



Agroforestry not only provide a unique opportunity for carbon sequestration, and hence helping to mitigate climate change, but may also enhance the adaptive capacity of smallholder farmers to the changing climate.

Ecosystem-Based Mitigation and Adaptation (EBMA): Exploring The Synergies In Agroforestry

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As the impacts of climate change are felt and expected to further stress human and natural ecosystems, it is vital that essential ecosystem services are maintained in order to protect human wellbeing.

The rural poor in developing countries are most vulnerable to the impacts of climate change. Ecosystem services help improves human well-being and may enhance resilience and reduce risk for local communities.

Ecosystems provide a venue where the synergies between adaptation and mitigation can be optimized and trade-offs reduced.

There are two options to address climate change:

- (1) Mitigation
- (2) Adaptation

Historically, both has been treated separately due to its differences in spatial, temporal and sectoral scales. However, there has been recent focus in research and policy on synergies between adaptation and mitigation that will provide for win-win solutions. However, there is still the need to look more into the synergies and conflicts at different scales.

WHAT IS EBMA?

It includes a range of local and landscape scale strategies for managing ecosystems to increase resilience and maintain essential ecosystem services and reduce the vulnerability of people, their livelihoods and nature at the same time providing for the reduction of GHG emissions and enhancement of sinks in the face of climate change.

It addresses the role of ecosystem services in reducing the vulnerability of natural-resource dependent societies to climate change and taking advantage of the role of natural in greenhouse gas emissions, both as sources and sinks.

WHY LINK MITIGATION AND ADAPTATION?

- (1) Potential for creating win-win situations by implementing a single policy option;
- (2) Critical need to assess the conflicts and synergies, and the interactions with development plans and institutions;
- (3) Institutional complexity, insufficient opportunities and uncertainty are major challenges to the widespread development of synergies (Klein 2005).



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SYNERGIES IN AGROFORESTRY

Mitigation and adaptation share the ultimate purpose of reducing the undesirable impacts of climate change.

Through EbMA strategies, people and ecosystems will be better able to cope with risks associated with current climate and future climate change at the same time contributing to the efforts of reducing GHG concentration in the atmosphere.

Agroforestry presents opportunities for this synergies.

AGROFORESTRY AND CLIMATE CHANGE MITIGATION

Agroforestry systems present a good opportunity to increase carbon stocks in degraded and agricultural lands.

Of all the land uses analyzed in IPCC LULUC report, agroforestry offered the highest potential for carbon sequestration in non-Annex I countries (Figure 2), making it a quantitatively important carbon sink.

