008).

- Though recently the issue of REDD has attracted academicians, to our knowledge the available evidences are mainly descriptive or qualitative in nature.

III. METHODOLOGY

Data

- The data -obtained from the EfD project titled ‘Household forest values under varying management regimes in Ethiopia’- collected in 2009.
- The sample sites- were selected based on sites selected for the SLM.
- Systematic simple random sampling technique.
- A total of 600 households were chosen from 40 sites–Only 315 HHs were considered.
- Both household and community level surveys were conducted.

Information on: forest cover, biomass availability, density, agro ecology, HHs Characteristics, etc

Estimation of carbon stock:

- done for each kebele or site for each type of forest using three Allometric equations.

i) Brown *et.al*. (1989) ii) Brown (1997)

ii) Pearson *et.al*. (2005).

- The equations are developed for tropical countries.
- But give different estimations
- The first equation was used- as it considers dbh

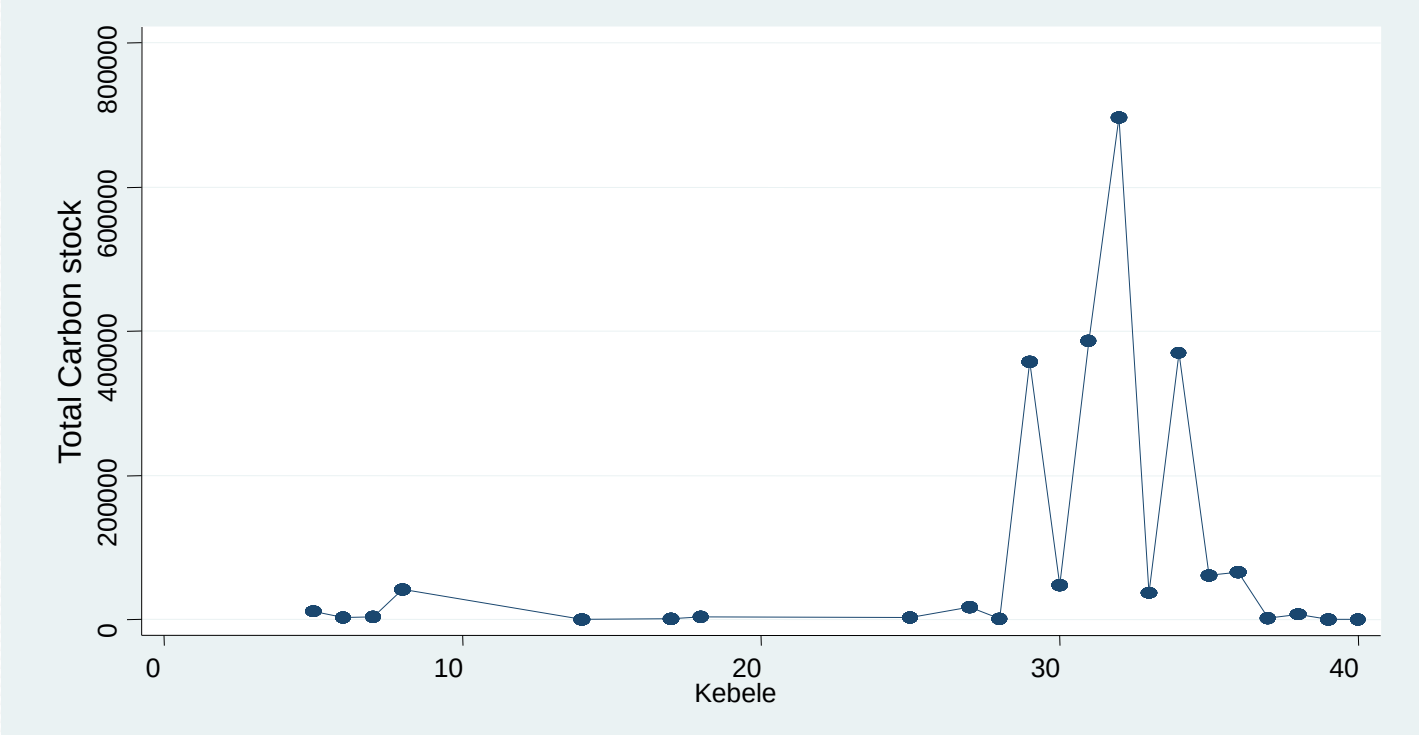

Figure 1 Carbon stock by Kebele level

The carbon stocks per hectare is also different among the study sites. It ranges from 0.028 - 119.07 tons/ha.

Empirical Strategy

- The framework is as follows:

Forest carbon stock = f(CPFM, X, Z)

$$\ln C = \alpha + \beta(CPFM) + \theta X + \gamma Z + \varepsilon$$

X-exogenous community variables forest area, population density, location

Z-refers to agro ecological zone & altitude

CPFM-refers to institutional index-obtained using factor analysis.

- The CPFM index-based on perceptions of households
- Factor Analysis-One factor with Eigen value greater than one
- Limitation: Some variables are missing (e.g. grazing density, presence of NGOs for forest development, etc).
- Method of Estimation:- OLS is employed

4. RESULTS AND DISCUSSION

- Different specifications
- Per hectare and per capita regression
- Result

→ Local level institution has a positive and significant effect on the level of carbon stock

- The variable is composed of - monitoring and enforcement, Allocation, Fairness, and Awareness.

- - Enforcing a system of rules and regulations- may have positive implications for forest conditions.
- -Increasing the awareness of households .

→ May need to target development agents and village leaders in order to transfer their message.

A fair and acceptable system of the access and distribution of forest resources- for the sustainable management of forests.

→ This has to be clear to the community.

- Evidences also show that policies that empower communities and that have clear access and extraction rules are effective.

A clear rule regarding the allocation and distribution of benefits.

- Conclusion

→ Strong local level of institutions-are necessary to improve forest conditions-increase level of carbon stock.

- A number of conditioning variables are significant determinants of carbon stock in the study areas.
- Forest density – reduce the carbon stock.

  → Need to consider the role of population.
- Forest area is one of the important determinants of average carbon stock

  → Need to consider how to increase the current forest area
- Distance to town-mixed result

Agro-ecological factors are also affect the amount of carbon stock per capita.

-Altitude is negatively related to average carbon stock-May imply high altitude areas may not be preferable for REDD

-There is also variation across regions.

V. CONCLUSIONS AND POLICY IMPLICATIONS

- Strong local level institutions are important to increase carbon stock - important in improving tree cover and consequently enhance the total carbon stock in the region.

- Need to consider the role of population in selecting areas for REDD implementation-Areas where the forest density is low seems a good candidate for REDD.

- Need to have public policy that tries to increase forest cover-and plan for REDD at a larger scale.

  e.g. plantation and consider degraded areas

- The role of agro ecological factors should be taken in to account
- Future research may consider

  -aspects of forest management and REDD

  -The issue of leakage

THANK YOU