Community Movement for Conservation of Urban Waterbodies
Experiences from Kolkata, India

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Kolkata is the 3rd largest metropolis in India with a population of 4.58 million (2001). It is densely populated, 24700 person per sq.km with an area of 185 sq. km.
Lakes, East Kolkata Wetland and hundreds of Ponds in Kolkata
HOW MANY PONDS IN KOLKATA?

The actual number of ponds within KMC area is still a guess. The KMC list of ponds showed 3874 ponds in 2006, 1736 ponds in 1997. A detailed map book of Kolkata containing 284 plates by NATMO in 2006 showed 8731. Counted from Google’s satellite imagery of Kolkata was 4889. It may vary upto 10%, so the number of ponds would vary between 4400 to 5400. This means about 44% of the waterbodies have been filled up in last two decades.
Urban Ponds and Bangladesh

• Number of Important Cities and Towns still have substantial number of ponds.

• According to a survey conducted by District Fisheries Department in 1991, the number of water bodies in Chittagong city was 19,250 while the Physical Feature Survey conducted by Chittagong Development Authority in 2006-2007 indicated existence of 4,523 water bodies there.

• Rajshahi - The number of water bodies in the city as in 1981 there were 2,171 ponds and the number of ponds became only 729 in 1991. The Rajshahi Development Authority also said, according to its recent data, there are only 313 ponds in the city.

• The city of Comilla is known for its ponds once called city of Tanks and Banks.
India is fast getting urbanized. This urbanization is mainly a product of demographic explosion and poverty induced rural-urban migration.

Urban India depends much on the unplanned sector for basic civic amenities such as upon various types of waterbodies to meet its daily requirement of water.

The requirements fulfilled by these waterbodies, do not get reflected in urban water resource accounting.

Requirement for more land for housing and other urban expansion, the very existence of urban ponds is ‘critically endangered’.

We take up the case of Kolkata Municipal Area to find out the extent of this importance of the urban waterbodies.
Urban Ponds are not just pools of Water

The role of the ponds in urban and peri-urban milieu is multifaceted. It has a role of social, ecological and civic importance.
WHO ARE THE USERS – WHAT ARE THE USES

- A survey was conducted in 73 ponds sizing 1000 square meter or more to find the number of users and various uses of these ponds. **This is the first ever such survey done.**
- 2088 people using these ponds were interviewed for their use pattern and economic status
- Present environmental status were noted
- Present management status were noted
Bathing & Washing

Fish Cultivation

Culture

Biodiversity, Water Harvesting
1 Million Pond Users in Kolkata Everyday

Bathing is the most common activity. Considering total users in 71 ponds in summer period would be 29226. Average user per pond would be 441 persons. Considering 2500 ponds, about half of the ponds in the city, total number of users will be about 1027500. So about 23 percent of the population of Kolkata is dependent on the ponds.

About 80 percent users being poor,
Fish Economy
80% of Ponds are used for Pisciculture. Considering a modest annual average fish sale of Rs. 50,000 in a pond of size 0.5 hectare and considering 2500 ponds out of the 4500 ponds where such fish cultivation is done, the annual fish business in the city ponds is worth Rs.125 million (US$2.5 million).

Biodiversity, Water Resource
94.5 % of the ponds have trees around the surveyed ponds. Ponds and surroundings is an important part of Urban ecology. It recharges ground water, stores rainwater.

Culture
There are benches beside the pond for people to sit and relax beside 35.62% ponds. 57.53% of the ponds have clubs beside them. 38.36% of the ponds also have temples beside them. Many of these temples and mosques are quite old having a historical value attached to them.
A book on HERITAGE PONDS OF KOLKATA

Published by Kolkata Municipal Corporation
• All Government Plans for development of Kolkata has bypassed the existence of these thousands of ponds.

• Calcutta Environmental Management Strategy and Action Plan (CEMSAP 1997) did not include the ponds in its plan.

KMDA planning of Kolkata : Perspective Plan for CMA: 2011 and Planning for Metropolitan Development 1990 – 2015 have not considered ponds as a resource.

• Kolkata Municipal Corporation (KMC) has no department for all these 5000 waterbodies. It has repaired and rebuilt a number of ponds but it has no plan for their maintenance and operation or any overall management plan.

