

Carbon stock assessment of a community-initiated mangrove plantation in Banacon Island, Bohol, Philippines

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Abstract

Restoration of degraded mangroves has significant role in climate change mitigation particularly in carbon absorption. In Bohol Province, Philippines, a small coastal island community named Banacon has initiated a mangrove amelioration project in late 1950s upon recognizing the problem of dwindling wood supply for fuel and house construction. From barely 15 hectares of limited land, the local people of Banacon had successfully developed 1,715 ha of *Rhizophora stylosa* plantations along the degraded coasts of their island despite of limited technical and financial support from the government. This effort therefore led to the recognition of Banacon as one of the largest man-made mangrove forests in Southeast Asia and recipient of the Philippine Wetland Conservation Award in 2003. Recognizing the potentials of these plantations towards incentive-based conservation mechanisms such as the payment for environmental service (PES) project, carbon stock assessment was done. Using standard sampling techniques and allometric equations designed for mangrove trees, aboveground carbon density was measured across stand ages namely, 15, 20 and 40 year-old plantations. Mature natural stands were also included in the assessment. On the average, 40 year-old plantation has the largest estimate with 370.7 ton ha⁻¹, followed by 15 year-old plantation with 208.5 ton ha⁻¹, then by natural stand with 189.7 ton ha⁻¹, and lastly with 20-year old plantation with 174. ton ha⁻¹. Surprisingly, the 15-year old plantation has larger carbon stocks than 20-year old and natural stands which can be attributed to lesser utilization being done in this particular site. Overall, mangroves of Banacon store huge amount of carbon. Local community should therefore continue to participate in reforestation activities and forest management planning in order to sustainably manage these stands.

Keywords

bakauan, best practice, coastal rehabilitation, forest conservation, local community