



# Role of Civil Society in Lake Management: A Case Study of Bengaluru

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**Abstract:** Bengaluru was once a city of thousand lakes. A large network of manmade tanks once supplied water for drinking and irrigation to the city. However, over the years the rapid urbanization and city's development processes have adversely impacted these waterbodies. The lakes in the city are facing conservation challenges and a thriving network of community organizations, lake groups, resident welfare associations etc., are playing an active role in preserving these waterbodies. This paper analyses the role played by these lake groups in conserving the city's lakes.

**Keywords:** Lakes, Lake groups, Civil Society, Sustainability, Development, Urbanization.

## 1. INTRODUCTION:

Water is an essential resource for human survival and for the growth of cities. The city of Bengaluru is located on the Deccan Plateau, a region known to be water –deprived. The city has always depended on constructed water reservoirs for irrigation and domestic use as it does not have a perennial river. The local rulers placed great importance on the construction of water reservoirs, creating a number of lakes across the landscape of the current day city (Harini, Nagendra ,2016, p.166). Some claim that Bengaluru was referred to as 'Kalyananagara', a city of kalyanis or tanks (Janaki Nayar,2005). Traditionally, these lakes were maintained by different communities living in villages near the lakes.<sup>1</sup> In 1791, when Lord Cornwallis sent a contingent of British East India Company soldiers from Fort St. George, Madras, to the Mysore State to find an alternate route to Srirangapatna for fighting Tipu Sultan, the Captain who headed the team came to Bangalore town. He was amazed by the climate and environment of Bengaluru and described it as a land of thousand lakes (N.K. Patil Committee Report,2011, p.4-5) Nair credits the evolution of this metropolis to the building and conservation of tanks/lakes<sup>2</sup>. The undulating terrain of Bengaluru, with its hills and valleys provided a very natural drainage pattern with small streams originating from ridges cascading down to form major streams in the three major valleys i.e., Hebbal, Vrishabhavathi and Koramangala and Challaghatta (N.K. Patil Committee Report, p.2,2011). The existence of these valleys around the city has facilitated the development of lakes. Several small reservoirs were built across these valleys. This water source has completely disappeared now as a result of their destruction (P. Thippaiah, 2009, p.108).

The region of Bengaluru was controlled successively by the Gangas (fifth to tenth centuries), the Cholas (ninth to thirteenth centuries) and the Hoysalas (twelfth to thirteenth centuries), but the city first took shape as a fortified settlement in the sixteenth century. These rulers who ruled over the current day city paid great attention to the construction of lakes. They built tanks with high bunds to store water. While the rulers ensured that the tanks were maintained, it was the community that played an important role in cleaning and maintaining the waterbodies. Thus, the Gangas constructed the Agara lake; the Cholas built the lakes of Bellandur and Pattandur and the Hoysalas constructed the lakes of Vibhutipura and Dharmambudhi (Harini, Nagendra,2016, p.166). The early founders and rulers of Bengaluru continued this practice of supporting the growth of the city by the strategic construction of new lakes. Kempe

<sup>1</sup> Rohan D'Souza, The importance of Bengaluru's lakes and their associated land,28<sup>th</sup> October 2024, The Hindu

<sup>2</sup> Nair, J. (2005). The Promise of the Metropolis: Bangalore's Twentieth Century. New Delhi: Oxford University Press.

Gowda, whose name is usually associated with the founding of the town in 1537, is believed to have enlarged the Dharmambudhi lake and constructed the Kempambudhi lake as well as a number of other kalyanis. The Maratha ruler Shahji's court poet Paramanand described Bengaluru as having lakes the size of the sea that surrounded the fort, enhancing its beauty. Both Hyder Ali and Tipu Sultan who ruled this region have also continued the practice of maintaining lakes recognizing their importance for agriculture and in war. As the city began to grow, it required additional lakes to provide water to the new immigrants, Hence, the Miller's lake series, the Shoolay lake and the Halasur lake were constructed in the 1860s by L.B. Bowring, and Sankey lake was constructed by Co. R. H. Sankey in 1882. The city was so comprehensively covered by lakes by the end of the nineteenth century that it was difficult to find a location to construct a new lake (Harini, Nagendra, 2016, p.170). Till the year 1896, unfiltered water was supplied to Bangalore city in the Kalyani system from a number of tanks such as Dharmambudhi, Sampangi, Ulsoor, Sankey etc., supplemented by local wells and stepped ponds<sup>3</sup>. In order to meet the water demands of the increasing population of the city, the Mysore state constructed the Hessarghatta lake outside the city, building an embankment across the Arkavathi river. At present BWSSB is supplying treated Cauvery Water to Bangalore City under the Cauvery Water Supply Scheme (CWSS) Stage I, II, III & Stage IV Phase I & II with total installed capacity of 1440 MLD.

