

Forests4Water: The Role of Forest Ecosystems in Safeguarding Water Resources – Session II

23 SEPTEMBER 2025

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AGENDA

- Welcome, Introduction and housekeeping
  Afia Siddiqui, Learn Officer , IWA
- Mangrove Stewardship in Indian Sundarban bring tangible benefits for resilience of Kolkata City
  Ajanta Dey, Joint Secretary & Programme Director, Nature Environment & Wildlife Society, Kolkata
- Mangroves: Our First Line of Defense
  Ferdin Sylvester, Director, OneEarth Foundation, Goa
- Moderated Panel discussions including Q and A ,lessons learned, & Closing
  Akanksha Tyagi, Communications and Partnerships Associate, IUCN Asia

INTRODUCTION

- The webinar series is co-organised by the International Water Association (IWA) and the International Union for Conservation of Nature (IUCN).

- It will showcase global and regional experiences on integrating ecosystem-based approaches that harnesses the combined power of forest and water ecosystems for improving city planning and adaptation strategies.

INTRODUCTION

- The second webinar will examine how '**Coastal cities**' can combat flooding, saline intrusion, and climate impacts by harnessing the vital role of coastal forests and mangroves.

- The webinars will anchor discussions around three core dimensions: (1) science, knowledge, and policy to understand forest–water linkages; (2) planning and implementation challenges and solutions; and (3) community innovation and social resilience through inclusive governance, youth engagement, and localised actions.

WEBINAR INFORMATION

- This webinar will be **recorded and made available "on-demand"** on the IWA Connect Plus platform and IWA Network website, with relevant information.
- The **speakers** are responsible for **securing copyright permissions** for any work that they will present of which they are not the legal copyright holder.
- The opinions, hypothesis, conclusions or recommendations contained in the presentations and other materials are the **sole responsibility of the speaker(s)** and do not necessarily reflect IWA & IUCN's opinion.

WEBINAR INFORMATION



- **'Chat' box**: please use this for general requests and for interactive activities.
- **'Q&A' box**: please use this to send questions to the panelists. (We will answer these during the discussions)

Please Note: *Attendees' microphones are muted. We cannot respond to 'Raise Hand'.*

SPEAKERS PROFILE



***Ajanta Dey**, Joint Secretary & Programme Director, Nature Environment & Wildlife Society, Kolkata*

Ms. Ajanta Dey, is a conservation practitioner and has been working on ecological restoration of landscapes with an ecosystem-based approach for over two decades. She is the Joint Secretary & Programme Director of Nature Environment & Wildlife Society (NEWS) .She is also the Member of West Bengal State Coastal Zone Management Authority.



Ferdin Sylvester, Director, OneEarth Foundation, Goa

Mr. Ferdin is an Environmental Engineer and Climate Resilience Strategist with over 12 years of experience in advancing ecosystem-based solutions for climate adaptation, coastal resilience, circular economy, and climate policy. He specialises in designing field-tested, technology-integrated, and community-driven interventions - ranging from mangrove-based storm surge models to plastic circularity systems and SDG-aligned frameworks.



Mangrove Stewardship in Indian Sundarban bring tangible benefits for resilience of Kolkata City

AJANTA DEY , JOINT SECRETARY & PROGRAMME DIRECTOR

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KOLKATA CITY – ONLY 113 KM FROM BAY OF BENGAL COAST

- Aila , a super cyclone in 2009 had disrupted city life:

- Estimated 1,800 trees were uprooted in just four hours. This resulted in over 30 main roads being blocked, paralyzing traffic and causing stranded commuters for hours. Even the city's metro system was affected by the storm.
- Many electric poles toppled, leading to a disruption in the electricity supply across several parts of the metropolis. Water supply and cable connections were also affected.
- The city was filled with debris, and cleanup efforts by the municipal corporation were slow due to a lack of adequate resources
- Kolkata also experienced flooding, with many parts reporting standing water.
- At least seven deaths occurred within Kolkata itself, some attributed to falling trees.
- The storm and its aftermath also led to a significant increase in migration from the severely affected coastal areas of the Sundarbans to Kolkata, as people sought shelter and work.

MANGROVES ACT AS BIO-SHIELD



Rich in biodiversity , 84 species of mangroves , 492 species of birds , crustaceans , fishes, reptiles, mammals



Spread over India and Bangladesh , the largest contiguous mangrove forest in the world ; Indian Sundarban comprises 9630 sq km.



