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Coastal and Marine Blue Carbon: A Viable Solution for Climate Change

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All coastal wetlands and oceanic ecosystems are long term net sinks for atmospheric CO2 through production of standing biomass and burial of primarily root and rhizome organic matter in sediment. Occupying only 2% of seabed area, vegetated wetlands represent 50% of carbon transfer from ocean sediments. Coastal and oceanic vegetated ecosystems (seagrass meadows, mangrove forests and salt marshes), primarily called blue carbon sinks which when lost, can lead to reduced organic carbon stocks and increased CO_2 emissions. The carbon fixed per unit area of blue carbon ecosystems is several folds greater than terrestrial pool. Maintaining and enhancing blue carbon would be an integral part of the nature-based solutions for climate change. This research intends to summarize the current scientific data on blue carbon ecosystems and specific actions needed to address them. Despite their value in sequestering carbon, they are being wiped out at an alarming rate. Every year 1.9% of mangroves, 1.5% of tidal marshes and 1.5% of seagrasses are being lost which end up in an annual subsequent loss of about 240, 60, and 150 million tons of CO_2 emission, respectively. Anthropogenic pressures have over taken resulting in anthropogenic carbon emissions. It is necessary to improve science-based understanding of the underlying mechanisms of carbon sequestration of blue carbon sinks and take actions such as conserving historically sequestered carbon pools and restoring and rebuilding degraded carbon pools. However, sustainable management of these systems now would slow or reverse ongoing loss of global carbon.

Key words: *Coastal and marine blue carbon, Sea grass, Mangroves, Salt marshes, Climate change mitigation, Restoration*

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