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HOW CIVIC GROUPS ARE MEETING THE CHALLENGES OF SAVING BENGALURU LAKES: A STUDY

Dipak Mandal[1] and S Manasi[2]

This current paper discusses how urban expansion has impacted lakes and the role of civic groups in saving several lakes and its evolving into an environmental movement in Bengaluru. In addition, the paper highlights the contribution of civic groups that have helped improve lake management, thus impacting the city environs in a positive manner. These civic groups have played a significant role in community interest where the ecology and environment have been central concerns.

Keywords: urban environmental movements; urban lakes; civic groups; Bengaluru

Introduction

The world is getting rapidly urbanised, and currently, more than fifty per cent of the world population is living in urban areas. According to the UN-Habitat 2008 report, developing countries of Asia and Africa will have more people living in urban rather than rural areas by 2030. Cities are reconfiguring on a massive scale at spatial and demographic levels in clusters, urban corridors, suburban sprawl, and agglomeration. Such as urban transformation drastically impact the territorial, economic, political, socio-cultural, and environmental fields in terms of generating ill effects. According to a study, urbanisation has promoted economic growth up to a particular level in the initial stages, but after attaining the level, the impacts are negative in economic growth (Henderson, 2003).

Urban activities share 75 per cent of global CO2 emissions (UNEP, 2009). The per capita emission of carbon-dioxide by urban households is a shocking sixteen times more than rural households (The Indian Express, April 11, 2014). Sustainable development of urban areas was first implemented in western countries. The high concentration of people and economic activity in urban areas has increased the residential problems, unemployment rates, transportation and congestion problems in urban areas. To resolve these issues, the United States initiated measures for the sustainable development of urban areas. This policy addresses the challenge at the city level through clear, compelling goals, the participation of stakeholders, targeted long-term policies, and public-private partnerships.

Meanwhile, the problems, nature and intensity of problems in Asian contexts have been different. Sustainable urban development in developing countries was introduced later. This country has the largest share of the world population. The primary sector of agriculture plays a vital role in the national GDP, and a significant number of people are engaged in this sector. Since there is a considerable gap in income, infrastructure, connectivity, and accessibility between rural and urban areas, cities have encountered migration, resulting in urbanisation and urban concentration, more than what is seen in developed countries.

This unplanned rapid growth creates many problems like over crowding, traffic congestion, sewerage and sanitation problems, water-logging, urban floods, and the proliferation of slums in urban

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areas. Environmental concerns in the cities, apart from the evident and oft-discussed issues of air pollution, waste management, water scarcity and quality, the environmental burden of the varied forms of pollution have transformed its nature and intensity. Thus, as a whole, they are termed as Climate Change, since all these factors are interlinked and interrelated. It has led to several debates at the global level for understanding the nature of environmental concerns that are threatening sustainability.

Cities are home to over one and a half of the world's people and are the primary factor of the climatic change issue. Climate change experts cite the added stress on urban areas through increasing numbers of heat waves threatening the health of the elderly, the infirm as well as the very young; more recurrent and intense droughts and inland floods are impacting water supplies as well as the coastal cities affecting inhabitants and the essential infrastructure, property and ecosystem (UCCRN Report, 2011). Developing and underdeveloped countries face significant problems compared to developed countries. Third world countries share a more significant population globally, and primary economic activities play a considerable role in the country's GDP. That is why many people migrate from rural to urban areas and increase urban concentration. This unplanned rapid growth of urban areas harms the city's climatic conditions, resources, and the ecosystem.

Urbanisation in Bengaluru started increasing after the economic liberalisation when the massive scale of the private sector and Multi-National Companies (MNC) across the world took part to raise the city Gross Domestic Product (GDP). During the period of 1993 to 2004, the country's GDP growth rate was 7.93 per cent, where the city had a 20.76 per cent growth rate.[3] In addition, many universities and colleges are located in the city, which attract youths from different parts of the world. As a result, software, MNC companies and industries have set up their headquarters in the city, leading to massive migration into the city. This situation has caused a variety of problems for the city, especially environment-related problems.

Urban Governance

Due to increased urbanisation, urban governance has become a significant challenge. As we know, governance encompasses the exercise of political, economic and administrative authority in managing a country's affairs at all levels. Here government should incorporate collective decision-making and formal and informal, participatory and representative, decentralised and centralised and finally represent national and local governance. Besides, governance also comprises complex mechanisms, processes and institutions through which citizens and groups convey their interests, arbitrate their differences, and exercise their legal rights and obligations. It is also a continuous process through which conflicting or diverse interests may be accommodated, and cooperative action may be taken. As an example of governance at the local level – neighbourhood cooperatives install and maintain a waste recycling scheme, and another is a regional initiative of state agencies, industrial groups, and residents to control deforestation.

However, when the urbanisation process is fast and urban challenges get intense, it poses severe challenges to public urban government institutions, affecting the quality of life. When problems reach an

[3] https://www.thehindu.com/opinion/open-page/bengalurus-growth-story/article27102964.ece

unacceptable threshold for the citizens, we see various forms of protests through collective action by civil society organisations demanding change. These are pressure groups that push the government authorities to make the necessary change and have led to environmental movements in urban contexts when the magnitude of the problems gets uncontrollable, with profound implications. For instance, Environment Support Group has filed a Public Interest Litigation (PIL) against lake privatization in Bengaluru. They found that the city has 386 lakes, and out of these 121 lakes are unknown.

Also, they mention that 100 lakes have been converted into various urban uses, including bus station, road, layout, and garbage dumps. They submitted the report to the Karnataka High Court, Karnataka State Pollution Control Board, Bangalore Water Supply and Sewerage Board (BWSSB), Forest Department, Lake Development Authority (LDA) governing and non-governing bodies. Residents such as dhobis (washer community), fishermen/women supported Mr Leo Saldana on this issue, and they got huge attention. Finally, on March 3, 2011, the High Court of Karnataka accepted the letter to protect urban lakes in Bengaluru.

Given this backdrop, we can observe that citizens' involvement in governance has immensely increased. Bengaluru city citizens' networks are vibrant in action and have showcased solid waste management, lakes' rejuvenation, and tree planting. In this paper, we confine ourselves to discuss lake-related movements only. We will discuss environmental movements and urban environmental movements in brief and later discuss how the citizens have been active and created an environmental movement in the context of lake rejuvenation at length.