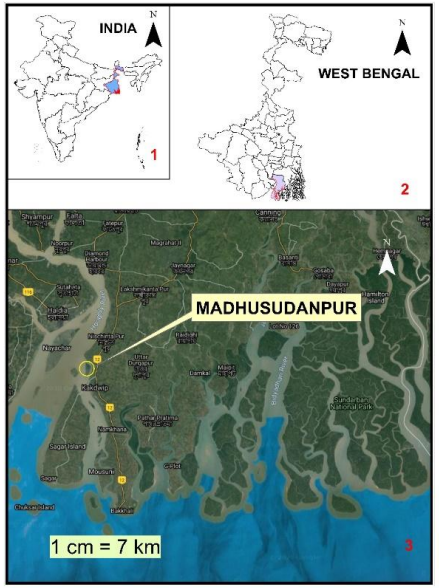


PROVIDES AN ARRAY OF ECOSYSTEM SERVICES

1) Protection against storms and cyclones
2) They retain terrestrial sediments and recycle nutrients, supporting clear offshore waters
3) Nursery of fishes, finfishes, crabs etc
4) It also acts as carbon sequestering pool, being one of most carbon-rich biomes
5) Mangrove ecosystem also acts as absorbent of toxic pollutants and sediments before they reach the coastal ocean
6) Non timber forest produces like honey, wax is an important livelihood resource for significant population of the marginalised communities.
7) The aesthetics and recreational facilities are also of immense potential that encourage tourism and related income augmentation for the local communities.

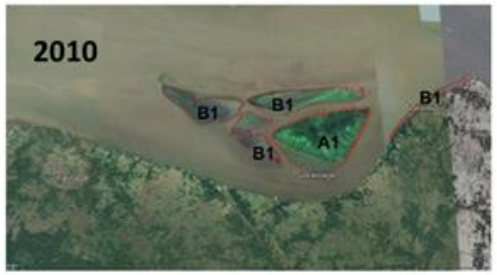
MANGROVE CREATE THE BUFFER BETWEEN LAND AND SEA

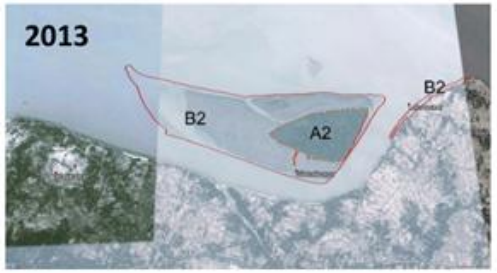


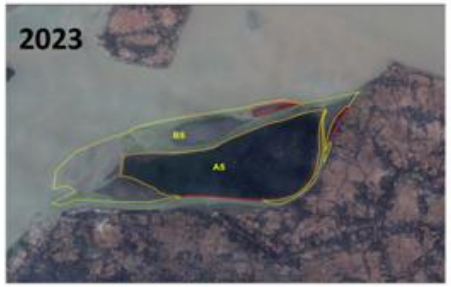


MANGROVES ACCRETE LAND





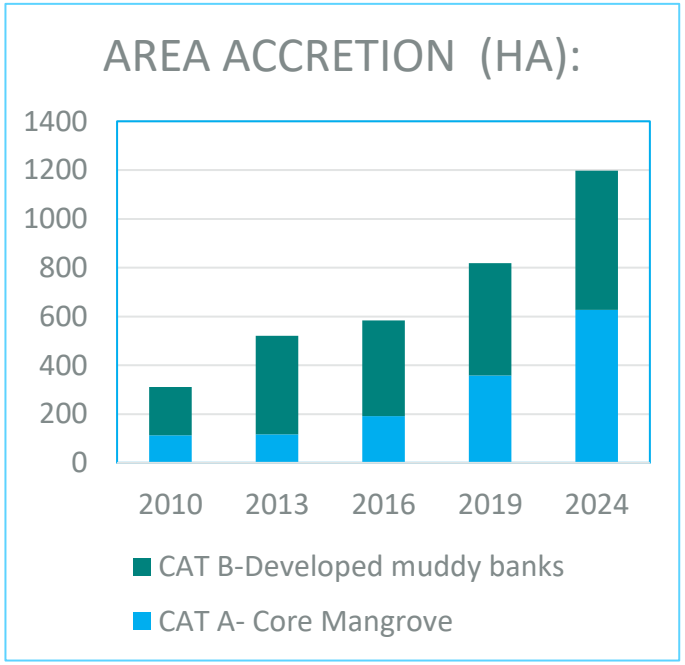








Gradual accretion in creating the bio-shield



1100 HA OF MANGROVES RICH IN BIODIVERSITY





92 bird species observed.

3 Near Threatened (NT) species (IUCN Red List version 2024-2) viz. Black-headed ibis, Eurasian Curlew and Woolly necked stork.

Rare sightings of birds like short-tailed shearwater

Breeding population for Purple heron, Open bill stork

- 10 species of mammals documented - 3 species of cats, 2 species of otters and 1 species of dolphin.



11 reptile species including 8 species of snakes and 3 species of monitor lizards.

