

Good Afternoon AIT Bangkok!

What will it take to make Indian cities more Resilient?

An experiment with Integrated Lake Basin Management approach at Indore



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Asia Region Biennial IASC Meeting, July 2018

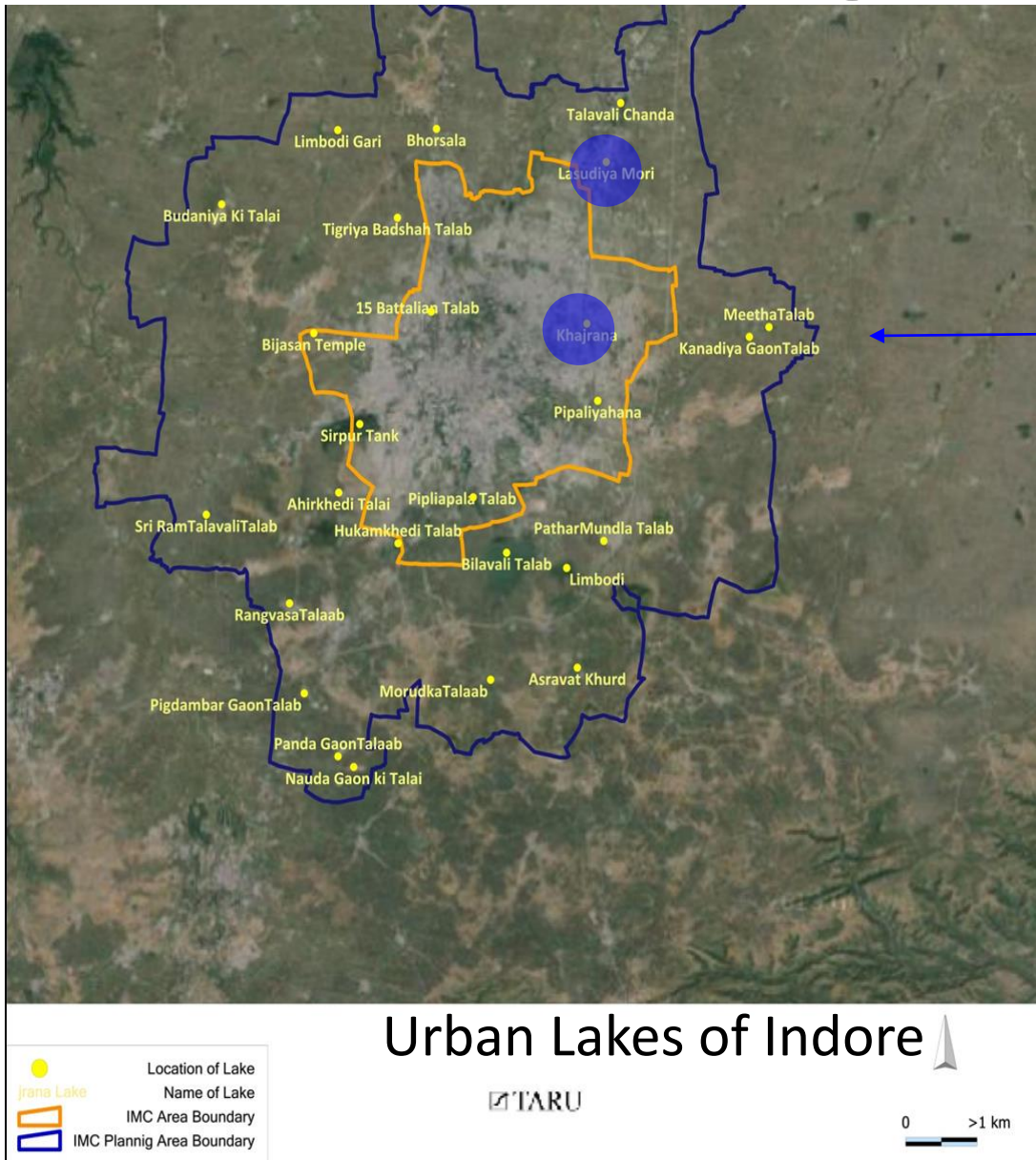


Background

- Rockefeller Foundation Grant (2012 CAC 314). Worked for two years.
- Project Targeted towards building Water Resilience.
- Experiment with Integrated Lake Basin Management (ILBM) approach.
- Focus on Institutions, Policies, Participation, Information, Finance, Technology.
- Applied research, pilot lake restoration activity at Indore.
- Two urban lakes - Lasudia Mori (120mx200m) and Khajrana (170mx220m).