Environmental Movements

The environmental movement is one kind of "social movement that requires the collection of individuals, groups, and coalitions that perceives a common interest in environmental protection which acts to bring changes in environmental policies cum practices" (Tong, Yanki 2005). Environmental movements are proposed as broad networks of people and organisations engaged in collective action to seek environmental benefits. Environmental movements are understood to be varied and complex, their organisational forms scaling from the extremely organised and formally institutionalised to the radically informal, the spatial scope of their actions spanning from the local to global, the nature of their concerns ranging from the single issue to the full panoply of global environmental concerns. Such an inclusive notion is coherent with the term's usage amongst environmental campaigners themselves. It lets us consider the linkages flanked by the different levels and forms of what activists name as 'the environmental movement' (Rootes and Christopher, 1999).

Urban Environmental Movements

The great contradiction of urban environmentalism is that while cities are responsible for many environmental ills, environmental perception focuses on non-urban areas. Cities are primary contributors to air, aquatic, and land pollution in conjunction with other forms of ecological neglect. As cities are wholly bound to economic growth, urban governance must reconcile profitability with sustainability. According to the UN Habitat Report, more than fifty per cent of people live in urban areas, and it will increase to sixty per cent in 2030, while their implications can be seen in non-urban areas as well.

The urban environmental movement seeks to protect the natural world and promote sustainable living in urban areas. It had its early stages in the conservation efforts of the early 1900s when conservationists intended to slow the rapid exhaustion of Canadian resources in favour of more regulated management. Many scholars divide the evolution of the urban environmental movement into "waves", or periods easily characterised by specific themes. While the number and characteristics of each wave may differ from scholar to scholar, they are often defined as follows: the first wave determined on conservation; the second, pollution; the third, the professionalisation of the urban environmental group; and fourth, climate change and modern sustainable technology.

Given the political opportunities and framing processes, what is the mobilisation structure by which social movements prepare to mobilise? What are the social movements' organisational dynamics? What are the informal and formal collective vehicles by which people mobilise and participate in collective action? McAdam et al. (1996) identified three mobilisation structure elements that favour social movement success: disruptive tactics to end stalemates, radical group manifestations which strengthen actions in support of moderate proposals, and simple objectives that do not take too much from adversaries (Gamson, 1990, 41-46). According to Tarrow (1998), disruptive tactics or threats make movements useful as vehicles for social change.

Some papers have documented movements of various forms and in different countries. In their paper, Jones, Fly and Cordel (1999) attempt to determine whether urban or rural residents are concerned about environmental issues. This paper emphasises that local issues are more significant than national issues because people are closely affected by local issues. They found that literate people, political awareness, and high-income groups are more conscious of environmental issues. Demographic variables such as religion, ethnicity, age and gender have a higher impact on environmental issues.

Another paper by Xie and Ho examines the role of the formal and non-formal organisation on urban environmentalism of two major cities in China, Xiangfan and Shanghai. In China, political conditions and the cultural context have played a significant role in these movements. At the lower level (grassroots level), individual activity rather than organisational activity was more significant. The environmental activity in the central city, Xiangfan, is different from the eastern city of Shanghai since Shanghai is one of the economically developed cities in China and well connected globally and has western influence. Thus there is increased awareness, and NGOs play a significant role in involving people in these movements (Xie and Ho, 2008).

P Brand's paper (2004) talks about urban environmentalism's general theoretical perspective and methodological approach. Also, this paper discusses the political economy and neo-liberalisation for sustainable development of the urban area. This paper argued that neo-liberalisation has promoted an open trade market and globalisation. In this open trade market, the developed countries invest their money in underdeveloped countries and control the city economy. This process has increased the conflict between the international organisation and the local governing body. This trend also increases geographical and spatial segregation, poverty, and the environmental burden.

There are smaller protests that are localised and are pursued to resolve issues. Manasi and Deepa talk about arsenic contamination and environmental degradation of Hootgalli Village in Mysore. This village is affected by water contamination (arsenic) due to industrial effluents. This industrial effluent

is the primary source of Potassium Nitrate, which came from the manufacturing sector. Potassium Nitrate has increased the BOD in the lake, water-borne disease, and arsenic contamination in groundwater. The political leaders identify problems and mobilise local people to protest against the industrialist. The local people demand their rights for unpolluted drinking water, which would happen only with the shutting down of the industry. Vote banks and political ideology have played a significant role in this movement. This local conflict has a significant impact on politics, the economy, and society.

Another paper by Manasi and Smitha documents a case in Koramangala that focuses on urban flooding, resulting in conflict. An apartment complex of 300 plots was built on the gradient of Shinivagulu Tankbed in 1989 by the Bangalore Development Authority at Koramangala. A storm water drain of about 40 feet passes through the layout. During heavy rains, water enters the households causing inconvenience to the residents. Hence, a secondary drain was built to divert floodwaters into storm water drains solving the problem partially. The natural slope of the Koramangala valley of which Shinivagulu Tankbed is a component facilitates water to drain through the wetlands into the Bellandur Lake, affecting the natural flow and causing flooding along the belt. The residents filed a writ petition in the High Court against the nuisance of the drain, asking for covering. The government came up with a Rs 110 crore project of re-modelling the open drains passing through four valleys in Bengaluru but this remains incomplete. This pursuance helped resolve the issue wherein Rs 400 crore was sanctioned for re-modelling the drain and resolving the issue.

Yangpi Tong (2005) discussed political ideology and local institutional action impact on environmental movements in Taiwan and China. These two countries are closely related to the socialist ideology; decentralisation politics has played a significant role in any social movement. At the grassroots levels, there are different groups due to the different ideologies. This paper has divided environmental movement objectives into two different ways: the priority to growth, which worsens environmental quality. Secondly, environmentalism produced by economic growth is changing life or enhances the standard of living. In socialist countries, every social movement is controlled by the local governmental organisation. Under the decentralisation policy, the local institute plays a significant role in protecting the environment because people are closely related to this institute.

The above-discussed problems highlight the intensity and dimensions of the problems leading to agitations and environmental movements. Thus, the environmental movement can be described as a social and political movement, mainly concerning preserving the environment and improving the state of the environment (P.P. Karan, 1994). It can also be said of the green and conservation movement. Generally, environmentalists favour the sustainable management of natural resources and the protection of the environment via changes in public policy and individual behaviour.

According to Erin L Gordon (2012), the modern environmental movement was started in 1960 and 1970. It covers broad and varied areas of institutional domination. Such coercion may include the consumption of ecosystems and natural resources into waste. It also includes pollution of air and water, weak infrastructure, exposure of organic life to toxic and several other focuses. Due to the rapid increase of urbanisation and industrialisation in the 20th century, large cities like Tokyo, Sao Paolo, Mexico City, Mumbai, and Kolkata face many problems. They include unplanned city growth, lack of transport and infrastructure planning, old buildings, lack of proper sanitation and sewerage facility, and mismanagement

of solid waste. In India, studies on urbanisation focus on megacities, issues related to the urban economy, politics, and environmental pollution. However, we have attempted to document and study the relative implications of the urban environmental movement on environmental challenges. This study will fill this gap.

