THE CURSE OF CONCRETE ON LAKES OF BENGALURU: DEVELOPED LAKES V/S LAKES

Image:- AI generated horrifying version of lakes 2040

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6 CLEAN WATER AND SANITATION

Image Credit: Malgudi Shiva, Narasipura Kere, Vidyaranyapura, Bengaluru

1. **Groundwater Recharge:**
   a. Lakes recharge groundwater, providing potable water for irrigation, domestic, and industrial use.
   b. This can be achieved through simple techniques like desilting and dredging.
   c. Traditionally, lakes were allowed to dry up during summers, and the silt was used for agriculture. Stormwater networks were cleared to welcome rainwater.
2. **Biodiversity:**
   a. Lakes are home to many species, supporting diverse ecosystems.
3. **Lung Space:**
   a. They provide essential lung space, contributing to cleaner air and a healthier environment.
4. **Micro-climates:**
   a. Lakes create micro-climates, helping to prevent the formation of heat islands.
5. **Natural Ambiance:**
   a. The natural ambiance of lakes offers a healing environment, promoting mental and physical well-being.
6. **Flood Relief:**
   a. Acts as a storage tank and prevents flooding outside and recharges groundwater and use the stored water during scarcity.
7. **Cultural Significance:**
   a. Every year, after good rains, we perform pooja's and prayers to thank the rain and welcome the harvest god, seeking blessings for our land to be rich with agriculture and prosperity.

Case Study: Hosakere and Kommaghatta Kere

In the Kengeri valley, there are two lakes: Hosakere and Kommaghatta Kere (BBMP lake), both belonging to the same stream. Hasakere, spanning 44 acres, has no development, fencing, or concrete bunds, with only roads on either side. In contrast, the 32-acre Kommaghatta Kere features extensive development, including concrete structures.

Image: Hosakere canal filled with rainwater of the 1st week of June 24

Current Condition of Lakes in Bengaluru: From a City of 1000 Lakes to a City of 100 Concrete Lakes

Concrete Encroachment: Although there is no exact count, most lakes within BBMP limits now have varying degrees of concrete structures. In contrast, lakes managed by the panchayat fare better, with minimal to moderate concrete use. Lakes can be maintained in a very natural manner using natural bunds with gravel, cobblestones, boulders, and forest trees, which help sustain lake ecosystems. These features, along with bush fences, prevent breaches and support biodiversity. Effective water management utilizes gravitational flow and simple sluice gates to direct overflow to adjacent lower lakes. Unfortunately, agencies often complicate this process by preferring concrete structures that make lakes appear more "developed" but significantly hinder their natural functions.

Loss of Identity: Misuse of Lake Areas: Lakes are losing their identities, turning into parks, playgrounds, parking lots, open gyms, swimming pools, restaurants, plant nurseries, religious places, markets, roads, bridges, health centers, and buildings.

Debris and Water Quality: Many lakes contain construction debris, which becomes visible when water levels drop. This debris compromises the lakes' natural state and water quality.

Example: Sankey Tank- Overload of Concrete and artificialness : Recent concrete constructions around Sankey Tank have aimed to prevent flooding and overflow, resulting in significant changes to the lake's natural state. A high-powered motor (over 75 HP) is installed to drain excess water, highlighting the reliance on artificial interventions instead of natural solutions.

BBMP Lakes- Typical Lake designs with concrete, debris & garbage V/S Lakes that are the reason of the existence of many species

Photo Credit: BBMP Website of Chalkere after development

Photo Credit: Madur, GOK, Lingambudhi Kere, Mysore

Photo Credit: Aksheev Thakur, Yelechanahalli Kere, Deccan Chronical

Photo Credit: Rahul Chandra, Mint, Sule Kere, Vijaynagar Empire,

Photo Credit: Margarete, Kitagnur Kere, on debris dump in the lake premises

Photo Credit: Flamingo Indo, Kempegowda, Lake man of Karnataka,

Photo Credit: Malgudi Shiva, Narasipura Kere, Vidyaranyapura, Bengaluru

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Observations

- Water Quality: Hosakere, despite receiving less attention, has better water quality compared to Kommaghatta Kere, which often reports fish kills.
- Wildlife: Both lakes support a good bird population, but Hosakere's simpler environment provides a better habitat due to less human interference.
- Infrastructure: Kommaghatta Kere has walking tracks, playgrounds, and shelters, whereas Hosakere lacks such facilities, focusing solely on natural processes. Kommaghatta kere had more concrete in contrast to Hosakere.