Background



- Indore. Mini Mumbai.
- Commercial Capital of Central India.
- 26 urban lakes identified.
- Complex interconnected system.

Resilience

- **Why protect urban lakes?**
- **Protect ourselves from drought and flood** besides having them as public open spaces for relief and recreation in the high density areas.

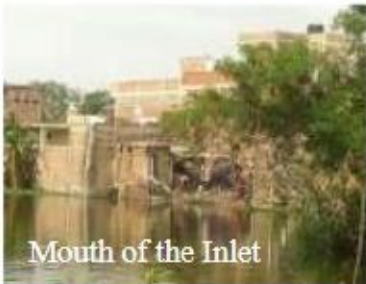


- **Sustainable and Smart City**



Lasudia Mori, Indore

Physical characteristics



Mouth of the Inlet



Inlet channel to the lake



Housing in the Nayi Basti and the Lake Drive Road



Govt. High School,
Lasudia Mori



Outlet of the lake



Road to Lasudia Mori
village



Unattended Edge



Open Space near Temples



Temples



Lake Drive Road

Khajrana, Indore

Physical characteristics



Lake with the west view



Inlet channel overlooking a Mazaar



Treatment plant at inlet channel



Residential Buildings facing back to the lake



Pathik Ashray at proposed garden in the outlet side



Bund around the lake



Pathway & Greening on bund



Proposed garden overlooking outlet sluice



Regular Labourers gathering at Khajrana



Police Station at Khajrana Junction



Pump to draw water from lake



A squatter house & water point near outlet sluice

Sirpur Talab, Indore

Physical characteristics



Sirpur Talab, Indore

Human activities



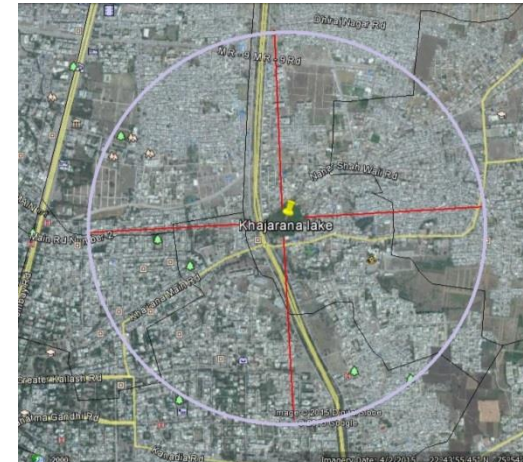
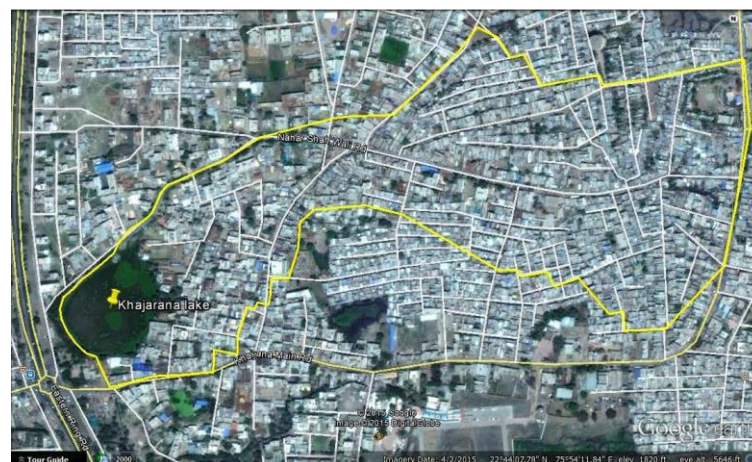
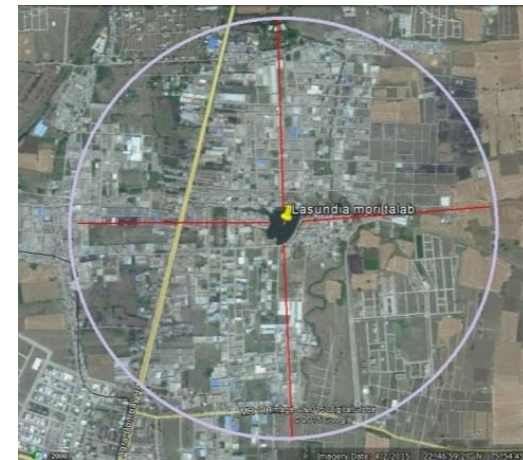
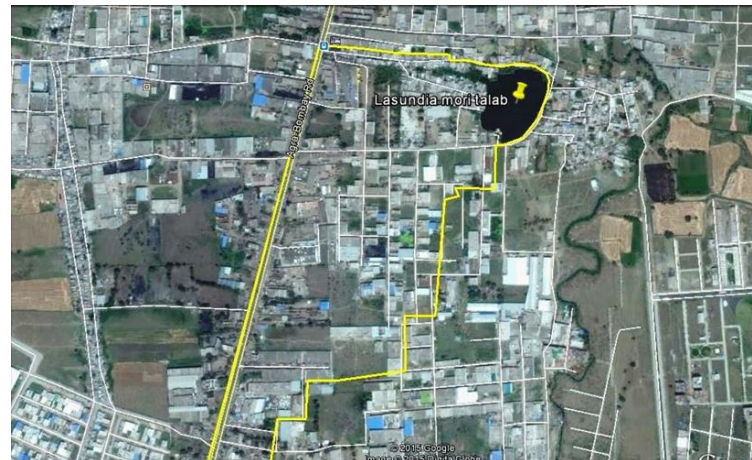
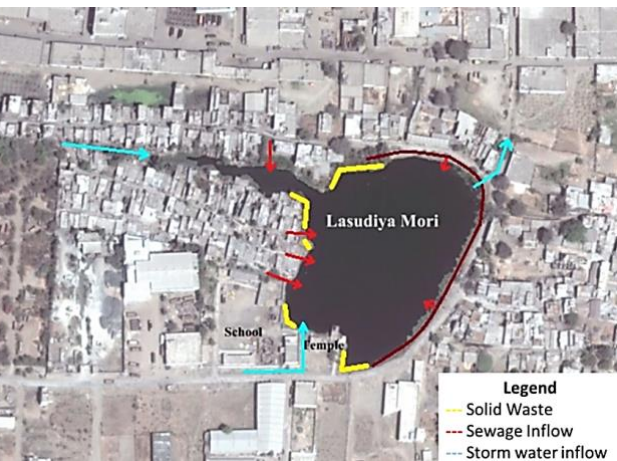
Urban Lakes Today