Actors involved in Urban Environmental Movements

Several factors trigger urban environmental movements. It is observed that citizens, civil society, media NGOs and RWAs, individual organisations are various institutional organisations involved in collective action in demanding change, more so when the threshold level is reached, affecting the quality of life. For instance, the agitation against the Lingadeeranahalli processing plant near the Turahalli forest view, Bengaluru, is apt. People were agitated with the foul smell they had to bear and the anger that the nearby lake was polluted with leachate. It is essential to have a processing plant, but the technology must be in place to ensure no pollution.

From the literature review, it is evident that several urban environmental problems and varied types of responses may be categorised as environmental responses and movements. There are several cases of environmental movements that have resulted in bringing about change in the city contexts. However, not all environmental movements have brought about the expected change. No analysis has documented these environmental movements in an integrated manner. Besides, there is a lack of understanding of their ideologies and processes in the Indian city contexts. The outcome of unrest among the urbanites has led these agitations and movements to bring about the expected change. As seen in the literature, we witness varied forms and types of urban environmental movements. Also, there is no periodisation of the evolution of the management of urban environmental issues. The periodisation will sketch the transformations in discourse from the focus on the local environment to sustainable urban development.

As discussed earlier, the rapid rate of urbanisation has caused immense pressure on the cities. Cities face acute problems such as waste management, land encroachment, and water pollution of lakes, forcing people to respond in varied forms. All these concerns have long-term implications for the environment. They are discussed from climate change and threats to long-term sustainability perspective as environmental burdens are becoming more global. It brings to the fore the issue of how the quality of life of people is affected and the inability of the governance systems to cope with the increasing pressures of urbanisation. Urban problems are new generation issues with variations, for instance, across the locations – if it is at the periphery of the core of the city and the propaganda around it.

Historically, environmental movements in India like Appiko and Chipko have drawn worldwide attention, while issues and agitations concerning the urban contexts are scattered. These agitations have also brought to limelight the types, nature and volume of the environmental burden affecting cities. They bring to the fore that environmental movements need to be structured, although the problems and contexts are diverse. There will be several socio-economic and political processes that influence the situation and problem contexts. If the processes and ideologies of these movements are analysed, they could act as indicators for improved governance and transformations besides improving citizen responsibility.

As mentioned earlier, due to the rapid urbanisation, industrial activity, and lack of proper planning, the city cannot provide the necessary infrastructure and other civic amenities. The community has acted upon issues of concern at the threshold point to solve the problems through social activism. Various stakeholders, particularly individuals, community groups, RWAs and NGOs, protest against city governance. The main focus would be to document the transitions and their result as environmental movements, identify spatial shifts of environmental burdens, environmental movements' actors, their categories, and a structure in the first place. In every social movement, several actors play a significant role in identifying issues, the possible way to solve problems, and even engage in awareness and capacity building.

Interestingly, it is observed that Bengaluru is characterised by high civic activism. Some of the initiatives have effectively influenced policy change, thus improving urban governance. More than 20 NGOs are working specifically on environmental concerns. In India, urban environmental problems vary across cities because of their geographical location, economic activity, socio-cultural factors, local governance and citizen perceptions. For example, Chennai and Mumbai face urban flooding and other natural hazards, and Kolkata faces poor urban service and encroachment of public space. Similarly, Delhi faces air pollution; Bengaluru faces land encroachment and industrial effluents, causing lake pollution and urban waste.

Methodology

The paper is based on the urban environmental initiatives in Bengaluru city, India, the citizen networks and their approaches, with specific reference to asserting lake rejuvenation. The information is based on a review of literature on urban environmental initiatives which have gradually transformed into environmental movements, lake rejuvenation, secondary data analysis and some focus group discussions. Secondary data was collected from several sources such as books, journals, and websites. Quantitative data will help overview the location of local urban environmental movements, nature of environmentalist actors, population engagement, and source of funding. Qualitative data will help identify citizen perceptions, the structure of movements function, socio-political and economic status. The sample frame of this study will be prepared based on different parameters: location criteria, organisational status, actors involved, the area covering of actors, their involvement in the issue, and their period of struggle and influence of change. Indicators are developed to measure the outcomes of UEM.

Bengaluru City Lake Details

There are no accurate statistics of lakes and water bodies in Bengaluru, so it is not easy to provide a complete picture of lakes in the city.[4] As there are inadequate data sources on lakes and tanks, the current study has attempted to draw attention to Bengaluru lakes and tanks. The 'Garden City' of Bengaluru had 260 lakes, ponds, and water bodies in 1962. It was sufficient for groundwater recharge, the supply of drinking water and fulfilled the water demands in the city's agriculture sector and the outside suburban

[4] Thippaiah, P (2009). Vanishing Lakes: A Study of Bangalore City. Bangalore: Institute for Social and Economic Change.

areas. Also, these numbers (total number of lakes and water bodies) were able to control the local climate variability.[5] One study done by Deepa mentioned that in 1973, the Bangalore Urban District had a total number of 379 tanks and out of this, 138 and 241 tanks were located in North Taluk and South Taluk respectively.[6] However, today, most of the lakes have vanished, are polluted, sewerage fed, encroached by developers due to unplanned urbanisation, increased population growth and anthropogenic activities. The total number of lakes has reduced from 262 to 127, and out of these, only 81 lakes are liveable in the city.[7]

The city has a maximum number of lakes located on the periphery. The southern part has more lakes, followed by northern, eastern and western parts of the city. The highest lake density is occurring in the south-eastern and northern part of the city limit, and moderate density is located in south-western and north-western part of the city limits. The lake density in the core area is very low compared to other parts of the city as the transport nodes, i.e., bus station, railway station, industrial and commercial activity, are concentrated here. In the overall scenario, rapid urbanisation and population growth significantly reduce the number of lakes and lake density. The Indian Institute of Science (IISc), Bengaluru, studied lakes with the satellite image process using GIS software. The study finds that in the last four decades, the built-up area has increased by 925 per cent, reduction of vegetation cover by 78 per cent, and water bodies by 79 per cent. It highlights the unplanned city growth and profit-oriented city planning that have led to the destruction of the city's ecology and environment.[8]