PROVIDES LIVELIHOOD





- 52 crab collectors in the site in 2011
- 570-625 crab collectors presently
- 456 – 529 % increase in crab production in comparison to 2010

TOTAL GROUP	FEMALE GROUP	MIXED GROUP	FEMALE MEMBERS	MALE MEMBERS
62	42	20	555	271





Integrated Livelihood Programs:

- Natural farming
- Sustainable pisciculture
- Backyard poultry farming
- Sustainable Bee keeping
- Integrated mangrove Aquaculture
- Responsible Tourism-aligning mangrove conservation with livelihood augmentation.





WOMEN STEWARDSHIP SHAPES INTO GREEN BRIGADE WHILE CREATING THIS TRANSFORMATION



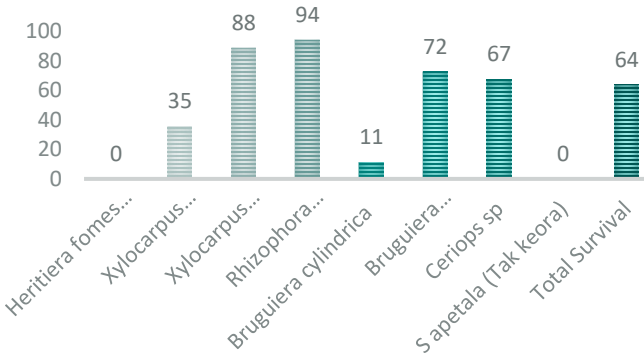








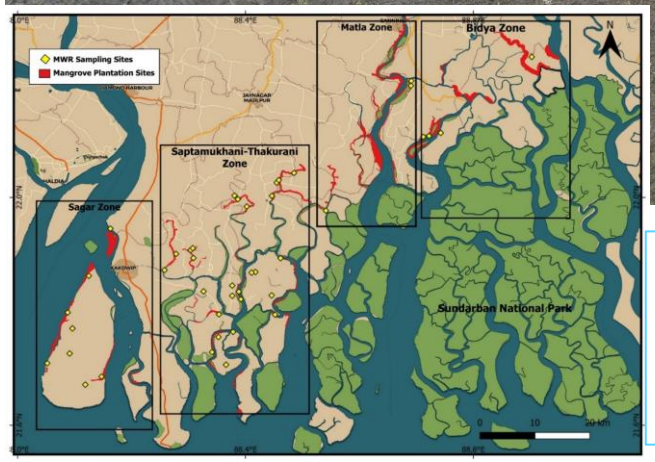




Post Aila, 5075 ha of mangroves restored by local communities esp women – 83 sites in 154 villages in Sundarban