- **Smart Lakes for Smart Cities**- revitalisation for alternate use as emergency water for building social-ecological resilience
- **Constructed wetland**– engineered system with natural ecosystem characteristics
- Combined rain-waste water system.
- Year round water opportunity as well as challenge.



Urban Lakes Today

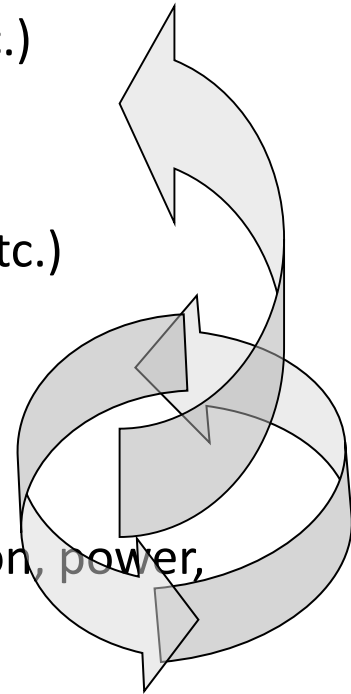
- Managing the scales- social-economic-ecology-political-cultural influence of and by a lake is geographically at catchment, shore and basin scales.



Managing Urban Lakes

Involves Managing

- **the lake** (biological, ecological, technical, engineering, etc.)
(basin, edge, watershed)
- **the uses** (values, sectors, demand/supply, spatial, land use, etc.)
(direct/indirect)
- **the users** (dependability, profit, personal, behavior, attitude, etc.)
(direct/indirect)
- **the institutions** (administration, implementation, coordination, power, information, communication, compliance, commitment, etc.)
- **the institutional mechanisms** (policy, rules, regulations, strategy, legal, planning, taxation, sanctions, etc.)



Institutional Architecture

- **Polycentric**

- Local Government Organisations

- Local Community, NGOs and CBOs

- Businesses, Corporates and Associations

- Education and Research Organisations

Local Government Organisations

Pivotal in

- **System integration** – with other water and sub-systems.
- **Knowledge integration** – with other stakeholders.