As multiple agencies are involved in city's lake maintenance at different levels, lake governance is complex in nature. It involves multiple lake custodians such as Bruhat Bengaluru Mahanagara Palike(BBMP), Bengaluru Development Authority(BDA), Karnataka Forest Department (KFD), Bengaluru Metro Rail Corporation Limited (BMRC), lake groups, parastatals like Bangalore Water Supply and Sewerage Board(BWSSB), co –coordinating agencies Karnataka State Pollution Control Board (KSPCB), Karnataka Fisheries Development Corporation Limited(KFDC) etc. At present BBMP is in charge of 204 lakes in the city.

## **2. Importance of Lakes:**

These irrigation tanks or water bodies helped harvest rain water from the catchment areas during the rainy season. They were interlinked through a chain or cascade system, which prevented the loss of water. The farmers and the fishermen used the lakes for economic purposes as well. The farmers used the water for irrigation, the silt as manure, shepherds used the grass for grazing, dhobis washed clothes and the fishermen fished in these lakes<sup>4</sup>.Lakes have evolved into a religious and cultural hub with people celebrating festivities around it. For example, at the heart of the Bengaluru's Karaga festival lies a deep respect for water. Lakes also serve vital ecological functions. They are critical to flood control management, recharging groundwater, biodiversity conservation, for supporting livelihoods and aquatic and semi-aquatic eco-systems.

## **3. Impact of urbanisation and development on lakes**

Bengaluru is one of the fastest growing cities in India. In 1941, the population of Bengaluru was 0.41 million with a city area of 29sq.km. The city's population has grown rapidly over the last few decades. As per the 2011 census, the city had a population of 8.4 million with its area of 741 sq.km. According to World Population Review, the city's population is now estimated at 14,008,300. When the city started getting water from the Kaveri river and the agricultural lands were converted into built up areas due to urbanisation, many lakes were converted into residential layouts, bus-stands and play grounds<sup>5</sup>,golf courses and a few tanks were breached under the malaria eradication programme. The rajakaluves and the drains that carry rain-water into the lake are encroached, blocked or narrowed in many places. As a result of this, some of the areas in the city are getting flooded causing miseries and hardships to the people. A study of floods in the city identifies an increase in the built up area, paved surfaces, encroachment of natural water courses and low –lying areas, inadequate capacity and encroachment of storm-water drains and increasing density of population as the major causes of floods in Bengaluru<sup>6</sup>.For example ,the recent rains had led to significant waterlogging disrupting the normal life. Urbanisation has brought about environmental degradation, with waterbodies suffering from pollution, encroachment and depletion of natural resources, exacerbating the water crisis. Urbanisation and development have had a significant impact on the lakes of the city. The lake areas have become dumping grounds for solid waste debris, construction waste etc. Most of the lakes in the city are filled with sewage water. The entry of untreated sewage and industrial effluents into the lakes remains as the major reason for the contamination of these waterbodies. The dissolved oxygen levels in the lakes is less. Fishkill incidents have reported in Bhattarahalli, Munnekolalu, Challakere, and Iblur

<sup>3</sup> BWSSB

<sup>4</sup> Bangalore and its Lakes: Reclaiming our urban lakes and engaging with our natural ecosystem, Biome, Environmental

<sup>5</sup> N K Patil Committee Report

<sup>6</sup> Sanganal. A (2020), Urban Flood Management –A Case Study of Bangalore. Report Submitted to Administrative Training Institute, Mysore,2020.



lakes, despite the presence of sewage treatment plants indicating a failure to utilise the STPs effectively<sup>7</sup>. Many lakes are infested with alligator weeds and water hyacinth. According to lake activists, dumping garbage and construction waste is seen commonly in most of the lakes on the outskirts<sup>8</sup>.

