

Mangrove model park: communicating the geochemistry of 'blue carbon' to disaster vulnerable population of Indian Sundarbans

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Sundarban mangrove ecosystem is the world's largest transboundary contiguous mangrove ecosystem. Blue carbon is one of the world's largest carbon sinks and mangrove soil captures the bulk of the sequestered carbon [1]. The high salinity deters decomposition process, resulting in more carbon build up in the mangrove environment [1]. But communicating this complex geochemistry to marginalized local population regularly impacted by natural disasters, is an arduous task. But conservation initiative constructing a mangrove model park along with Self-Help Group (SHG) mediated community awareness camp have effectively implemented the 'blue carbon sequestration' theory in the field.

As a part of a socio-environmental intervention, between 2010 and 2022, local communities were mobilized, and eco-engineering methods were employed to successfully conserve 23 species of mangrove flora [2]. Species such as *Heritiera fomes*, *Nypa fruticans*, *Kandelia candel*, *Bruguiera parviflora*, *Xylocarpus granatum* and *Xylocarpus moluccensis*, which are now rarely found in the Indian part of Sundarbans, are now conserved in the park with local community support.

Between 2012 and 2017, years this *ex-situ* conservation park has shown an increase in soil organic blue carbon pool (45% between 2012 and 2017), indicating restoration of mangrove ecological services. Challenges such as acquisition of land, enlisting people participation, fear of tiger straying from nearby reserve forest due to available mangrove cover was omnipresent. But regular awareness camp, building up of local institutions make this endeavor a success. The take home message from the project is that community participation along with third sector involvement can be an effective method in communicating complex 'geochemistry' jargons such as 'blue carbon sequestration' effectively to local communities and building resilience in the wake of climate change.

References:

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[2] Chowdhury, A., Naz, A., Bhattacharyya, S., & Sanyal, P. (2018). Cost-benefit analysis of 'Blue Carbon' sequestration by plantation of few key mangrove species at Sundarban Biosphere Reserve, India. *Carbon Management*, 9(6), 575-586.