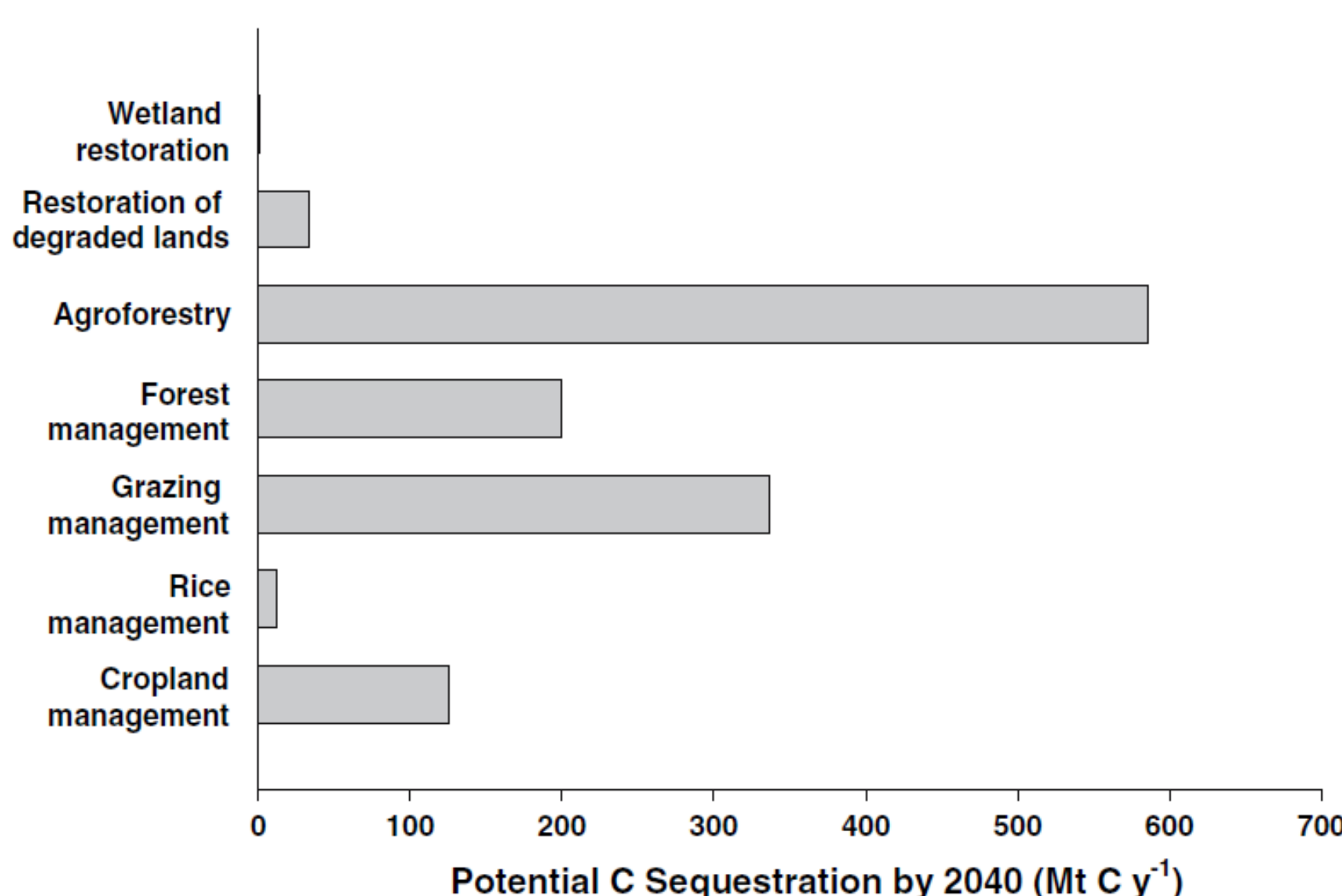


Figure 2. Carbon sequestration potential of different land use and management options (adapted from IPCC 2000)

ENHANCING FARMERS' ADAPTIVE CAPACITY THROUGH AGROFORESTRY

In addition to providing a wide range of environmental benefits such as restoration and maintenance of soil fertility, soil erosion control, and water conservation, the integration of trees on farms and in agricultural landscapes often results in a more diversified and sustainable crop production.

Also, agroforestry practices may indirectly improve the adaptive capacity of farmers through other benefits such as improved microclimate and reduced evapotranspiration.

