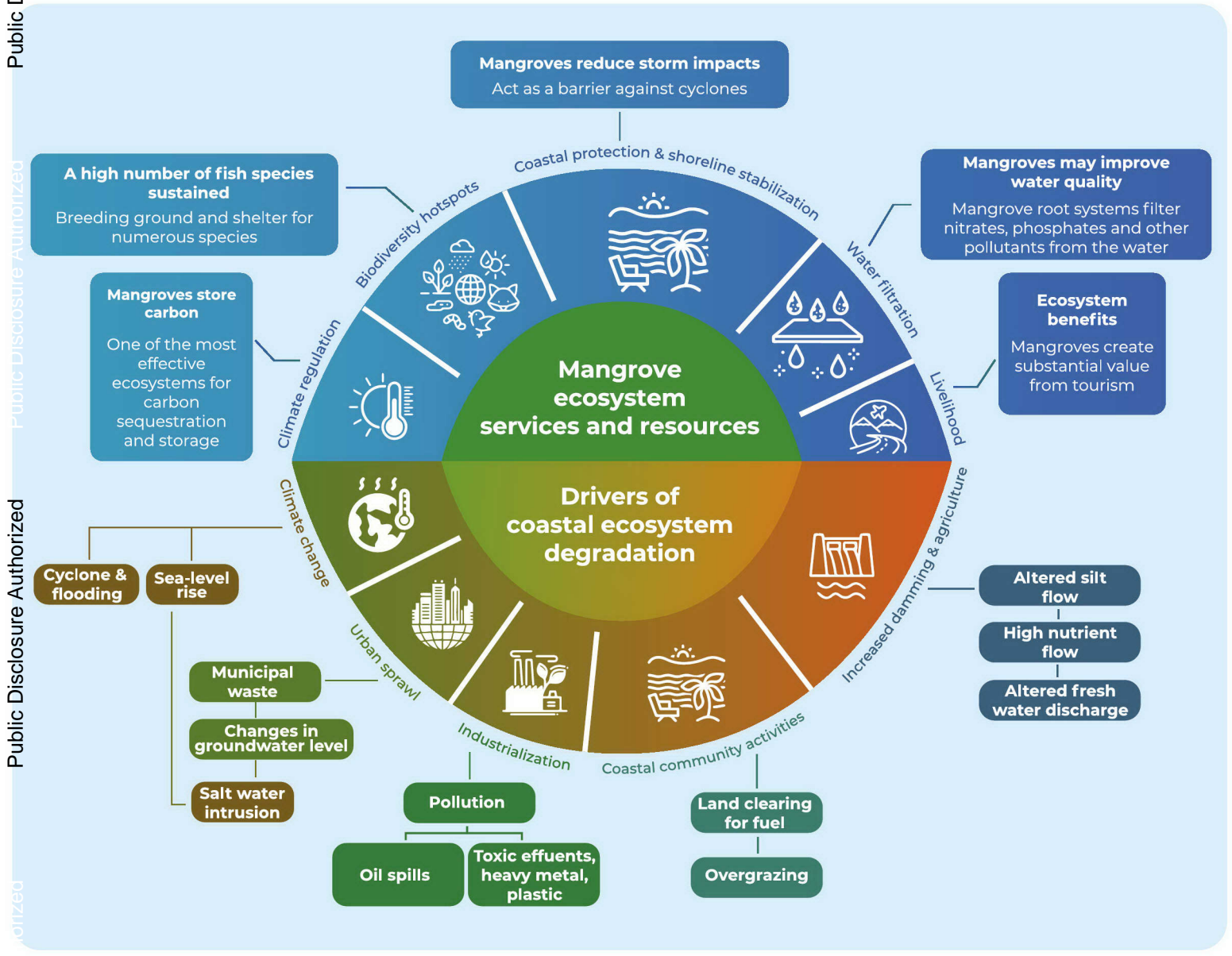


Blue Carbon Rapid Assessment for Pakistan

in support of the revision of its Nationally Determined Contribution under the Paris Agreement



The study analyzed Pakistan's blue carbon exposure, relevant carbon stock trends, and the sector's potential for climate adaptation and mitigation. Blue carbon ecosystems could serve as assets to deliver Pakistan's NDC through carbon sequestration and adaptation. As part of the rapid assessment, a first-pass estimate of Pakistan's blue carbon stocks was conducted, and the potential for emission reductions presented.



