

# Better than nothing: biomass and carbon storage in natural and planted mangroves in Kiên Giang Province, Viet Nam

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## Abstract

The mangrove vegetation in Kiên Giang Province on the western Mekong Delta coast of Viet Nam was poorly known, and has suffered drastic contraction in area via conversion and coastal erosion. In some counter to this trend, planting of *Rhizophora apiculata*, *Sonneratia caseolaris* and *Avicennia alba* has occurred periodically in recent times, with mixed success, particularly in *Avicennia* plantings on the open coast. Concerns within Kiên Giang to find avenues to value the remaining vegetation led to a rapid survey of mangrove vegetation, biomass and carbon storage, from field data and a set of allometric equations. Values varied reflecting the range of vegetation present, but in places above ground biomass (AGB) exceeded 300 t DW ha<sup>-1</sup> and estimated total carbon store exceeded 200 t ha<sup>-1</sup>. Much of the vegetation is young so the potential is higher than reported values. Natural colonizing vegetation on the open coast is slow to gain biomass, but does so over time with increasing diversity of species. Planted stands of *R. apiculata* and *S. caseolaris* were found to be a reliable and fast source of mangrove biomass gain, with 16-18 year old *R. apiculata* stands having an AGB > 200 t ha<sup>-1</sup>. However, cutting of trees is ubiquitous and in the worst cases impacts on stand biomass (up to c. 45 %). Worse, large scale conversion continues and the coast is retracting fast through erosion on large fronts, squeezing the mangrove vegetation thinner and thinner. The diminishment becomes the major problem for financial valuation, despite the potential of the vegetation. However, work such as this shows that even in cases where only a proportion of the mangrove remains, the biomass/carbon benefits should still be given currency in arguments for protecting what is left and as support for schemes to enhance mangrove vegetation.

## Keywords

REDD, climate change, forests, blue carbon, protection