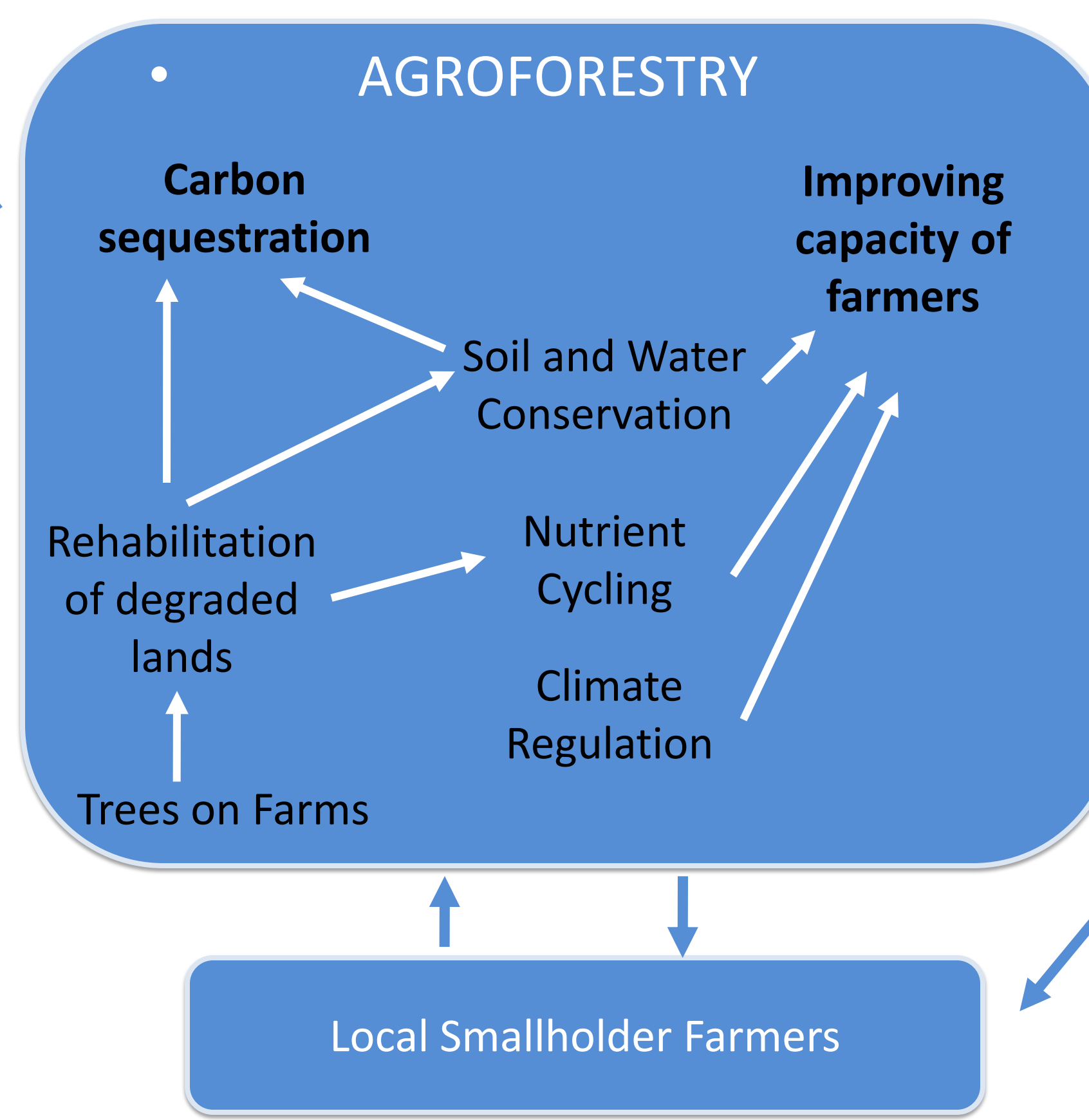


Figure 1. Seeing the synergy in agroforestry (Modified from Locatelli and Evans, 2008)