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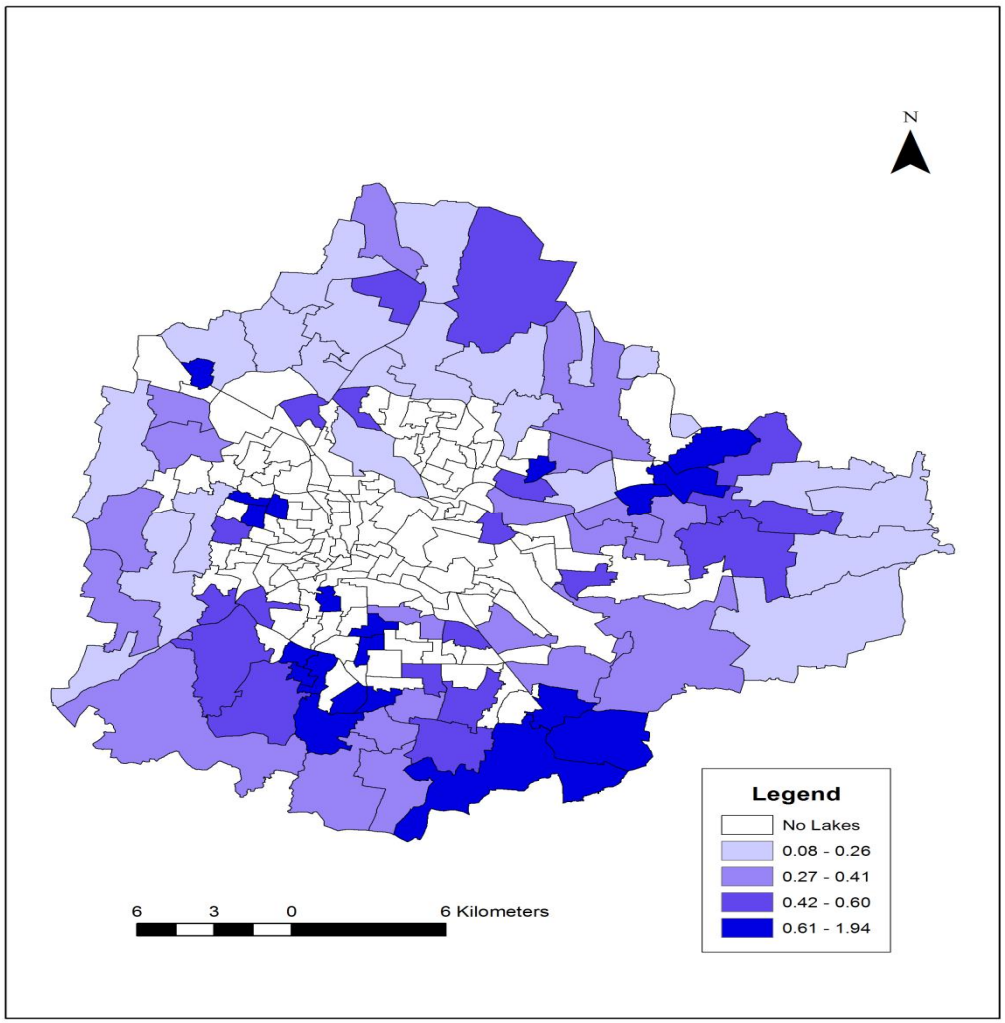
[5] Rau, L (1986). Restoration of the existing tanks in Bangalore Metropolitan Area. Report of the Expert Committee.

[6] Bharadwaja, A S (2016, January 11). Bengaluru lost its water bodies, and here's what is remaining. Retrieved May 01, 2019, from Citizen Matters: http://bengaluru.citizenmatters.in/bangalore-water-bodies-ndwi-images-research-7994

[7] Namma Bengaluru Foundation (2014). Survey on Lake Encroachments. Bengaluru. http://www.indiaenvironmentportal.org.in/files/file/Survey_on_Lake_Encroachments.pdf

[8] T V Ramachandra, B H Aithal, G Kulkarni and S Vinay (2017). Green Spaces in Bengaluru: Quantification through Geospatial Techniques. Indian Forester, 143 (4): 307-320.

Choropleth Map Showing the Ward-Wise Lake Area in Km^2, 2011 (Bengaluru)



Source: Map prepared by author based on BBMP's Lake Department Data, 2011

Key Findings

The organisation group to save the lakes: Forty-three active civic group networks are working in Bengaluru. These groups work at various levels and adopt different approaches to rejuvenate the lakes that needs attention. The rejuvenated lakes may have one to thirteen groups working on the same lake, studying different aspects and working as a more influential pressure group to change.

Issues in lakes – Across the majority of the lakes, it has been observed that the main problem was the dumping of garbage, sewage effluents being let into the lake, and the encroachment of the lake area.

Encroachment is one of the significant problems for reducing the lake number in the city, as well as reducing the storage capacity and lakebed area. Both the public sectors, as well as the government sector are playing a significant role in lake encroachment activities. Government bodies such as BDA, BBMP, Karnataka State Road Transport Corporation (KSRTC), Karnataka Housing Board (KHB), Sports Authority of India (SAI), KSPCB and other agencies have encroached on the lake area and other marshy

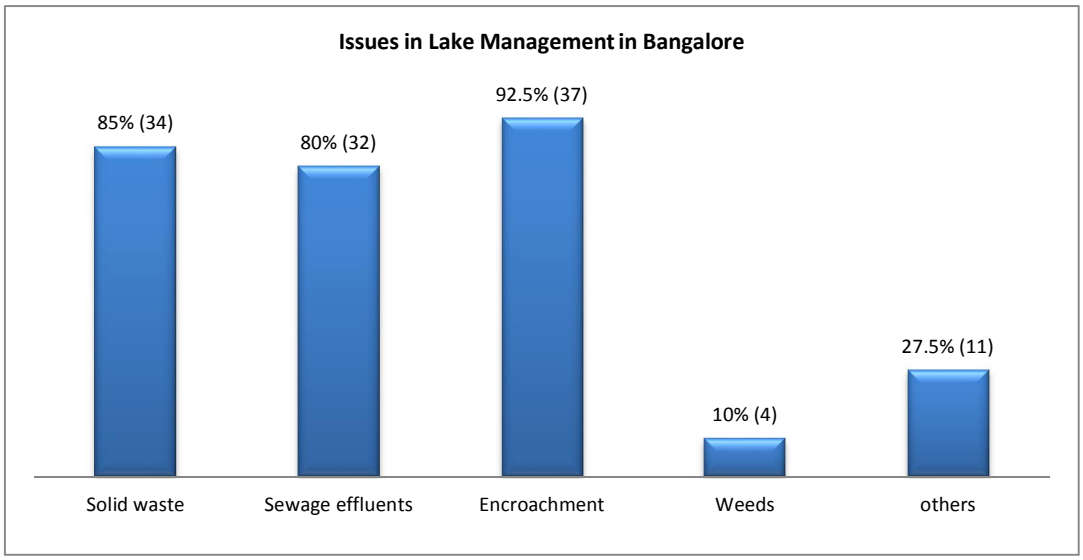
lands for enhancing their activity without bothering to protect the lake environment and the lake ecosystem.