• None of the Universities and Technical Institutions of Kolkata has done any meaningful studies on these vital water resources.
Community Movement and Pond Management

• In last two decades the major environmental movement in and around Kolkata has been the movement to save the waterbodies.
• Community organisations have led the movement with local popular support.
• There has been no external funding for this and no central NGO intervention. No Foreign NGO or their Indian Beneficiaries have worked on that.
• There have been a number of success stories. The community groups are managing the ponds without any government support.
• Vasundhara has been a part of this movement, both on field and research level.
Saving A Dying Jheel at Vivek Nagar
Encroaching the Jheel
Jheel as Waste Dump
The Pledge
Campaign
Reclamation
Encroachment Removed
And Resettled
Restoration
New Jheel
Management of Jheel

- Jheel Sanrakshan Committee was formed out of a mass movement in April 1999
- It campaigned and organised mass support for restoration of the Jheel
- It carries out strict vigil to keep Jheel always clean
- Prohibiting washing but continuing bathing
- Organising a number of workshops with academics, local pond committees and environmentalists on pond improvement
- Organising modern cleaning programme after immersion of idols
- Involving local school students by organising painting by them on Jheel’s boundary wall, planting trees, elocution & quiz competition on environment
Notice
Providing Clean Water to 700 Bathers Everyday
Fish Cultivation
Eco-friendly Immersion
Eco-friendly Immersion

Photo 16  Separating wastes during Idol Immersion at night – Jheel Road
Volunteers

Photo 18  Community Volunteers during Immersion Ceremony
Eco-friendly Immersion

Photo 17  Crane lifting idols’ frames in the next morning – Jheel road
Paintings on Jheel Wall
Community Meeting
Wetland Day
Economic Sustainability

Viveknagar Jheel - Income Pattern

- Sale of Fish: 56%
- Immersion: 34%
- Donation: 10%

Expenditure

- Fish: 32%
- Development: 18%
- Supervision: 15%
- Programme: 12%
- Office: 7%
- Charity: 7%

Total Income and Expenditure Patterns
• Pond was once source of drinking water
• After tubewells became common in the area, it started to be polluted.
• For about 30 years some local toughs carried out fish cultivation without caring for the pond.
• In 2002, 600 local residents formed an organisation, provided money to take back the control of the pond, went to court ang got legal order.
• It cleaned the pond, restored the surrounding in ecofriendly way, providing special washing facilities for the poor and earns its revenue from fish cultivation.

• A successful community effort
OLD KAZIPUKUR POND
NEW KAZIPUKUR POND
Golf Garden
Jadu Colony
Rashmoni Bagan

Photo 12  Rashmoni Bagan Pond (RB) – A well managed pond with garden around
Ganguli Pukur
To compare the ponds managed by community organisations with those of unmanged ones, detailed water quality study throughout the year for five (5) ponds were carried out. The ponds were selected on the basis of number of users, different levels of management, different types of polluting sources and practice of pisciculture.

### Salient Features of the Ponds for Water Quality Survey

<table>
<thead>
<tr>
<th>Pond</th>
<th>Ownership</th>
<th>Management</th>
<th>Major Pollution Source</th>
<th>Fish Cultivation</th>
<th>User Control</th>
<th>Visual Impression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rashmoni Bagan (RB)</td>
<td>Government</td>
<td>Community Organisation</td>
<td>No external source</td>
<td>Yes</td>
<td>Only bathing without soap</td>
<td>Very Good</td>
</tr>
<tr>
<td>Jheel Road (JR)</td>
<td>Private</td>
<td>Community Organisation</td>
<td>No external source</td>
<td>Yes</td>
<td>Only bathing</td>
<td>Good</td>
</tr>
<tr>
<td>Rashmoni Bazar (RZ)</td>
<td>Private</td>
<td>Owner and Community Organisation</td>
<td>Domestic Sewage</td>
<td>Yes</td>
<td>No Control</td>
<td>Bad</td>
</tr>
<tr>
<td>Chanditala (CT)</td>
<td>Private</td>
<td>Owner</td>
<td>Domestic Industrial Waste</td>
<td>Yes</td>
<td>No Control</td>
<td>Bad</td>
</tr>
<tr>
<td>Sil lane (SL)</td>
<td>Private</td>
<td>Owner</td>
<td>Domestic Municipal waste</td>
<td>Yes</td>
<td>No Control</td>
<td>Very Bad</td>
</tr>
</tbody>
</table>
### Water Quality Parameters Monitored

<table>
<thead>
<tr>
<th>General Variables</th>
<th>Indicator to Organic Pollution</th>
<th>Nutrients</th>
<th>Metals &amp; Others</th>
<th>Biological</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td></td>
<td>Nitrates</td>
<td>Lead</td>
<td>Faecal Coliform</td>
</tr>
<tr>
<td>Temperature</td>
<td></td>
<td>Organic Nitrogen</td>
<td>Zinc</td>
<td>Total Coliform</td>
</tr>
<tr>
<td>Odour</td>
<td></td>
<td>Phosphates</td>
<td>Oil</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td></td>
<td>&amp; Grease</td>
<td></td>
</tr>
<tr>
<td>Turbidity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sechi Disc Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Dissolved Oxygen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>Oxygen Biochemical Demand (BOD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td>Oxygen Demand (COD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Turbidity</td>
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<tr>
<td>Sechi Disc Depth</td>
<td></td>
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<tr>
<td>Total Suspended Solids</td>
<td></td>
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<tr>
<td>Total Dissolved Solids</td>
<td></td>
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</tbody>
</table>

**Water Quality Index (WQI)** is a 100 point scale that summarizes results from a total of eight parameters (pH, DO, BOD, Faecal Coliform, Nitrate, Phosphate, Turbidity and Total dissolved solids, excluding temperature). The Results show that community managed ponds have better water quality.

