

Abstract

Incorporating blue carbon ecosystems into Kenya's Nationally Determined Contributions (NDCs) is crucial for effective climate action, as these ecosystems offer significant carbon sequestration potential. This study presents the progress and challenges of incorporating blue carbon climate solutions into Kenya's climate commitments. The study aimed to gather data, identify information gaps to ascertain and collate knowledge required for strengthening full integration of BCEs into Kenya's climate commitments. A review of existing information and analysis on trends, status and conditions of Kenya's BCEs were conducted. Results from this study show that Kenya's Blue Carbon Ecosystems (BCEs), particularly mangroves and seagrasses, are declining at alarming rates of 0.57 % and 0.26 % annually, respectively, with projections showing that, without intervention, mangrove cover could decrease by 15.8 % by 2050, releasing approximately 55.3 MtCO_{2e}. This decline underscores the urgent need for strong data collection and enhanced policy frameworks to enable meaningful BCE integration into climate strategies. Management interventions could mitigate these losses, boosting mangrove cover by 4 % above 2020 levels and reducing carbon losses by 67 % compared to a business-as-usual scenario. Furthermore, such interventions yield substantial economic return up to five times the cost for mangroves and three times for seagrasses highlighting the economic and environmental imperative of these measures. To fully realize these benefits, comprehensive data readiness assessments and improved policy support are essential for embedding BCEs effectively within Kenya's climate commitments.