GREEN BRIGADE IN MONITORING ACTION

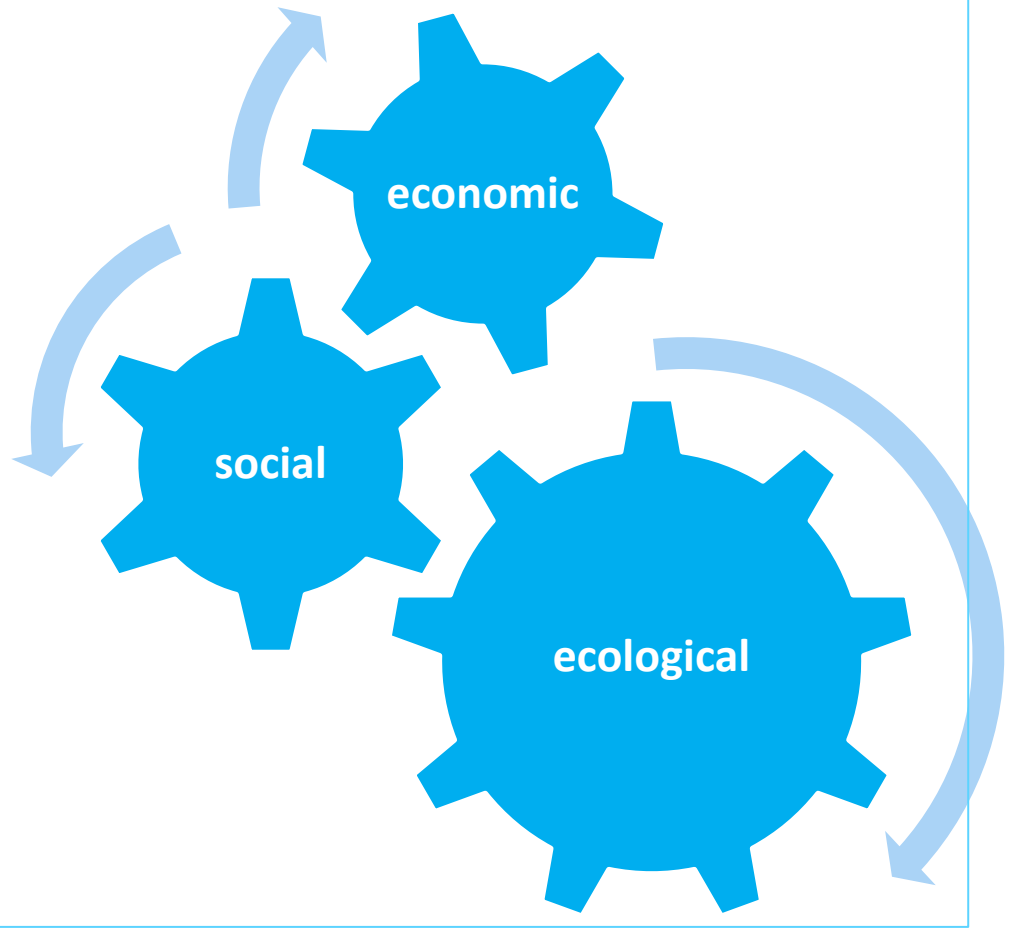




Monthly Mangrove Watch Report brings comparative data over the four zones

Parameters	Saptamukhani -Thakurani	Sagar	Bidya	Matla
Total no. of sites	28	7	4	3
Total Sampling points	135	36	17	14
Average area (Bigha)	269.05625	1354.6	85.76	154.3
% site with low veg cover	6.25	27.03	5.88	0
% site with mod veg cover	15	43.24	0	28.57
% site with dense veg cover	78.75	29.73	94.12	71.43
% site with open caopy cover	8.125	21.62	5.88	0
% site with discontinuous caopy cover	3.75	8.11	0	0
% site with mod caopy cover	16.875	45.95	0	28.57
% site with dense caopy cover	71.25	24.32	94.12	71.43
% site with soft soil	22.5	10.18	0	0
% site with mixed soil	35.625	45.95	100	78.567
% site with hard soil	41.875	43.24	0	21.43
% site with 0-10 days inundation/month	12.5	13.51	0	0
% site with 10-20 days inundation/month	38.75	70.27	100	100
% site with 20-30 days inundation/month	48.75	16.22	0	0
Mean height of Plants (Feet)	7.5±0.17	11.67±0.65	27.19±0.24	23.36±1.58
Mean plant density/Bigha	1237±50	5140±370	1033±42.65	1179±185
% site with observed tree felling activity	71.43	100	100	100
% site with observed grazing activity	57	85.71	50	100
% site with observed prawn seed collection	92.86	100	25	66.66
% site with observed erosion	10.71	100	75	33.33
% site with observed siltation	39.29	14.29	100	66.66
% site with observed natural regeneration	82.14	100	100	66.66
% site with observed pest attack	60.71	0	75	0
% site with observed recovery from pest attack	100	0	100	0

FORESTS IMPACT IN PROTECTING CITIES



- Kolkata's low-lying location on the Ganga Delta, with an average elevation of just 6.4 meters above mean sea level, makes it highly susceptible to flooding.
- The IPCC's Sixth Assessment Report (AR6) identified Kolkata as one of the **most vulnerable cities to disaster-related mortality** among eight megacities worldwide.
- The reports also place Kolkata among the **top 20 coastal cities** with the highest potential for flood-related losses by 2050.
- This could displace millions of people, with some estimates suggesting up to 4.5 crore people could be at risk of inundation by 2100.

MANGROVES BUILD COASTAL RESILIENCE



Thank you



Mangroves: Our First Line of Defense

FERDIN SYLVESTER – DIRECTOR ONEEARTH FOUNDATION (GOA)

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WHAT ARE MANGROVES?

Prevent erosion, flooding, stabilize soil.