<table>
<thead>
<tr>
<th>Pond</th>
<th>Annual Avg WQI</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rashmohi Bagan (RB)</td>
<td>64.5</td>
<td>Medium</td>
</tr>
<tr>
<td>Jheel (JR)</td>
<td>63.44</td>
<td>Medium</td>
</tr>
<tr>
<td>Rashmohi Bazar (RZ)</td>
<td>46.32</td>
<td>Polluted</td>
</tr>
<tr>
<td>Chanditala (CT)</td>
<td>49.14</td>
<td>Polluted</td>
</tr>
<tr>
<td>Sil Lane (SL)</td>
<td>44.12</td>
<td>Polluted</td>
</tr>
<tr>
<td><strong>Community Management Activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rasmoni Bagan Pond</strong></td>
<td><strong>Jheel Road Pond</strong></td>
<td><strong>Kazipukur Pond</strong></td>
</tr>
<tr>
<td>Diversion of all drains</td>
<td>Diversion of all drains</td>
<td>Diversion of all drains</td>
</tr>
<tr>
<td>No disposal of any garbage in or nearby</td>
<td>No disposal of any garbage in or nearby</td>
<td>No disposal of any garbage in or nearby</td>
</tr>
<tr>
<td>No washing of clothes</td>
<td>No washing of clothes</td>
<td><strong>No washing of clothes but alternative arrangement made</strong></td>
</tr>
<tr>
<td>No washing of utensils or animals</td>
<td>No washing of utensils or animals</td>
<td>No washing of utensils or animals</td>
</tr>
<tr>
<td>Bathing without soap only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No idol immersion</td>
<td><strong>Idol immersion with restriction</strong></td>
<td>No idol immersion</td>
</tr>
<tr>
<td>No leasing to outsiders for fish cultivation</td>
<td>No leasing to outsiders for fish cultivation</td>
<td>No leasing to outsiders for fish cultivation.</td>
</tr>
<tr>
<td>No use of toxic chemicals for pond cleaning</td>
<td>No use of toxic chemicals for pond cleaning</td>
<td>No use of toxic chemicals for pond cleaning</td>
</tr>
<tr>
<td>Periodic cleaning of ponds</td>
<td>Periodic cleaning of ponds and regular guarding by paid employee</td>
<td>Periodic cleaning of ponds</td>
</tr>
<tr>
<td>Maintaining a garden by the side of the pond</td>
<td>Maintaining a garden by the side of the pond</td>
<td>Maintaining a garden by the side of the pond</td>
</tr>
<tr>
<td>Planting different commercial trees</td>
<td>Planting fruit bearing trees for birds alongwith decorative trees</td>
<td>Planting fruit bearing trees for birds alongwith decorative trees</td>
</tr>
<tr>
<td>Constant vigilance</td>
<td>Constant vigilance</td>
<td>Constant vigilance</td>
</tr>
<tr>
<td>Social activity by organisation</td>
<td>Social activity by organisation</td>
<td>Social activity by organisation</td>
</tr>
<tr>
<td><strong>Maintaining green pond bank for better biodiversity</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Major Findings of the Study

- Bathing is the major activity in urban ponds and therefore safe bathing water quality should be the primary management goal.
- Fish cultivation provides economic sustainability of the ponds.
- Fish cultivation impacts water quality detrimental to human uses. Thus the pond owners cannot have any interest in improving bathing water quality.
- Community Groups have improved the water quality and also the surrounding environment by eliminating major sources of external pollution e.g. drainage to pond, garbage dumping, washing and cleaning.
- Absence of data about the waterbodies is the major lacuna in urban waterbodies management.
- The present management by the community groups is a spontaneous effort. There is a total absence of any institution to provide technical, managerial or other assistance to these community groups.
The above studies clearly show that community managed ponds are providing better water quality for people and at the same time sustaining biodiversity.

The present management of the ponds by the community groups is a spontaneous effort.

There is a total absence of any institution to provide technical, managerial or other assistance to these community groups.

There is also absence of networking between the community groups and therefore there is no exchange of ideas and experiences.

There is an immediate need for developing water institutions to ensure preservation, improvement and optimum utilization of this critical resource for the people and environment.
In Lieu of Thanks
Rowing Traditional Boat in Restored Pond