India



Organization: Society for the Promotion of Area Resource Centers (SPARC)
Location: Satpala Talav, Virar, Mumbai Metropolitan Region (MMR), India
Solution: Assisting vulnerable Indian communities in adopting decentralised nature-based solutions for wastewater treatment and management
Factsheet Period: First round of UNDP AFCIA funding (18 months); Second round of UNDP AFCIA funding (14 months)



Society for the Promotion of Area Resource Centers member interacting with waterbody users in Mumbai @SPARC

70% of India's surface water is estimated to be unfit for consumption, while only a small portion of the 40 million litres of wastewater that enters the country's rivers daily are adequately treated (Maharashtra Pollution Control Board, 2022). In MMR, rapid urban expansion is putting severe pressure on lakes, rivers and wetlands that are critical to the livelihoods of farming, fishing and tribal communities. As more villages are absorbed into urban areas, untreated sewage and wastewater increasingly contaminate local water sources. SPARC is working to restore degraded water bodies in peri-urban areas by introducing nature-based wastewater treatment systems. Through decentralized reed bed technologies, the solution improves water quality, protects riparian ecosystems and supports local livelihoods. By transforming lakes into multifunctional public spaces, SPARC strengthens community stewardship, builds resilience to climate change and promotes sustainable, community-led water management.

Key achievements

- Documented 85% of 2,000 waterbodies across Mumbai to identify vulnerable settlements
- Trained 44 women, mainly women from vulnerable communities, in climate-resilient aquaculture, organic farming, bamboo float farm construction and market access, strengthening livelihoods and local adaptation capacity
- Secured government and community endorsements for wastewater solutions
- Completed mapping, drone surveys and engineering designs to guide lake restoration
- Developed a scalable, community-informed nature-based treatment model
- Constructed 90% of the treatment system: the settling pond, holding pond, biodigester and reed bed system
- Established two federations to oversee wastewater and solid waste management
- Recorded detailed household and water source data in Ganeshpuri and Satpala
- Built over 25 Eco Frame prototypes along the lake edge with stone bed foundations to stabilize lake edges and restore riparian vegetation
- Formed an agricultural cooperative with women for aquaculture, duck rearing and eco frame farming
- Completed the first vegetable harvest, proving the viability of floating farms and strengthening community confidence in nature-based farming



Adaptation benefits

- Enhances resilience to erratic rainfall and extreme heat through reuse of treated wastewater
- Improves surface and groundwater quality via natural treatment methods
- Restores riparian ecosystems and supports climate-resilient livelihoods like organic farming and aquaculture
- Promotes women-led, community-driven models for water body restoration

Innovation

- A decentralized, community-led wastewater system using nature-based, low-energy solutions
- Combines water treatment with fish and duck farming to boost livelihoods and restore ecosystems
- Low-cost, modular design, open-source ecological restoration methods enables easy replication in urban areas without major infrastructure
- Restores wetlands, captures carbon & reduces harmful emissions, building climate resilience
- Operates through natural filtration, reducing energy use and maintenance compared to conventional treatment plants
- Offers a flexible alternative to costly, large-scale infrastructure







Social impact

- Protects vulnerable communities from flooding and urban heat island effects
- Strengthens community engagement and shared responsibility for water stewardship
- Supports women's livelihoods through cooperatives focused on fish farming and duck rearing

Replication potential

- Scalable in metropolitan areas facing challenges from unplanned urbanization
- Use-case under development for investment by MMR Development Authority
- Decentralized, modular design enables replication across urban water bodies without large infrastructure needs
- Offers a low-cost, climate-positive alternative to traditional urban water systems, improving sustainability and livability in fast-growing cities

Funding snapshot

- UNDP-AFCIA grant: US$170,000 (initial grant: $60,000; scaling grant: $110,000)

Investability	
Sustaining criteria	Fully funded by UNDP-AFCIA grant and in the process of receiving funding from various Corporate Social Responsibility initiatives.
Financial Innovation	Aquaculture in restored water bodies presents a highly profitable model. An investment of $3,514 per year in a 0.5 hectare waterbody (covering lease costs, fish seeds and feed) has demonstrated 100% profit margins. Scaling larger water bodies would generate employment opportunities and revenue streams at low operational costs. Bulk implementation across multiple sites will drive economies of scale, reduce per-unit costs and make the solution more commercially viable.

ADAPTATION FUND Climate Innovation Accelerator

ADAPTATION FUND

To read their story, visit UNDP-AFCIA

To watch their video, click here

To contact the initiative, visit SPARC