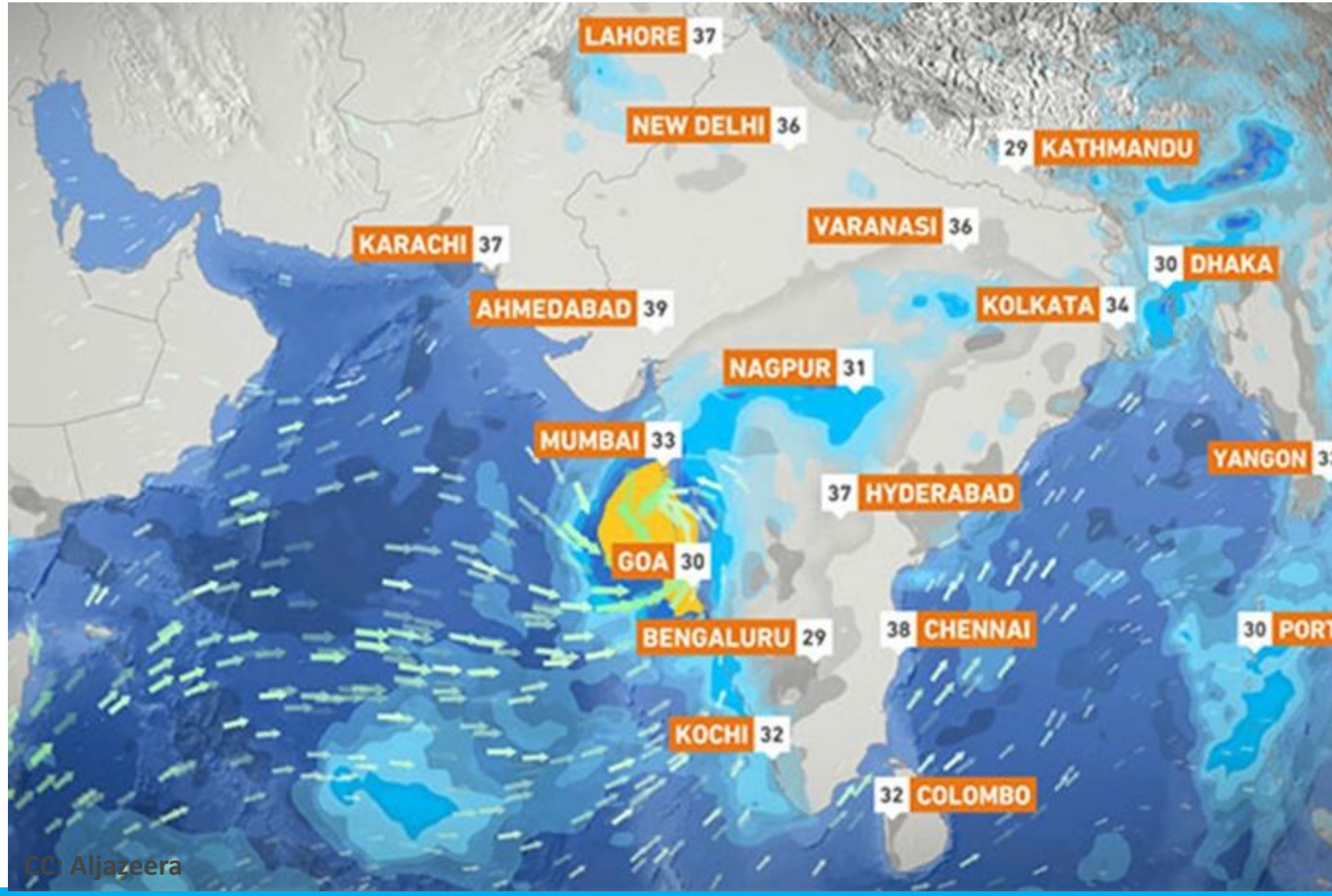
First line of defense against cyclones, storm wave surges, tsunamis.



TROUBLE ON THE WESTERN FRONT?

Arabian Sea heating → cyclones projected to increase.

What stands between us and such disasters?



THE ANSWER IS MANGROVES

The lowest death toll and capita loss trends observed in areas that were situated behind mangrove forests.

Odisha Super Cyclone (1999)