As per the Forest Department data sources, 519 acres of land of 114 tanks beds has been encroached. Out of this, fifty per cent was encroached by the government departments for infrastructure development, as dumping ground for hazardous waste and layout building. Another fifty per cent of the area is occupied by private builders, industrialists, slum dwellers and farmers. In encroachment related activities, the politicians, land grabbers and bureaucrats are playing a significant role. Several newspapers and other sources mention a secure connection among the land grabbers, builders and bureaucrats. Sometimes, local authorities approved the builders' plans and projects without verifying their legal documents. These situations were a fillip for them to build new layouts or apartments and sell them to city dwellers.

A study carried out by Thippaiah in 1998 and 2006 has argued that the encroachment activities in Bengaluru are much higher as compared to that at the state level. At the state level, the percentage of encroachment rate is 6.69 to 15.86 per cent, wherein in Bengaluru, it is 20.38 per cent. This encroachment scenario reflects that the local government activities are inadequate to protect and manage urban lakes and water bodies.

Currently, the city generates an average of 0.5 kg waste per day per capita with a total population of about 10.18 million. It generates around 5000 metric tonnes of waste per day. Out of the total amount, waste dumped in the lake areas is a significant proportion. This issue is getting attention in newspapers, media and people agitating in the city. The sewerage effluents in the lakes and water bodies are an additional element to enhance the lake management problems. Lakes and water bodies are major dumping areas for untreated sewerage from the residents and apartments. This untreated sewerage decreases the water quality and increases the Biological Oxygen Demand (BOD) in the lake ecosystem. It is difficult for the organism (aquatic flora and fauna) to breathe and grow in this situation. That is why dying aquatic fauna (fish, snail) is a common issue in many city lakes. In Bengaluru city, 90 per cent of lakes are sewerage fed due to untreated sewerage and industrial effluents and dumping of waste and construction debris in the lakebed. Also, the water quality of the lakes is highly polluted, and none of the lakes has water which is drinkable.

To find out the issues in the city's lakes, we have taken forty lakes and analysed them based on the availability of secondary data sources. We observed that 85 per cent of lakes showed dumping of solid waste (34 lakes), 80 per cent of them received sewerage effluents (32 lakes), 92.5 per cent were encroached (37 lakes), 10 per cent had weeds (4 lakes), and 27.5 per cent other problems (11 lakes). In other problems, this study has included idol immersion, government decisions, and maintenance issues (see appendix table 5).



Source: Compiled by the author from different sources (Newspaper, field survey, LDA Data)

Ecological Importance of Lakes

The urban water bodies have several significant impacts on the supply of drinking water, irrigation and groundwater recharge; reduce the variability of local climate urban greenery. The lakes play a significant role in maintaining the ecological balance, the habitat of flora and fauna, groundwater recharge, reducing urban water logging, and functioning as a recreational centre. The lake buffer zone is captured by the various trees, plants, bushes, and medicinal herbs. The lakes are a natural habitat for the various migratory and territorial birds such as Woods and Piper, Kingfisher, Sun Bird, Baya Weaver, Egret, Spot-Billed Pelican, Grey Heron, Pond Heron, Darter, and Purple Moorhen.

Number of civic society groups active in lake rejuvenation

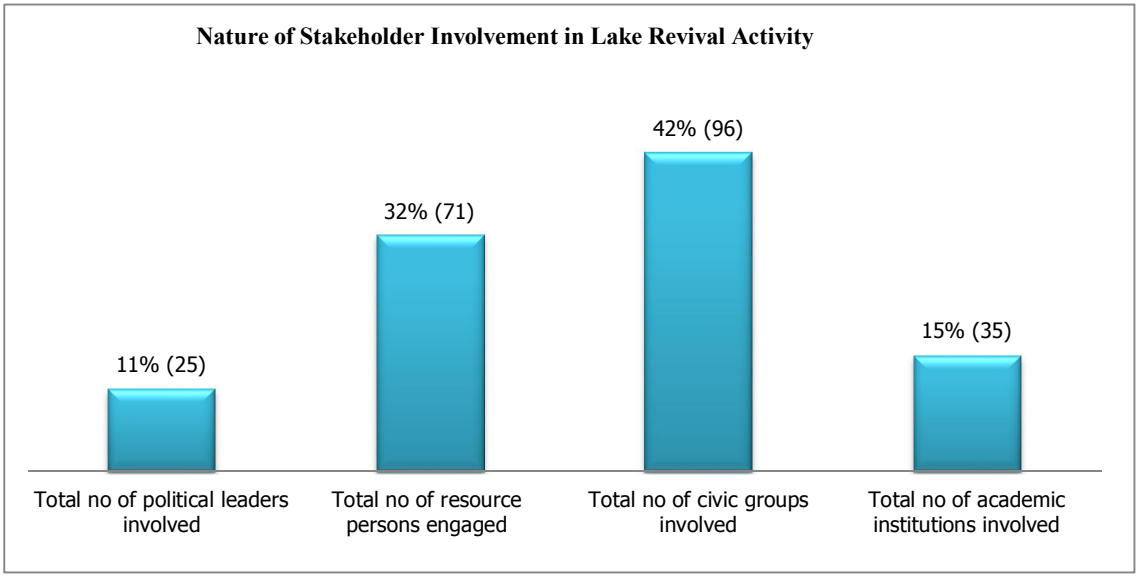
Lakes are an essential focal point of several civic groups, NGOs, resident associations, academicians, and environmentalists. The group formed is usually based on the people residing in the lake neighbourhood and several other associations, NGOs and volunteer groups. To draw the attention of the residents and the government, the concerned groups organise photographic sessions, file Public Interest Litigation (PIL), campaigning, and painting competitions among the students. Similarly, they organise lake clean-up drives, celebrating cultural and religious festivals, awareness creation programmes, community meetings, Kere Habba (lake festival), and plantation programmes. The civic groups also discuss issues with the local government and corporate bodies as they share possible solutions to rejuvenate the lakes.

Some citizen groups secure lake ownership from the BBMP, like United Way of Bengaluru, Mahadevapura Parisara Samrakshane Mattu Abhivrudhi Samiti (MAPSAS), and Puttenahalli Neighbourhood Lake Improvement Trust (PNLIT). They are maintaining seven, five, and one lake, respectively. For rejuvenating the lakes, these citizen groups are following three significant steps. They are

1. The first step includes cleaning, gardening, beautification, and maintaining of the lakes

2. The second step involves working with the BBMP and forming guidelines to increase the strength of lake revival activities and
3. The third step includes getting the attention of the local community groups, organising the programmes, community meetings, and lake festivals for the involvement of people, and other civic groups towards the lake rejuvenation program.