Connect with

- **Other involved organisations** – integrate lake conservation/management plan.
- **Local community** – empower and institutionalise the Lake Conservation Committee with financial and technical support.
- **Private sector** – partnerships in lake conservation and development.
- **Research/Education sector** – research collaborations, awards, grants on documentation, monitoring and evaluation.



Local Community, NGOs & CBOs

Need for Community empowerment and action through,

- **Lake Conservation Committee.** Ex. Puttenahalli Neighbourhood Lake Improvement Trust, Bangalore initiated by the local community to maintain lake
- **Local Leaders.** Credibility and Connection with the local government. More environment crusaders. Identifying, incentivising and capacity building
- **Celebrating and Sporting lake.** Ex. Besides doing World Environment-Wetlands-Water-Biodiversity Days/ Religious/ Social events, etc.
- **Sporting a lake.** Historically popular. Lake sporting on Independence Day, Childrens day, Labour Day, Holi, Diwali, Dussera, Eid, Concerts, Ramlila, etc.
- **Lake Monitoring.** Ex. Simple indicator based toolkit for monitoring urban lakes by the local community. Waste Management.
- **Entrepreneur-al approach** to lake management.
Ex. Hyogo Prefecture - Museum of Lakes.



Businesses, Corporates & Associations

- Underutilised Sector.

May involve through,

- Leasing Lake. Ex. Lease of Naroda Lake Ahmedabad
- Partnership Model. Ex. Mansagar Jaipur. Place on Long Term Lease.
- Lake Aesthetics. Ex. Group of Artists painting a built environment in Indore
- Donors and Sponsors. Social credits for CSR. Ex. RK Marbles Rajasthan
- Pay and Use. Ex. Kankaria Ahmedabad.
- Think Tank. Ex. Rotterdam Climate Change Initiative Cell is led by professionals.
- Lake Adoption – Ex. Kamal Haasan launch clean Madhambakkam lake, Chennai through Narpani Iyakkam (Welfare Club) as part of 'Clean India campaign'.



Education & Research Organisations

- Underutilised Sector.
- Pivotal in Tapping, Storing and Disseminating the available knowledge. Become an Integrated Knowledge Bank.
- Become partners in city development ideas.
- Celebrating the knowledge of lake and water bodies. Ex. Thesis Awards, Design Studios, Research Funds, Seminars, Workshops, Field Trips, Scholarships and Fellowships. Ex. DAVV, IPS, IISS, IIMI, IIT, etc.



Technical Solutions

Ap plenty. Some applied are,

- Artificial Floating Islands
- In-situ bioremediation
- Liming
- Alum dosing
- Flow measurement of sewage inlet
- Data of water quality
- Manual De-eutrophication
- Waste Water Treatment Plant
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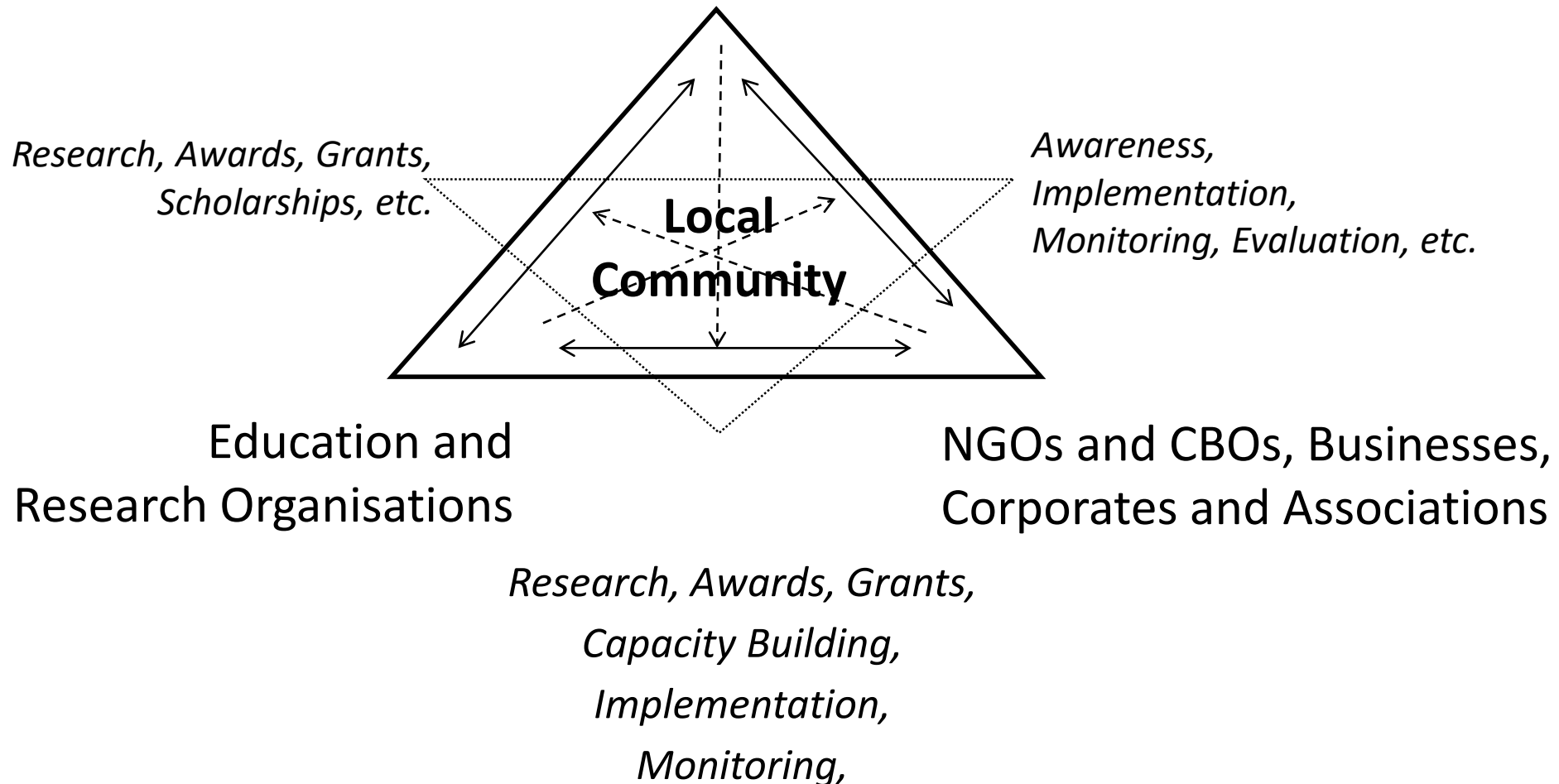