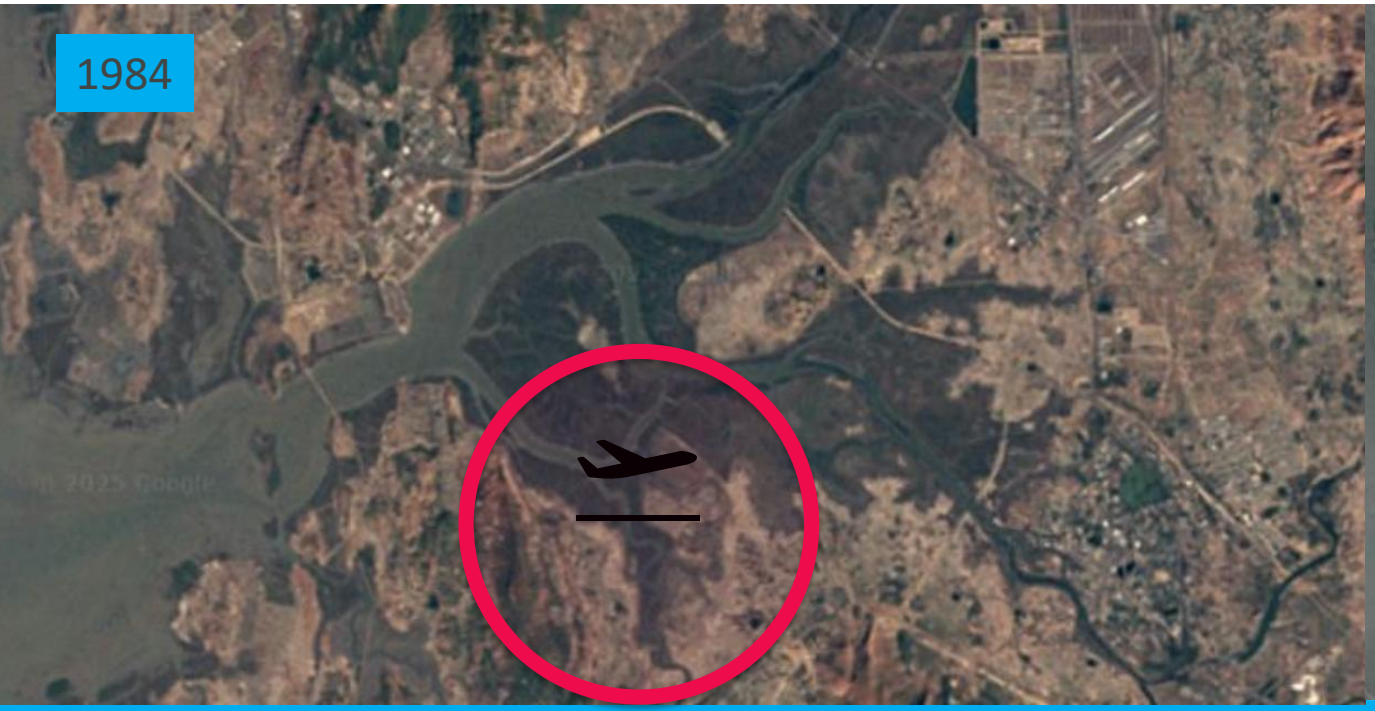
Typhoon Haiyan, Philippines (2013)

Tsunami, Pichavaram/Muthupet (2004)
Mangroves reduces the region's coastal exposure value from value from 4.78 (High risk) to 2.10 (Medium-low risk)



RESULT OF HUMAN NATURE DISCONNECT

- Most citizens unaware and disconnected from mangroves.
- Don’t link them with cyclones or floods.
- Allows for indiscriminate anthropogenic destruction.





EXPERIENTIAL TRAIL + ART

- Walk with students into mangroves.
- Collected roots, leaves shells → turned into art.
- Experiential, not theory.





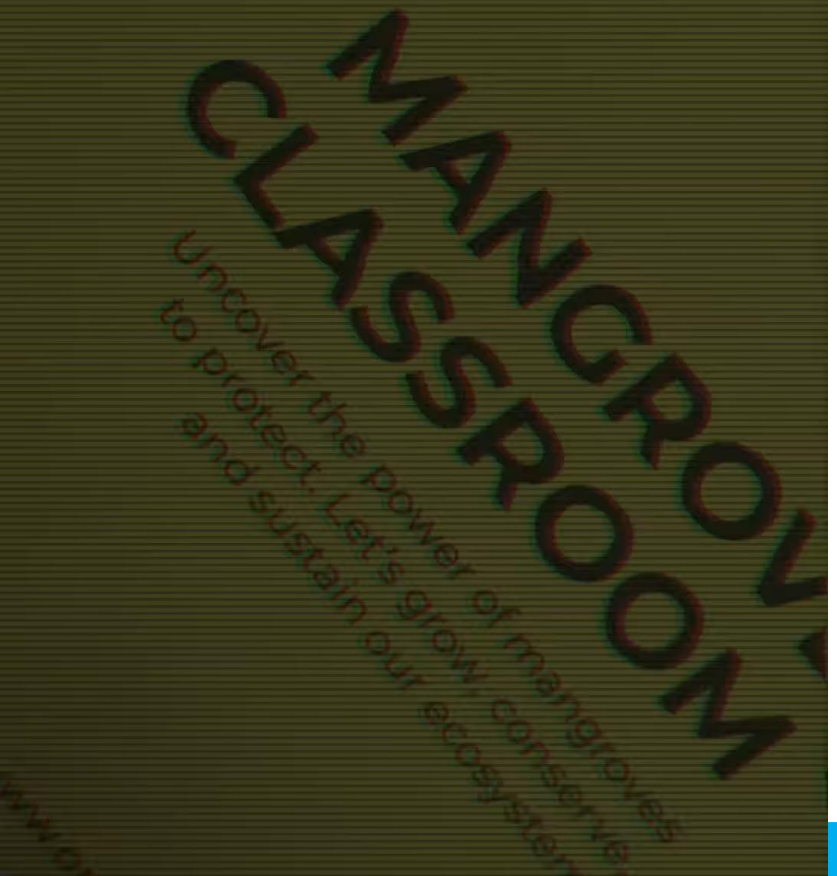






PIROJSHA GODREJ FOUNDATION

MANGROVE ODYSSEY



BRINGING PEOPLE INTO MANGROVES

IWA the international water association SOUTH ASIA

IUCN

ONE EARTH

30 days of nature trails and workshops

An emotional or spiritual experience
- Music
- Art
- Food
- Photography

Intersection of community, science, art, learning, experience, culture, history.