Among the thirty-one lakes that we studied, the nature of stakeholder involvement in the lake rejuvenation programme, we found that a total number of 227 different stakeholders' involvement in revival activities are carried out in these thirty-one lakes by twenty-five political leaders, seventy-one resource persons, ninety-six civic groups, and thirty-five academic institutions. All these stakeholders are involved in various levels and negotiate to improve the lake environs and have resulted in significant changes towards betterment.



Source: Compiled by author from the different sources (Newspaper, field survey, LDA Data)

The formation process of lake rejuvenation civic groups

Unplanned urbanisation and a profit-oriented growth model of the city resulted in massive damage to the city's environment. To maintain and protect the city environment, the residents formed a variety of 'Human Chain networks' with the help of NGOs and volunteer groups to secure the attention and create pressure on the local governing bodies. Lake conservation movements in Bengaluru is not a new phenomenon; it was started in 1980 by a civic group called 'Save Bengaluru's Lakes'. A committee was constituted for carrying out a detailed survey and provide suggestions for rejuvenation of the lakes in Bengaluru.

In 1990, the committee prepared the report and suggested that we should protect our lakes and water bodies to fulfil the increasing water demand of the city. The committee also realised that the Cauvery River was a temporary solution, and it was better to protect the city lakes and water bodies and harvest the rainwater to fulfil the city's water demand. In 2000, the government adopted the Public-Private-Participation (PPP) programme to develop the lakes in the city. Under this policy, the government

decided to hire private companies for managing and developing four lakes, i.e. Nagawara, Vengaiyana Kere, Hebbal, and Agara Lake, in a specific period (Wirth, 2017).

The government also decided to lease out three lakes to private parties, i.e. Nagavara Lake to Lumbini Gardens Limited in 2004, Hebbal Lake to East India Hotels Limited in 2006, and Venkayanakere to Biota Natural System Private Limited in 2007. This project included artificial beaches, luxury hotels, floating restaurants, and tourist spots. In turn, this destroyed the lake's environment and the habitat of different varieties of flora and fauna (Fernando, 2008). Additionally, the city has many people and traditional users, i.e. farmers, fishers, and washers, who are directly and indirectly attached to them regarding their socio-economic and environmental points of view. Further, this plan reduced the ability to access the commons resources because of the intervention by private players for managing the commons resources.

This policy was an injustice for the poor and middle-class income groups living in the society. The modern facilities and amenities provided by the private sector will be accessible only for the small high-income elite groups, and poor people do not have any access. Earlier, the people could easily access the lake environment for their recreation, drinking, and irrigation purpose, but now they would have to pay for accessing these facilities. To cancel the privatisation of the lake policy, an NGO by the name Environmental Support Group (ESG) filed a Public Interest Litigation (PIL) at Bangalore High Court in April 2008.

This PIL was filed based on the Supreme Court judgment, which stated that lakes are commons properties and should be maintained to include the traditional users. The High Court of Karnataka issued an order and mentioned that lakes are commons resources, so citizen and governing bodies should maintain them. Agara Lake was excluded from the plan by this order, and Hebbal Lake is still functioning under the plan. Also, the High Court formed the N. K. Patil Committee to monitor and rejuvenate the urban lakes with the help of neighbouring stakeholders. In 2011, the Chief Minister of Karnataka sanctioned Rs 150 crore for the lake rejuvenation and revival programme.

These collective efforts are currently receiving attention in newspapers, social media, and governing bodies. The following section highlights some of these collective efforts.

- People formed a human chain in the southeast part of the city to protest against the poor infrastructure and the government apathy in Sarjapur Road and surrounding areas, including Kaikondrahalli Lake, on October 28, 2018. The protesters participated in the Doddakannelli, Harlur Main Road, Kasavanahalli, Sarjapur, Bellandur, and surrounding areas. They submitted a petition to Chief Secretary TM Vijay Bhaskar as BBMP cannot provide proper essential civic amenities to the citizens. Four months earlier, around 60 Residential Welfare Associations (RWA) had submitted the resolution to the BBMP with the Bellandur Development Resolution 2018 for the neighbourhood development. However, BBMP did not take any action for the development of this area. According to the protester, Bellandur ward is an IT corridor area, and BBMP collects taxes of more than Rs 220 crore per annum, one of the city's largest taxpayer wards. However, our lakes are polluted, with inadequate water supply, underground drainage facility, civic amenities and infrastructure. Various citizen forums and RWA, including KasaMuktha Bellandur, Haralur Forum, Doddakanneli Rising,

Sparsh, Carmelaram Unites, Bangalore Apartment Federation, Bellandur Forum, and Kasavanahalli Development Forum, participated in this protest.[9]

- Residents of Pattandur Agrahara Lake formed a human chain to protect the lake on May 27, 2018. The residents alleged that the lake became a debris dump yard and was encroached by the private companies because of the stable government. People demand the government form a High-Power Committee or a judicial investigation to monitor and survey the lake area. In March 2018, the BBMP assured the residents that garbage dumping and construction activity would be stopped. However, the residents alleged that BBMP did not take any action against that.
- Additionally, a road is being constructed in the lake buffer zone. In April 2018, the High Court of Karnataka issued a notice to the civic agency to remove encroachments. Later, it directed the revenue department to organise a land survey and remove the encroaching party. However, the government did not initiate any actions to implement this court order, so people came out to protest against the government.[10]
- The collective effort of the citizen groups, volunteers' has successfully restored thirteen acres of Puttenahalli Lake. The lake was deteriorating due to encroachment, pollution, sewerage and debris dumping. In 2008, a resident of JP Nagar formed a group called Puttenahalli Neighbourhood Lake Improvement Trust (PNLIT) to rejuvenate the lake. The trust is frequently discussed with the apartment's people, local communities and other neighbouring civic groups. In 2009, the trust started working with the BBMP to rejuvenate the lake. In May 2011, the trust got a Memorandum of Understanding (MoU) with BBMP to rejuvenate the lake. The trust achieved the success of the first citizen custodian of the lake in the city. At present, the lake is completely restored. It plays a significant role as a recreation centre for the surrounding community, maintaining the ecological balance and habitat for numerous flora and fauna.

Timeline for formation of civic groups

Most of the environmental NGOs, civic groups and volunteer groups were formed during the post-economic reforms period. The reason is that under this policy, several Multi-National Corporations (MNC), IT firms, and service sector industries accumulated in Bengaluru city. That created a large job market as well better infrastructure and improved standards of living. It also increased the population growth and built-up area in the city. India has significant economic disparities between the rural and urban areas, and people prefer to migrate from rural to urban areas. The concentration of population and the rapid growth of urbanisation created several environmental problems in the city.