The necessity of lake preservation is more pronounced in the context of urbanisation, when city takes more and more villages into its fold as in case of ever growing Bengaluru city<sup>9</sup>. Lakes being the primary source of ground water recharge in the city, it is essential to restore the lakes to save the urban water system in Bengaluru. The Bruhat Bengaluru Mahanagara Palike has spent over Rs 340 crore to develop and restore 58 lakes in the city in the last three years. At present, it has taken up developmental works at 70 waterbodies at an estimated cost of Rs 231 crore<sup>10</sup>. The urban water bodies play an important role in maintaining ecological balance. They are the lung spaces of a city and act as a buffer against the urban heat islands development, proper maintenance of lake series helps prevent urban flooding, help recharge ground water, help in sustaining the flora and fauna that survive on these waterbodies. They have a direct bearing on the quality of life in urban areas.

#### **4. Lake groups – their role and activities**

When the lakes in the city unfurled into cesspools, citizen activism mushroomed all over. The citizen led groups are playing an important role in reviving the lakes of the city. The citizens have been active and created an environmental movement in the context of lake rejuvenation in the city. Lakes are an essential focal point of several civic groups, non-governmental organizations, several resident associations, academicians and associations<sup>11</sup>. These are a network of community based lake groups which are working to restore and protect their neighbourhood waterbodies. These groups mobilize local citizens and seek to influence authorities to achieve change. They often seek advice from ecological and technical experts to adapt lake restorations to local conditions and emphasize the multiple functions they serve.<sup>12</sup> In the last few years, the BBMP and the BDA have made service agreements with various citizen groups (registered as trusts and societies) within the city<sup>13</sup>. There were nine active lake groups before the introduction of Memorandums of Understanding (MoUs) by the BBMP in the year 2010.<sup>14</sup> The MoUs with municipal authorities gave these lake groups increased influence over and responsibility for lake management. It had in a way enabled grassroots mobilization by providing acknowledgement and support from above. In cooperation with municipal and sometimes non-governmental partners, the lake groups which entered into MOUs with the BBMP have achieved more successful protection and achievement of individual lakes compared to previous efforts led by municipal, state or private actors alone<sup>15</sup>. Many citizen lake groups are formally entrusted with the day-to-day management of these lakes which include security, gardening, solid waste management. At present the city has over 60 lake groups which are actively engaged in preserving the city's lakes. The success of these lake groups has resulted in galvanising other communities into action. There are both registered as well as unregistered (informal) lake groups. These lake groups raise money through fundraising campaigns or from corporate CSR funds till recently or sometimes pool resources from their neighbourhood. There are city-wide networks such as Save Bangalore Lakes, the Federation of Bengaluru Lakes and Friends of Lakes.

The lake groups engage with the government lake custodians during the allied work phase, such as decisions on the type of pathways, artificial ponds for idol immersions, benches and pavilions for the community children's play areas and trees to be planted around the lakes.<sup>16</sup> These lake groups organise lake clean-up drives, lake walks, community meetings, plantation drives, celebrate cultural and religious festivals like Kereyangana Deepotsava, gangarathi, Kere Habba etc., for involving the people in restoring the waterbodies. For example, Kothanuru Lake Development Association conducts lake clean-up drives in the name of 'Clean Kothanuru Campaign', Benniganahalli Kere Community Development Trust, Team Jananidhi organise Kereyangana Deepotsava, gangarathi etc., to seek community's involvement in lake restoration. These groups also organise photographic sessions, file Public Interest Litigation, petitions to the National Green Tribunal, campaigning, and painting competitions among the students. For

<sup>7</sup> 61 fish kill incidents reported in Bengaluru in 6 years, says study, *The Hindu* 12 March 2024.

<sup>8</sup> Darshan Devaiah B P, Bengaluru lakes have turned into garbage dumping yards, *The Hindu*, September 30, 2022.