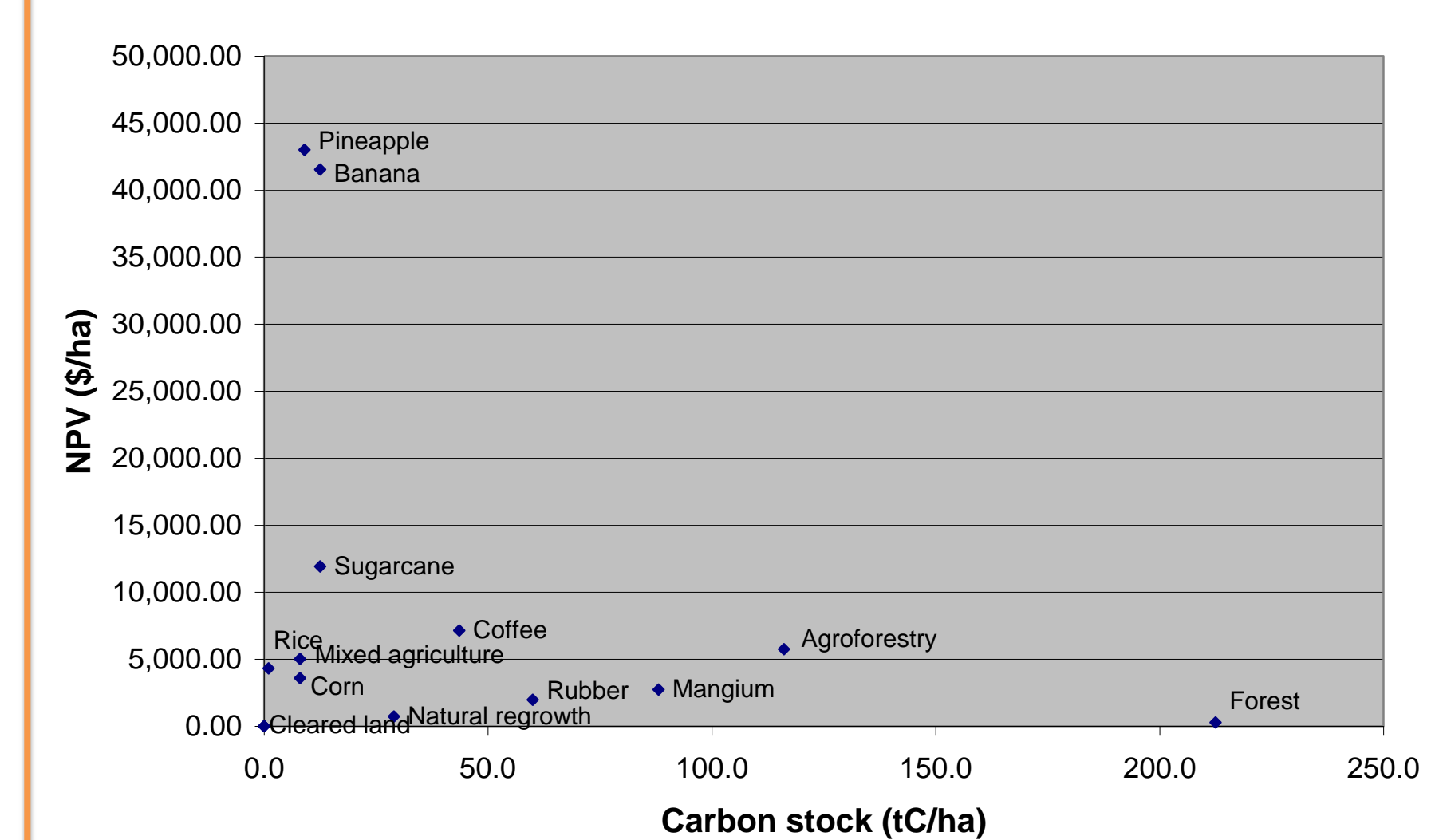


Figure 3. Tradeoffs between carbon stocks and social profitability of land use systems in Lantapan, Bukidnon (ASB Project)

Afforestation and Reforestation Projects under the Clean Development Mechanism (CDM AR) are more likely to be sustainable if they reduce the vulnerability of forests and forest people to climate change (Locatelli and Evans, 2009). Agroforestry can be promoted through CDM projects to create synergies between mitigation and adaptation and to meet the requirements that CDM projects produce social as well as environmental benefits (Verchot, et.al., 2007).

Aside from increasing the resilience of the biophysical system, the socioeconomic resilience of rural populations will be strengthened through the presence of trees in agricultural and degraded lands that can provide farmers with alternative or additional sources of income. This provide for the various components of the agroforestry systems to withstand shocks related to climate variability and future climate changes. Agroforestry has relatively high carbon stocks and viable financial benefits as compared to other crop intensive land uses (Figure3). Tree products (e.g. resins and fruits) can also buffer against income risks in cases of crop failure (Verchot, et.al., 2007).

Through EbMA strategies, people and ecosystems will be better able to cope with risks associated with current climate and future climate change at the same time contributing to the efforts of reducing GHG concentration in the atmosphere. There are encouraging synergies between mitigation and adaptation at the ecosystem level. A case in point, agroforestry promises to create the synergies between efforts to mitigate climate change and at the same time help vulnerable farmers adapt to the negative consequences of climate change. The challenge remains in putting these ideas into practice on the ground with smallholder farmers so that it will allow us to learn important lessons.

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