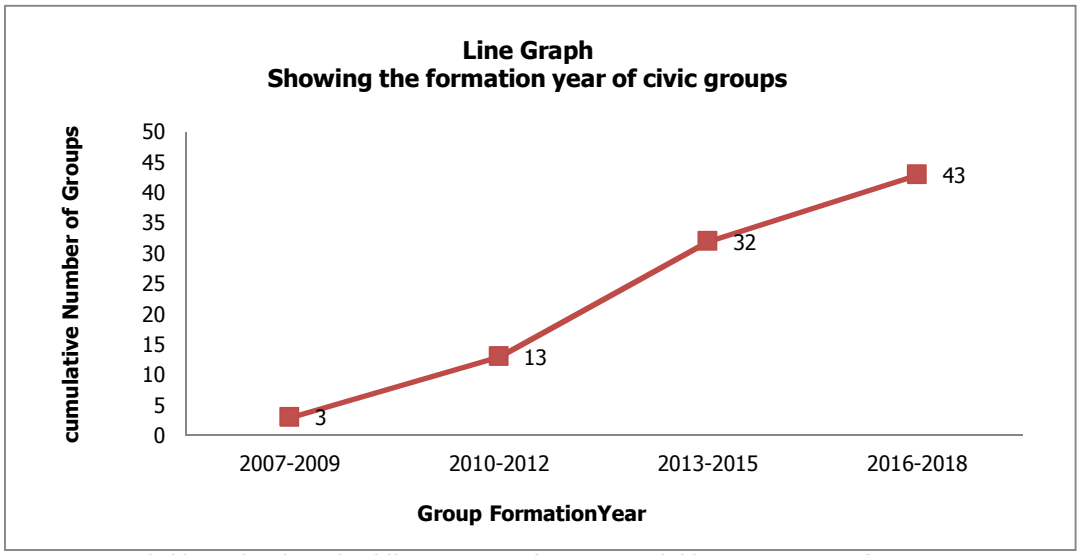
To protect and conserve the city environment, various citizen groups, volunteer groups, NGOs and activists formed a network to combat these problems and challenges. These groups play a significant role in creating awareness, citizen involvement, fixing the programme schedule, and reaching the targeted

[9] Times of India (October 28, 2018). https://timesofindia.indiatimes.com/city/bengaluru/residents-form-human-chain-to-protest-poor-infrastructure-palikes-apathy/articleshow/66397706.cms

[10] Indian Express (May 27, 2018). http://www.newindianexpress.com/cities/bengaluru/2018/may/27/bengaluru-residents-plan-human-chain-to-save-pattandur-agrahara-lake-1819961.html

goals. The groups frequently discuss with the neighbours, politicians, academic institutes and other groups to create public pressure, file PILs, get attention or seek funds from the government and other agencies.

Digital media plays a significant role in urban environmental movements. Social media is an easy way to disseminate the issues, agendas, activities, events, and contacts with ordinary people and other groups. These civic groups have a Facebook page and Whatsapp groups to discuss the problems and solutions concerning the related issues. Various stakeholders, like BBMP officials, urban planners, academicians, and engineers are attached through these social media groups.



Source: Compiled by author from the different sources (Newspaper, field survey, LDA Data)

The above line graph is showing the group formation year of forty-three groups in the city. The study found that more than ninety per cent of the groups were formed after 2010. The census data shows that population growth and area expansion have drastically increased after 2000, which has created numerous problems for the lake environment in the city.

Environmental challenges have become more prominent issues in the contemporary world. The civic groups play a significant role in this regard by organising the people, identifying the problems and piling up pressure on the authorities. The environmental challenges are interconnected in nature, so it is getting attention from the different parts of the world. As a result, the area of civic groups is spreading, overlapping with the regional, national, and world levels.[11] The groups share their problems, opinions and practices with other groups to create a proper framework to combat the environmental problems.

For forming a group, the residents of the area neighbouring the lake take the first initiative, discuss the problems with the people and try to organise them. The residents generally organise weekend and public holiday meetings and discuss possible solutions and future activities. Sometimes, to draw the public's attention to the problems and save the lake, they gather, agitate, and criticise the existing policies. By using social media, they are trying to mobilise the people, and many of them have lake rejuvenating Whatsapp, Facebook groups, and websites and internet blogs.

[11] Khondker, H H (2001). Environment and the global civil society. Asian Journal of Social Science, 29 (1): 53-71.

Furthermore, they participate in public discussions and television interviews to share the issues, problems, and group activity. As a result, the local issues can take an important place at the national and global levels, such as the frothing of Varthur, Bellandur Lake, and other lakes in the city. The government activities and policies often got criticism from the people because of the role of civic groups. In 2004, the city government took the initiative to privatise some lakes, and a massive number of people with various civic groups came together and protested against the government decision. Later, when the issues came into the court, the court order led to the government choosing not to extend this rule further.

It is not true that groups always protest against the government and other agencies. Many lakes are rejuvenated because the group and government work together, such as Puttenahalli Lake and Rachenahalli Lake. In addition to that, many civic groups got MoUs with the government to manage and protect the urban lakes.

Summary

The activities of civic groups in lake restoration have a wide range of impacts viz., both tangible and non-tangible. Their activities have helped solve multiple issues of lake management through the full range of networks with the various groups, government agencies and different stakeholder collaborations. The unplanned urban expansion has increased encroachment, sewerage effluents, garbage dumping, and pollution. These problems have led to many lakes frothing and foaming. These lakes had earlier provided a natural habitat for large numbers of fauna and flora. However, many present-day lakes are rejuvenated and have become a habitat for the fishes, birds and animals due to the efforts of the civic groups of residents.

The self-motivated citizen and volunteer groups gave their time; worked with the government and other agencies to bring back the lakes to their original form in all respects. Besides, the groups have been involved in addressing gaps in the government policies and suggested a holistic approach that includes the ecological, historical and drainage patterns etc rather than only engineering solutions. It is interesting to see that there is a great sense of belonging and involvement represented by the experts from various disciplines - architects, educationists, professional experts and school children are part of the group, and the local opinions are given due importance, thus involving all stakeholders aiding sustainable lake management.

In summation, the citizen networks have provided a platform for engaging in the management of the city environs and also aided in monitoring both the local authorities and the urban ecosystems. The networks have created opportunities for stakeholders to connect and discuss the requirements and interventions needed for transformations. Besides, their approaches have been unique to match the local contexts across neighbourhoods and provide lessons amongst them and others. For instance, Jakkur lake's transformation showcases the success of the citizen group wherein they worked closely with the government. Besides, involving volunteers at various levels is a strong point. During the process, they do face issues on the ground and these are addressed with negotiations. Since some of the issues remain, the groups do see the need for change on several fronts. As a whole, these civic groups have played an important role in transformations that aid in protecting and sustaining water bodies in Bengaluru and showcased the strength of citizen participation in improved governance.

