

Ecosystem services in Tropical Dry Forests: assessing carbon sequestration

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Earth's ecosystems provide a myriad of services that are fundamental for human health, livelihoods, development, and survival. Over the last decades, ecosystems in our planet have experienced dramatic changes that are compromising their future sustainability and as a consequence of the services they provide. Ecosystem services approaches emerge as a novel way of reframing the close link between the properties and functions of ecosystems and the benefits human populations derived from them. The capability of forest ecosystems to sequester and store carbon dioxide (CO₂) from the atmosphere represents a direct contribution to the regulation of climate of the planet, and as such is considered as a key ecosystem service worldwide. We assessed the biophysical and economical potential of Tropical Dry Forests (TDF) for the provision of the carbon sequestration service across the Americas in Mexico, Costa Rica, Brazil and Bolivia. We found that TDF supply an annual average CO₂ sequestration rate of $22.34 \pm 3.31 \text{ tCO}_2 \text{ ha}^{-1} \text{ yr}^{-1}$, which equals to an economic value that ranges from 488,8 US\$ ha⁻¹ yr⁻¹, for the lowest estimate, to 2828.5 US\$ ha⁻¹ yr⁻¹ for the highest value. For the biophysical estimates, we also identified that approximately 66% of the transferred carbon from the atmosphere is stored as biomass. This has implications for policy and decision making processes regarding the sustainable use and conservancy of TDF.