Pakistan's Blue Carbon Ecosystems

Pakistan's coastal ecosystems exploited for short-term economic gains

Indus Delta – **7th** largest arid mangrove ecosystem in the world

Blue carbon ecosystems offer **climate change mitigation and adaptation benefits** on a large scale

Survival of blue carbon ecosystems threatened by coastal development and climate change

CO₂

21 million tonnes C_{org} = 76.4 million tonnes CO₂e
Total carbon storage of mangroves and tidal marshes in Pakistan

12.9 million tonnes 1990	19.8 million tonnes 2020
Total Carbon Stock (C _{org})	

477 km ² 1990	1,464 km ² 2020
Pakistan mangrove coverage	
Equivalent to 3.4% annual increase	

Sindh & Balochistan Provinces in Pakistan with coastal ecosystems

Mangrove forests are in a highly degraded state

\$0.9 - \$1.5 billion Value of blue carbon stocks in

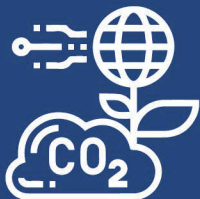
Information on **other blue carbon ecosystems**, particularly tidal marshes and seagrass meadows, is very limited

Challenges

- Unavailability of basic data and absence of a plan to gather it
- Limited technical and financial capacities of local governments
- Lack of cross-sectoral planning and coastal management
- Lack of measures for building community awareness, education, and technical capacity
- Lack of efficient law enforcement and institutional capacity

Opportunities

- Livelihood creation and diversification opportunities through developing blue carbon systems
- Sustainable coastal tourism opportunities through marine management
- Opportunities to recover ecosystems damaged or lost to over-exploitation and climate change, and effective nature-based solutions
- Opportunities to promote sectors such as aquaculture



First-pass Estimate of Blue Carbon Stocks and Value

Mangroves Store around **19.8 million tonnes** of organic carbon Value: **\$0.9-\$1.4 billion**

Tidal marshes Store around **1 million tonnes** of organic carbon Value: **\$44-\$74 million**

Seagrass Data not available for Pakistan

Rapid Assessment Recommendations

Recommendations are presented in the report towards the development of a Blue Carbon Action and Finance Roadmap, and are categorized into two pillars: Research and Outreach and Blue Carbon Implementation.

Research and Outreach

Improve mapping and monitoring of blue carbon ecosystems

Update national GHG inventory and prepare for national NDC accounting

Evaluate key pressures on Pakistan's blue carbon ecosystems

Invest in research to evaluate and map blue carbon co-benefits

Strengthen education, training, and engagement

Blue Carbon Implementation

Review and improve institutional arrangements

Capacity building

Climate change adaptation

Climate change mitigation

Financial resources

Government of Pakistan's Initiatives



Ten Billion Tree Tsunami

Project duration: Four years

Project financing: PRs 125 billion

Includes mangrove restoration as part of a larger project

Project targets include:

- 1.5 billion mangrove trees to be planted in Sindh alone
- 85,000 acres in Indus Delta to be afforested between 2021-2024
- Includes restoration of riverine, mangrove, dry land, and urban ecosystems

Protected Areas Initiative:

- Kick-started with the announcement of 15 national parks
- Astola Island is Pakistan's first marine protected area

Green Stimulus Package:

- Introduced in the wake of COVID-19, it offers green jobs to daily wage earners, especially women and youth. Work includes nursery raising, plantation, maintenance, infrastructure, and conservation activities in protected areas
- 84,609 daily wage earners provided green jobs under TBTT
- 430 million trees have been planted already, with a target of 1 billion by 30 June, 2021