COMMUNITY BASED MANGROVE RESTORATION



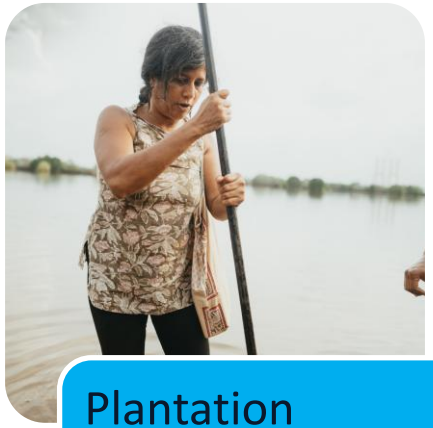
Survey

- Soil quality
- Inundation
- Wave action and tidal impact



Sapling collection

- Species identification
- Learning about vivipary and other adaptations



Plantation

- Best practices
- Community based restoration

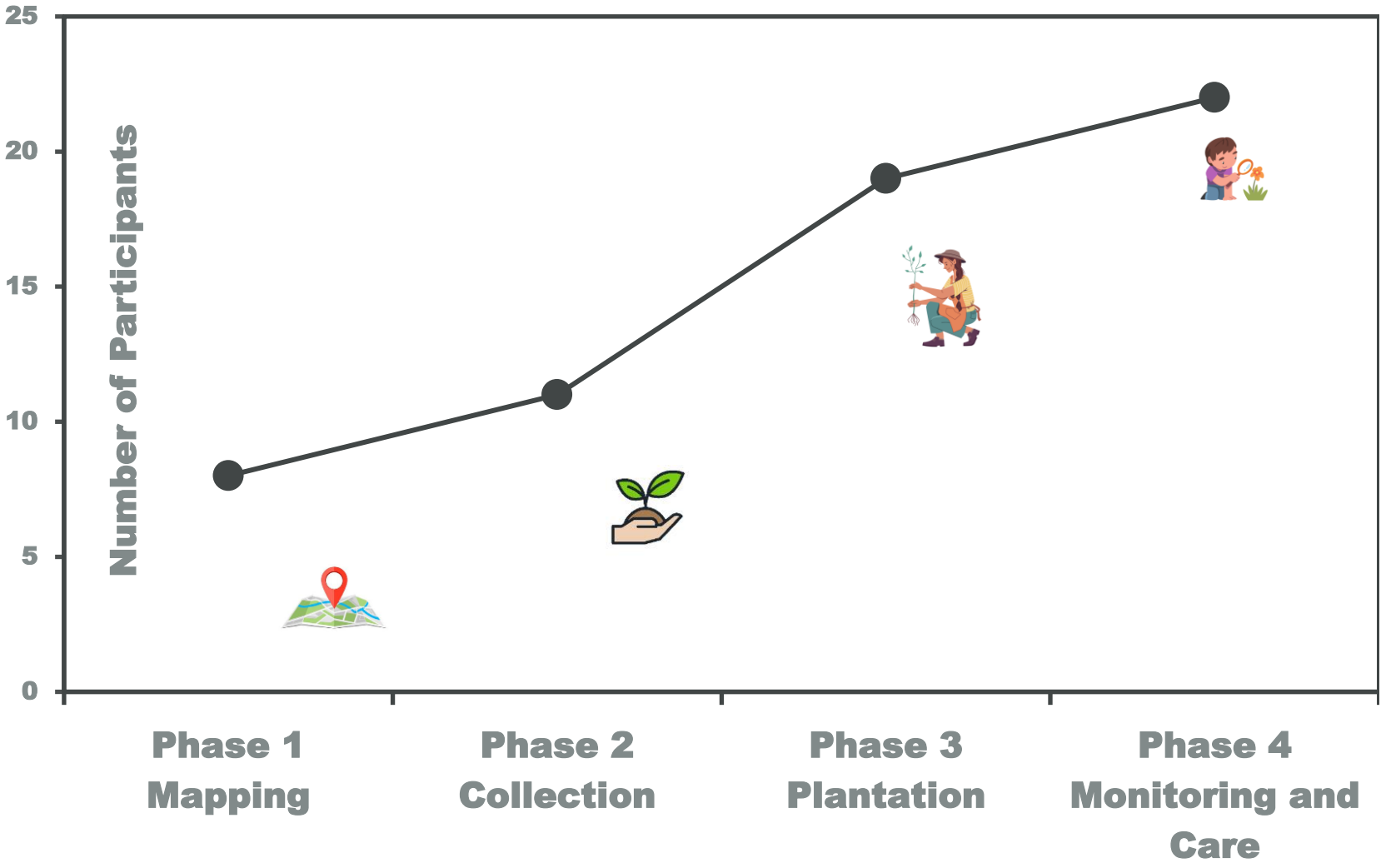


Monitoring

- Training
- Transect study
- Mortality

COMMUNITY BASED MANGROVE RESTORATION

Summary / Outcome



Success Indicators:

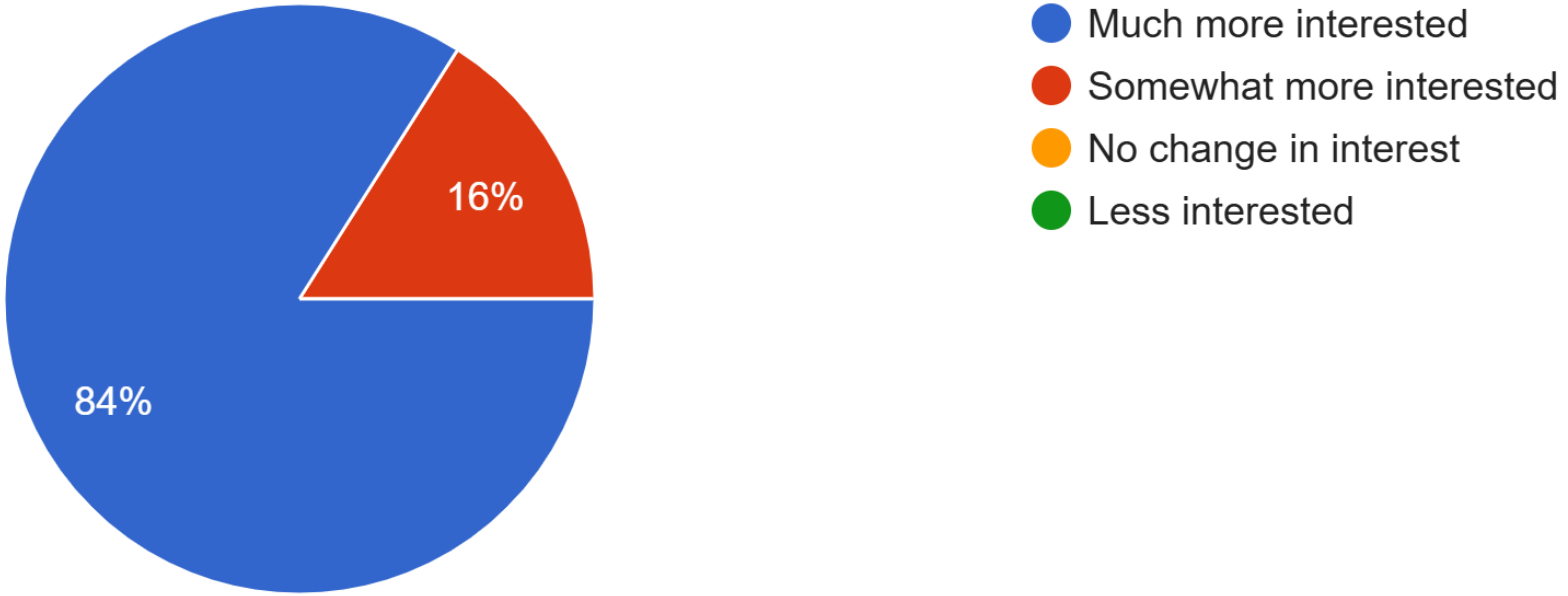
- Increased active participation in restoration and allied activities.
- Increased community awareness about mangrove ecosystems.
- Community involvement in data collection and monitoring, fostering long-term responsibility.

Phase 5: Community survey on continuation of restoration activities without external catalyst.

WHY PEOPLE MATTER

How interested are you NOW in protecting and conserving mangroves compared to before participation?

25 responses



FOR THE PEOPLE BY THE PEOPLE



THANK YOU

QUESTIONS

UPCOMING WEBINARS & EVENTS

- The third webinar will spotlight **Mountain cities**, where upstream forests regulate water, stabilise slopes, and buffer climate extremes. Discover how protecting these ecosystems is key to reducing landslides, ensuring water security, and safeguarding both local and downstream communities.

UPCOMING IUCN EVENTS



Learn more at : https://iucncongress2025.org/participate/registration

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Learn more at : https://www.iwa-network.org/learn/the-power-of-policy-creating-the-conditions-to-scale-nature-based-solutions-for-water-security

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