



# Carbon Assessment In Mangrove Ecosystem

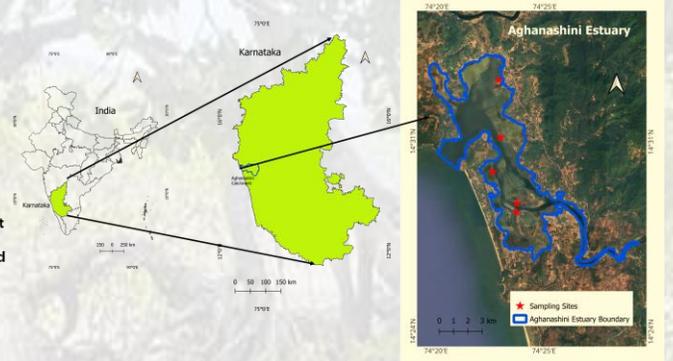
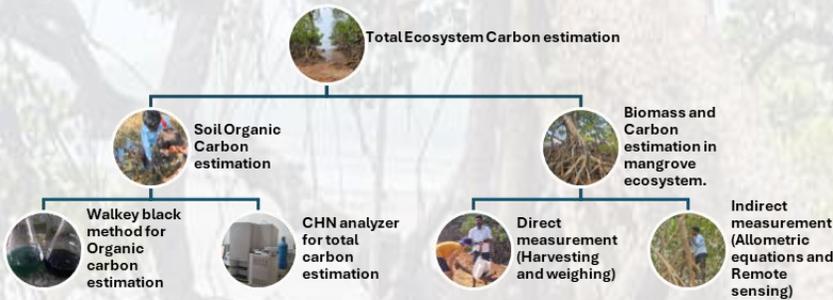
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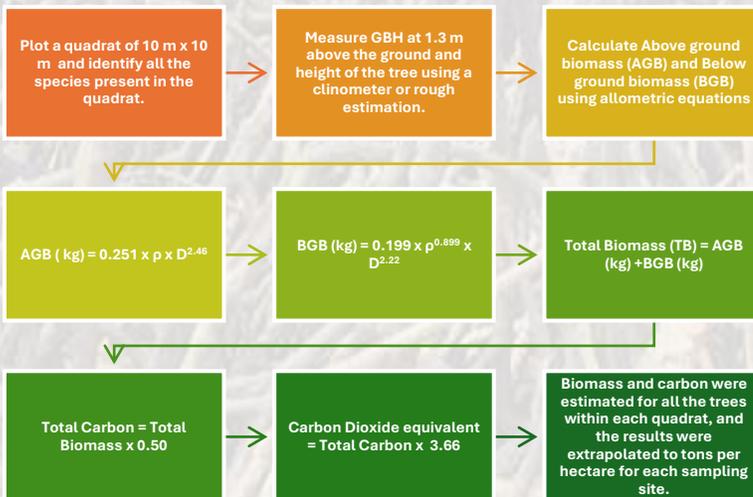


## Mangrove ecosystem

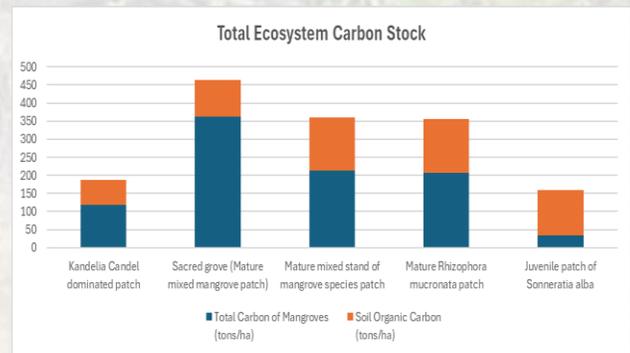
- ❖ Mangroves are a group of trees and shrubs that live in the coastal intertidal zone.
- ❖ Distributed globally between 32° 20' N (Bermuda) and 38° 59' S (New Zealand), covering 150,000 km<sup>2</sup> (FSI 2017).
- ❖ They are rich, productive, and biologically very important ecosystem of the world, which provide unique ecosystem goods and services and have high socio-economic values.
- ❖ Stabilize coastlines, reducing erosion from storm surges, waves, and tides.
- ❖ Highly productivity ecosystem with their dense woody biomass stores carbon effectively. Carbon sequestered in their trunks, branches, roots, and leaves.
- ❖ Mangrove sediments are rich in organic carbon, accumulating from leaf litter, woody debris, and root biomass. The anaerobic conditions in waterlogged soils significantly slow the decomposition rate, allowing for long-term carbon storage and enhancing the ecosystem's role in climate mitigation.
- ❖ Mangrove ecosystem store three or four times more carbon per unit area than the terrestrial forests.



### Methodology for Mangrove Biomass sampling



### Results and Discussion



- ❖ The total mangrove biomass ranged from 66 to 723 tons per hectare, with corresponding carbon levels ranging from 33 to 362 tons of carbon per hectare. Juvenile patches of *Sonneratia alba* exhibited the lowest biomass and carbon values, while the oldest mangrove patches recorded the highest levels for both metrics.
- ❖ Organic carbon content of soil ranged from 2.1% to 5.1%, while bulk density varied between 0.96 and 1.12 g/cm<sup>3</sup>. The sampling depth remained consistent at 30 cm across all sites.
- ❖ Soil Organic Carbon (SOC) varied from 68 to 150 ton C/ha, with the lowest levels observed at *Kandelia Candel* dominated patch and the highest at mature *Rhizophora mucronata* patch.
- ❖ Total ecosystem carbon stock ranged from 160 to 463 ton C/ha.
- ❖ The carbon sequestration potential of the mangrove ecosystem is estimated at 1116 ± 468.62 t C/ha, underscoring its vital role in capturing carbon and mitigating climate change.

### Methodology for Mangrove Soil sampling