The Preference for Concrete Lakes

1. Lack of Awareness: The government is often unaware that lake bunds can be naturally made using Nature-Based Solutions (NBS) without concrete. Example: Sankey Lake, the government, responding to requests from certain groups, set up separate concrete walking and jogging tracks, reducing the size of the lake. These tracks are much larger than before, causing concern for joggers due to the impact of concrete on their knees. Additionally, many age-old trees were chopped down to make way for these tracks, destroying the lake's overall ecosystem in the name of extending the bund.
The south side of the lake now features a swimming pool, where frequent fish kills have been observed. The west side is the most damaged, with gazebos, parks, playgrounds, and a health center. The east side has been altered with the replacement of the kalyani with a walkway into the lake. The north side has a nursery. The entire lake now suffers from an artificial ambiance, with manicured ornamental plants, transforming Sankey Tank from a natural lake into a park, playground, and fitness area, losing its identity as a lake.

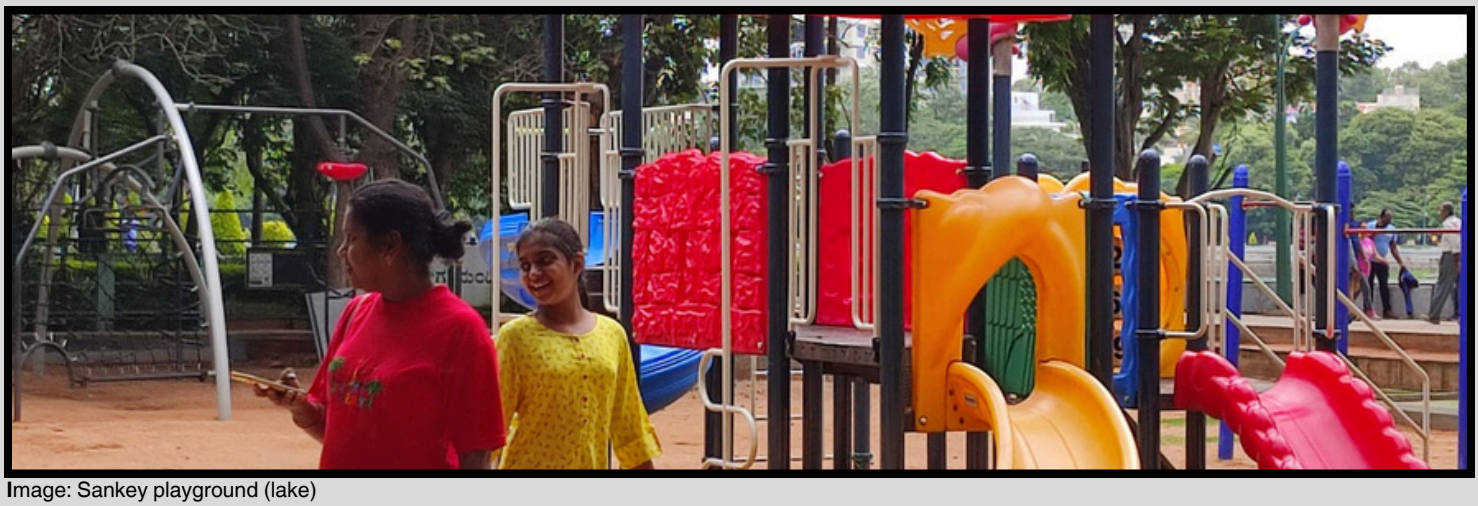

Image: Sankey playground (lake)

2. Unsustainable Engineering: There is an overemphasis on engineering solutions, neglecting the natural needs of a lake. No proper training given to administrators from time to time. Example: Yelemallappashetty Kere, has an STP that treats water and leaves it to Kolar and in the lake itself a river of raw sewage keeps flowing.

Image Credit: YMS lake group, Yelemallappashetty Kere

3. Purpose Misunderstanding: There is a need for training on the real purpose of lakes, which is to store rainwater, recharge groundwater, and support ecosystems.

4. Commercial Interests: Contractors often include concrete in their proposals for financial gains as the contractors-administrators lobby prevails for kickbacks.