Findings

- ILBM characteristics and their interactions can lead but also fail resilience study.
- posit that the interaction between institutions and participation is crucial for resilience however since ignored makes their relation and situation vulnerable.
- demonstrated the strengths and weaknesses of the interactions between the institutions and the participation.
- posit a discussion on the proposed lake management framework of water resilience in India.
- the formation and institutionalization of the lake conservation committee and connecting them with the local government besides cleaning the lake and maintaining them during the funding period are looked as a measurable outcome of building resilience. What happens post funding is to be assessed.

Discussion

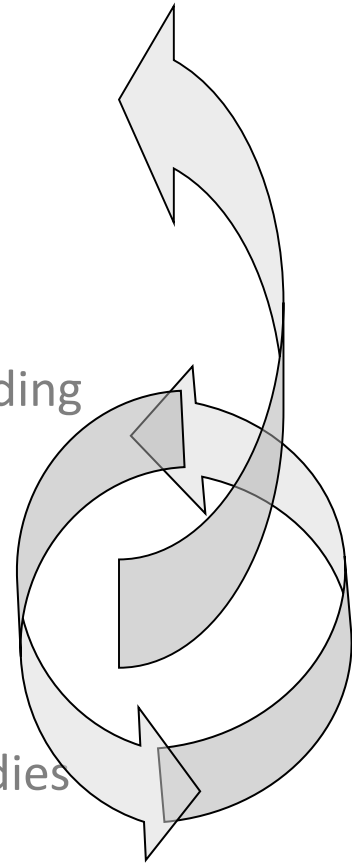
Local Government Organisations



Discussion

A lot is Done. Need for

- Decentralisation through Lake Governance Authority Bill
- A Lake Management Plan for Indore proposed.
 - Concept Note for a DPR
- A Lake Management Cell at LG must be established.
 - EOI for Training and Capacity Building
- An Integrated Study of Indore lakes & management is a start-up.
 - Proposal for Integrated Study
- Case Studies on Lake Management for Ideas and Innovations.
 - Proposed Inter/National lake studies
 - Certification of the Local Lakes



Thank You!



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Notes from the Conference

- OCeAN in School of Environment, Resources and Development (SERD) at AIT.
- Citizen of AIT. Top in Humanity Rank in the EU.

John Pulhin-Uni of Phillipines Los Banos.

- Governance in a Changing Climate: Key Challeneges and Opportunities