Approach for Restoration of Urban Lakes: A Case Study from Rapidly Urbanizing Catchments in the Global South

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Context setting

- Urban lakes offer essential ecosystem services.
- Rapid urbanization and inadequate water and wastewater management have degraded many lakes.
- Restoration and rejuvenation efforts are being conducted by national and state agencies, such as the Ministry of Environment, Forest, and Climate Change, India.

Key schemes include

- Amruta Nagarothana (2022-23)
- Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

Issues with restorations projects

- Absence of clear goals for lake restoration
- Insufficient baseline studies
- Limited or no stakeholder involvement
- Lack of design principles for intervention deployment (considering scale and type)

BBMP renovating 70 lakes at Rs 231 crore

Santosh Kumar.B / TNN / Updated: Jul 22, 2023, 08:50 IST

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Who Is Bengaluru's Lake Man? Meet Anand Malligavad Who Restored 35 Lakes

Anand Malligavad, a mechanical engineer in Bengaluru, has restored 35 lakes in the city, inspiring lake conservation efforts across India.

Lakes of Bengaluru: Lack of maintenance killing recently restored Singasandra Lake

Raghavendra B Pachhapur, Senior Project Lead with NGO ActionAid Association, said that the water quality of Singasandra Lake has been bad for more than a year.

Lakes of Bengaluru: Restored in 2014, the Herohalli Lake still reeks of lack of maintenance

According to the water quality index report by the Karnataka State Pollution Control Board (KSPCB) published in October, Herohalli lake falls in Class D which means that the water is not fit for drinking purposes.

FRAMEWORK FOR LAKE RESTORATION

Catchment characteristics
- Pollution sources- industries/domestic
- Nonpoint sources – runoff
- Run-off/infiltration

Climate/Weather
- Rainfall
- Temperature

Water Balance
- Hydrology
- Hypsometric curve
- Bathymetry

Water chemistry- SW and GW
- DO
- BOD
- COD
- Nutrients (N and P)
- Chlorophyll-a
- Suspended Solids

In-lake processes
- Sedimentation
- Phosphorus release
- Heavy metals release
- Carbon sequestration and stocks

Stakeholders/Key informants

Value of lake (use/non-use values)
- Aesthetics (flora and Fauna)
- Irrigation
- Fisheries

- Biodiversity/Existence value
- Ecosystem services (regulatory, provisioning and cultural services)

BASELINE STUDIES AND FEASIBILITY ASSESSMENT OF NATURE BASED SOLUTIONS

Socio-economic baseline for communities and stakeholders.

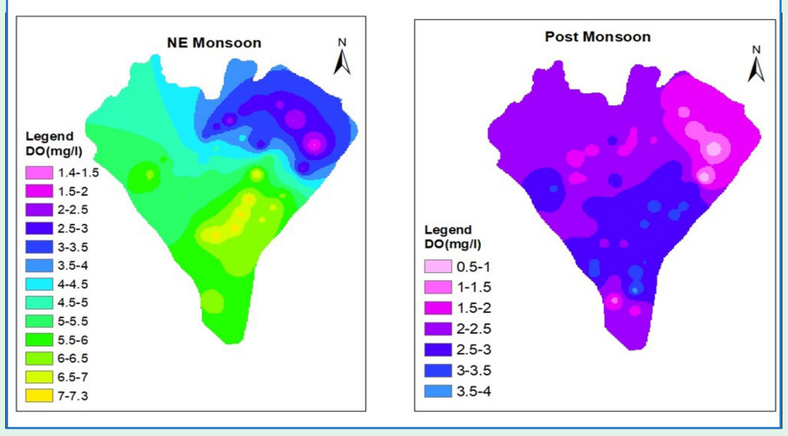
Co-identify the drivers and impacts of current lake water quality on stakeholders.



Water quality, hydrology and biodiversity baseline.

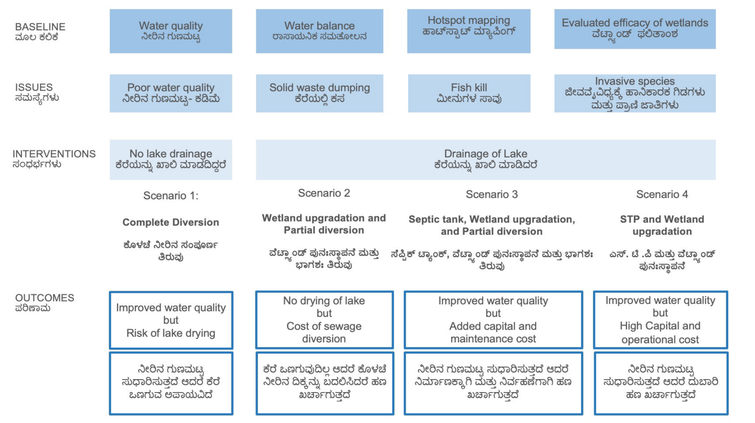
Estimation of self assimilation capacity of the lake.

Dissolved Oxygen Profile



Intervention design and development.

Feasibility assessment of Nature based solutions with the stakeholders.



SITE SELECTION AND KEY OUTPUTS/OUTCOMES



- Lake restoration assessment framework
- Design and deployment of interventions
- Stakeholders engagement
- Operation and maintenance guidelines (Nbs)
- Adoption of restoration framework by stakeholders
- Media coverage
- Adoption of Design by Municipality
- Improved management of decentralised sewage treatment plants
- Invitations to present approach to various stakeholders through workshops and events

