North Brazil Shelf Mangrove Project
Blue Carbon Feasibility Assessment

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1 Executive Summary

Blue carbon ecosystems, which are coastal vegetated ecosystems including mangroves, tidal wetlands, and seagrass beds, sequester significant amounts of carbon within the soil for tens to thousands of years. In addition to carbon storage, blue carbon ecosystems offer many ecosystem services, including habitat and nurseries for fish, birds, invertebrates, and mammals, shoreline protection, and land-building capacity, among many others. Once disturbed and drained, the substantial soil carbon stores can be released at significant rates. These ecosystems also will be significantly impacted by predicted accelerated sea level rise, especially if abutting hardened structures. This Blue Carbon Feasibility Assessment presents current data specifically on mangrove distributions, carbon stocks, and deforestation in Guyana and Suriname along the North Brazil Shelf Large Marine Ecosystem (NBS-LME), and outlines the methodologies and feasibility of developing carbon finance projects.

Mangrove ecosystems along the NBS-LME are dominated by *Avicennia germinans*, with two others, *Laguncularia racemosa* and *Rhizophora mangle*, also present. The development of mangrove stands is largely dependent on the presence of large mud banks originating from the Amazon River that migrate slowly westward and dampen wind wave effects. Mangroves grow quickly once established given the correct inundation and salinity regimes. Stands typically last for 60 to 70 years until the mud bank moves and largescale erosion occurs. While deforestation historically has occurred to a larger extent in Guyana than Suriname, current deforestation rates are low; however, mangrove regeneration in these areas is not occurring naturally and restoration efforts have been implemented, with varying success.

Most mangrove research along the NBS-LME has occurred in French Guiana, and the rich dataset of tree and soil carbon stocks was utilized in estimating carbon stocks in Suriname and Guyana. Additionally, many global-scale estimates of mangrove areas over time were incorporated to provide a range of country-level area estimates and associated carbon stocks. In Guyana, country-level mangrove C stock estimates range widely from 3.11 to 8.15 Tg C and from 11.6 to 19.8 Tg C in Suriname.

Key components needed to assess the feasibility of a carbon finance project are a carbon project methodology, a carbon market (currently in the NBS-LME, this would be a voluntary market), landscape feasibility, assessment of additionality, greenhouse gas accounting, financial feasibility, legal feasibility, organizational feasibility, and a permanence assessment. The latter is integral for assessing project longevity and feasibility. There is great potential for carbon financing projects in Suriname and Guyana for both restoration and conservation. Project implementation, validation, and monitoring costs are estimated at $350,000 USD, and, considering this, most scenarios presented for the NBS-LME result in revenue. A clear plan including organizational feasibility and structure combined with community engagement and involvement are integral in creating a successful carbon project.