<sup>9</sup> N K Patil Committee Report

<sup>10</sup> BBMP Renovating 70 lakes At Rs 231 Crore, July 22, 2023, *Times of India*

<sup>11</sup> Dipak Mandal, S Manasi, Civic Groups Engagement in Saving Bengaluru Lakes: A Study

<sup>12</sup> Johan Enqvist, Maria Tengo, Orjan Bodin, Are bottom-up approaches good for promoting socio-ecological fit in urban landscapes? *Ambio*, Vol.49, issue no.1.

<sup>13</sup> Sanchayan Nath, Managerial, clientelist or populist? Lake governance in the Indian city of Bangalore, *Water International*, Vol.46, Issue 4, 2019, pp.524-542.

<sup>14</sup> Divya Selvam, Aishwarya V, In Bengaluru, citizen groups lead the way in revival of lakes, *The Hindu*, 31 July, 2019.

<sup>15</sup> Johan Enqvist, Maria Tengo, Orjan Bodin, Are bottom-up approaches good for promoting socio-ecological fit in urban landscapes? *Ambio*, Vol.49, issue no.1.

<sup>16</sup> Veena Srinivasan, Apoorva R, 2020, Bangalore's Lakes: What role do citizens play?, WELL LABS

example, the Sarakki lake group approached the judiciary to clear the lake encroachments. In August 2014, the High Court of Karnataka ordered for the clearing of the encroachments in the lake area. Thus the judiciary has played a proactive role in the governance of city's lakes. They frequently discuss with the neighbours, politicians, academic institutes and other groups to create public pressure, file PILs, get attention or seek funds from the governmental and other agencies. Some lake groups have been working on economic utilisation of the aquatic weeds for baskets, ropes, paper etc. by underprivileged women. Other lake groups have experimented with Bokashi balls and an effective micro-organisms solution as a bioremediation technique in lakes that receive sewage. They also present an integrated understanding of the lake's ecological functions, historical role as water harvesting infrastructure, their cultural significance and their role as city's lung spaces to the larger public. For example, a lake group named Jalamitra organises weekly meetings, seminars and educational programmes such as World Environment Day, World Earth Day to educate and motivate people for coming together to protect the lake. The civic groups also discuss issues with the local government and corporate bodies as they share possible solutions to rejuvenate the lakes. For example, an informal group called 'Friends of Lakes', which started on a volunteer basis has been organising lake clean-up drives, awareness programmes and even aiding citizens with knowledge to revive their lakes. It has become an umbrella organization working with groups and citizens in 22 lakes. In addition to this, many lake groups organise different events like birdwatching, photography and art competitions, community gardens, biodiversity walks, yoga and music etc. Lake groups also play an important role in lobbying with the agencies to change rules. For example, the lake rejuvenation effort by the Puttenahalli Neighbourhood Lake Improvement Trust to permit a neighbourhood apartment Sewage Treatment Plant to release their surplus water into the shrinking Puttenahalli lake in South Bangalore.

### 5. What do lake volunteers do?

The lake volunteers help keep lakes healthy by monitoring, cleaning and raising awareness about lakes. They also track lake development work, monitor water quality, and keep an eye out for threats to the lake. They spread awareness about lakes, loss of greenery, and sewage seepage etc. BBMPs recent initiatives like 'Kere Mithra' allows lake volunteers to select their interested lake and monitor the ongoing activities in lakes such as pathway sweeping, bund slope cleaning, waterbody de-weeding, inlet cleaning etc.

### List of Lake Groups in Bengaluru

SL. No	Name of the Lake	Name of the Lake Group	Year of Formation
1	Hulimavu	Hulimavu Kere Taranga	2018
2	Arakere	Arakere Neighbourhood Improvement Trust	2012
3	Sarakki	Sarakki Lake Area Improvement Trust- SLAIT	2012
4	Puttenahalli (Bommanahalli)	Puttenahalli Neighbourhood Lake Improvement Trust	2010
5	Iblur	Iblur Environs Trust	2018
6	Agara	Agara Lake Protection and Maintenance Trust	2013
7	Gottigere	VSave Association	2017
8	Kalena Agrahara	Kalena Agrahara Lake Preservation and Beautification Members Association	2009
9	Akshayanagara	Akshayanagara Kereya Sutta Mutta – Team Jalanidhi	2008
10	Kothanuru	Kothanuru Kereya Sutta Mutta	2016
11	Chunchaghatta	Chunchaghatta Lake Group (Friends of Lakes)	2015
12	Yelchenahalli	Yelchenahalli Neighbourhood Lake Improvement Trust	2015
13	Doddakallasandra	Doddakallasandra Lake Group	2019
14	Kembattahalli	Kembattahalli Lake Group	2018
15	Alahalli	Alahalli Neighbourhood Lake Development Trust	2013
16	Doddabidarakallu	Doddabidarakallu Lake Group	2015
17	Lower Ambalipura	Mahadevapura Parisara Samrakshane Mattu Abhivruddhi Samiti -MAPSAS	2011
18	Kaggadasapura	Save Kaggadasapura Lake	2012