Image Credit: YMS lake group, Yelemallappashetty Kere

5. UNSDG Compliance: There is no pressure to follow the United Nations Sustainable Development Goals (UNSDGs).
As per UN SDG 6.6 goal, we must protect and conserve a lake and its ecosystem by 2030. India has not yet made any specific goals for lake and waterbody conservation part of Water Goal no 6.

6. Awareness Deficit: There is a lack of awareness about alternative methodologies for managing lakes.

7. Aesthetic Misconceptions: The government mistakenly believes that aesthetics are improved with artificial facilities.
Ex: Nagawara Lake

Image: Sankey playground (lake)

8. Water Quality Mismanagement: There is insufficient real emphasis on water quality, which can be enhanced through NBS and biomimicry.

9. Public Approval: Governments often prioritize public approval and buy-ins over environmental sustainability. People are given the impression that if it's concrete then the ambiance is going to be posh.

Image: Sankey health center (lake)

10. Enforcement: The agencies to enforce NBS are not able to take strong action against the wrong doers to safeguard lakes from lobbies.

Impacts of Concrete on Lakes

- Reduced Water Absorption: Concrete reduces the Earth's ability to absorb and percolate water.
- Carbon Emissions: The use of cement, sand, and water generates significant carbon emissions.
- Alkalinity: Cement is alkaline, potentially contaminating water bodies and harming aquatic life.
- Ecosystem Disruption: Infrastructure like walking tracks, jogging paths, playgrounds, parks reduces lake size and destroys ecosystems.

Image Credit: Malgudi Shiva, Narasipura Kere, Vidyaranyapura, Bengaluru

- Fish Kills: Proximity to facilities like swimming pools can lead to frequent fish kills. Example: Sankey Tank

Image Credit: Jude, Chalkere, Kalyanagar, Bengaluru

- Artificial Ambiance: Concrete structures create an artificial environment, stripping lakes of their natural identity. Example: Chalkere, Kalyanagar

- Run-off increases: leading to the pollutants to lake and surrounding areas Ex: oils, pesticides, sedimentation etc

- Flooding- Concrete causes water logging by preventing natural water percolation.

Steps Toward Nature-Based Lake Management

1. Historical Planning: Study and follow the principles of past city planning and customize considering the population and nature ability to handle the impact.

2. Science and NBS: Use science and NBS extensively. There is less awareness of different NBS methodologies to manage lakes.

3. Wetland Restoration: Restore wetlands after sedimentation.

4. Comprehensive Mapping: Map the lake's shoreline, islands, inlets, outlets, size, depth, and contours.

5. Natural Filtration and Algae Management : Use natural filtration methods for rainwater entering the lake and aerators nutrient remediation.

6. **Aesthetic Enhancement:** Use NBS to improve the lake's aesthetics.

7. Ecosystem Preservation: Allow the lake to develop and maintain its natural ecosystem.

8. Self-Sustenance: Enable the lake to be self-sustaining with minimal external intervention.

9. Community Involvement: Encourage volunteer and community efforts to monitor and maintain the lake. Allow neighbors and students to partake in lake conservation and be the watchdogs of their lakes.

10. Lake Celebrations : Conduct lake celebrations (Kere hubbas) and ensure adherence to Karnataka State Pollution Control Board (KSPCB) norms during events.

11. Healthy Lake Goal: Aim to achieve a healthy, vibrant lake that serves as a habitat for various species.

Challenges to Changing the Outlook about concretisation of lakes:

1. Unlearning Required: Both the government, contractors and the public need to unlearn outdated practices and adopt new, sustainable methodologies.

2. Scientific Approach: Use science and data to understand best practices from the past to revive natural lakes

3. Development with a vision that is based on Positive environment: Comply with UNSDG 6.6

4. Behavioral Change: Acceptance of Nature- Based solutions by public, government and all other stakeholders and implement it.

Future Expectations with Less Concrete in Lakes:

- Improved Water Quality: Enhanced natural filtration and groundwater recharge.

- Biodiversity: Increased biodiversity and healthier ecosystems.

- Sustainability: Long-term sustainability with reduced dependency on artificial structures.

- Community Benefits: Greater community involvement and awareness about environmental conservation. Leave a beautiful, clean and healthy lake for the next generations to enjoy.

By reducing the use of concrete and adopting more nature-based solutions, we can revive our lakes and ponds, ensuring they serve their true purpose and contribute positively to the environment.

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