19	Ulsoor	Ulsoor Lake Resident Welfare Association	2010
20	Vijanapura	Vijanapura Eco- Civic Team for Environment and Democracy	2017
21	Sigehalli	Sigehalli Lake Club	2023
22	Challakere Lake	Friends of Lakes	2015
23	Vibhuthipura Lake	Vibhuthipura Kere Abhivruddhi Mattu Samrakshane	2016
24	Benniganahalli	Benniganahalli Kere Community Development Trust	2022
25	Gangashetty	Save Gangashetty Lake	2018
26	Chikkabellandur	Friends of Lakes	2019
27	Bhattarahalli	Save Bhattarahalli Lake	2018
28	Kowdenahalli	K R Puram Lake and Environment Protection Trust	2016
29	Ambalipura Kelagina Kere	No Name	2007
30	Gunjur Palya	Friends of Lakes	2019
31	Hoodi	Save Hoodi Lake	2018
32	Gunjur Karmelaram	Friends of Lakes	2019
33	Panathur - 1	Srikarini	2020
34	Jimkenahalli	Save Varanasi Lake	2018
35	Hoodi Giddanakere	No Name	2016
36	Puttenahalli	Yelahanka Puttenahalli Lake and Bird Conservation Trust	2013
37	Kasavanahalli	Mahadevapura Parisara Samrakshane Mattu Abhivruddhi Samiti -MAPSAS	2011
38	Sadaramangala	Save Sadaramangala Lake	2017
39	Sowl	Mahadevapura Parisara Samrakshane Mattu Abhivruddhi Samiti -MAPSAS	2011
40	Devarabeesanahalli	Save Devarabeesanahalli Lake (Friends of Lakes)	2011
41	Doddanekundi	Nekkundi Tank Rejuvenation Trust -NeTRA	2014
42	Munnekolalu	Munnekolalu and Chinnappanahalli Lake Group	2022
43	Chinnappanahalli	Munnekolalu and Chinnappanahalli Lake Group	2022
44	Kundalahalli	Brookfield Layout Residents Welfare Association	2014
45	Bellandur	Bellandur Lake Development Group	2012
46	Varthur	Varthur Rising	2014
47	Lingadeeranahalli -13	Lingadeeranahalli Lake Group	2022
48	Talaghatapura Lake	No Name	2017
49	Hosakerehalli Lake	Save Hosakerehalli Lake	2018
50	Srigandadkaval	Usiru	2012
51	Halage Vaderahalli Lake	R R Nagar I Care	2015
52	Mesthipalya	No Name	2016
53	Doddabommasandra	Friends of Lakes	2011
54	Narasipura -1	Friends of Lakes	2011
55	Narasipura -2	Friends of Lakes	2011
56	Rachenahalli	Jala Mitra	2016
57	Amruthahalli	Amruthanagara Residents Welfare Association – Amruthanagara Lake Protection Group	2014
58	Venkateshpura	Chokkanahalli Sampigehalli Abhivruddhi Forum	2020
59	Thirumenahalli	No Name	2015
60	Allalasanra	Yelahanka United Environment Association	2012



**Source:** The above information is gathered by the researcher by contacting the key leaders of the lake groups and from the social media.

**6. Conclusion:** Citizens are playing an important role in reviving and maintaining the lakes of Bengaluru. A number of citizen and government led initiatives have revived many of the city's lakes. They work collectively with the BBMP towards maintaining the lakes and have started many action plans to progress the cause of preservation of the lake ecosystems. However, despite the considerable investment of money and citizen involvement, many problems still persist.

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