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Appendix

Table 1: Capturing Issues Across Lakes under Rejuvenation in Bengaluru

Sl. No.	Name of Civic Group	Name of the Lake	Issue
1	United Way Bengaluru	Kowdenahalli Lake	Significant encroachment in the lake area, construction debris and garbage dumping
2	BBMP Facts	Agrahara Lake	Encroachment by several private parties as well as BBMP, debris dumping
3	Save Alahalli Lake	Alahalli Lake	Encroachment, untreated sewerage flow
4	Save Arakere Lake	Arakere Lake	Encroachment of lake bed and reduced interconnectivity among the lakes, sewage and industrial effluents from houses and factories, encroachment
5	KasaMuktha Bellandur, Save Bellandur Lake, Aikyam Community for Sustainable Living Group, Citizen Matters Bengaluru, Federation of Bengaluru Lakes	Bellandur	Several industries, apartments, governments departments are a significant source of waste dumping, untreated sewerage, and encroachment
6	BBMP Facts	Chokkanahalli Lake	Encroachment, garbage and debris dumping
7	MAPSAS	Dodda Ambalipura Kere	Encroachment, garbage and debris dumping
8	Haralur Forum	Haralur Lake	Encroachments, dumping yard, construction activities, untreated sewerage from the nearby apartments, increased disease by pathogens like malaria and dengue
9	Save Hesaraghatta Lake	Hesaraghatta Lake	GoK initiated to convert Hesaraghatta natural grassland into a commercial area as a film city, resort and amusement park. To save this lake and grassland, people started campaigns and protested in December 2012. Mr Mahesh Bhatt (Photographer) and local people formed the Arkavathy and Kumudvathy River Rejuvenation Trust, and they filed Public Interest Litigation to the High Court.
10	Save Hebbal Lake, Jalmitra	Hebbal Lake	Lake Development Authority (LDA) plans to privatise the lakes under Public-Private Partnership. As per the environmental activist, a more significant number of people (farmers, fishing communities, dhobis and casual workers) will be severely affected due to this programme for their daily wages. Also, it will destroy the ecological balance and quality of the lake environment.
11	Save Horamavu Lake, Save Bangalore Lakes, K R Puram Constituency Association Welfare Federation	Horamavu Lake	Dumping debris and garbage, encroachment and untreated sewerage effluents.
12	Bengaluru Green Roadies, Save Hosakere	Hosakerehalli Lake	Encroachment, garbage dumping, sewerage effluents, malaria, dengue and other health-related issues
13	MAPSAS	Iblur Lake	Encroachment, garbage and debris dumping, health-related issues
14	Jala Poshan, United Way Bengaluru	Jakkur Lake	Encroachment, untreated sewerage effluents, garbage dumping, groundwater contaminated
15	Save Kaggadasapura Lake	Kaggadasapura Lake	Encroachment and sewerage effluents from surrounding apartments. Plan by BBMP to build 30 feet walking road on the lake bed. Build a temple close to the lake.
16	MAPSAS	Kaikrondahalli Kere	Encroachment, garbage and debris dumping
17	K R Puram Constituency Association Welfare Federation	Kalkere Lake	Industrial effluents, untreated sewerage effluents, garbage dumping
18	MAPSAS	Kasavanahalli Lake	Encroachment, garbage and debris dumping
19	United Bengaluru	Kempambudhi Kere	Untreated sewerage, weeds, encroachment

20	Save Kukkarahalli Lake	Kukkarahalli Lake	Encroachment, garbage and debris dumping
21	BBMP Facts	Kundalahalli Lake	Untreated sewerage effluents, Encroachments, construction debris dumping
22	Lalbagh Guardians	Lalbagh Lake	Garbage burning in the vicinity of the lake (mainly dry leaves), untreated sewerage effluent discharge.
23	MAPSAS	Lower Ambalipura Kere	Encroachment, garbage and debris dumping
24	MAPSAS	Mahadevapura Lake	Encroachment, garbage and debris dumping
25	Munnekolala Lake	Munnekolala Lake	Untreated sewerage effluents, idol immersion, garbage dumping
26	Save the biodiversity of Narsipura Lake	Narsipura Lake	Garbage dumping, encroachment, untreated sewerage effluent, groundwater contamination, stench, faecal matter floating on the water surface, mosquito menace. After rejuvenation, the sustainability issue was a concern; construction workers use it for open defecation
27	BBMP Facts	Parappana Agrahara Lake	Encroachment, garbage and debris dumping
28	Save Pattandur Agrahara Lake, Namma Bengaluru Foundation	Pattandur Agrahara Lake	Lakebed was encroached by several private parties. Another major problem is that BBMP has taken a project to build 80 feet road on the lake bed to connect the Whitefield Police Station to GR-ECC road near Prestige Palm. To complete this project, the government chopped hundreds of trees and captured a significant lake area. Also, BBMP and contractors used this land for dumping the garbage.
29	United Bengaluru	Pattandur Lake	Garbage dumping, BBMP has taken a project to build 80 feet road on the lake bed
30	Puttenahalli Neighbourhood Lake Improvement Trust	Puttenahalli Lake	Encroached by builders, filled by weeds, garbage, untreated sewage
31	Jalmitra, United Way Bengaluru	Rachenahalli	Debris dumping, parthenium and other weeds in the lake bed, untreated sewerage effluents, encroachment by the migrant people
32	K R Puram Constituency Association Welfare Federation	Rampura Lake	Encroachment, garbage dump yard
33	Sarakki Lake Area Improvement Trust, United Bengaluru, Bengaluru Matters	Sarakki Lake	A few years back, Sarakki Lake was home to SaviraHakki (thousand birds), but most vanished. The waterbody is destroyed due to neglect, apathy, sewage effluents and the encroachment of the lake area.
34	Save Lake of Sarjapura	Sarjapura Lake	Encroachment, garbage dump yard
35	BBMP Facts, Seegehalli Lake Development Trust	Seegehalli Lake	Encroachment, sewerage effluents, garbage dump yard
36	United Bengaluru	Singapura Lake	Encroachment and construction debris dumping
37	Save our Somasundarapalya Lake	Somasundarapalya Lake	Earlier the lake provided a freshwater and natural habitat for many flora and fauna. Now there is encroachment, construction activity, garbage dumping by the nearby apartments and houses polluting and stench. Another major problem is that the Karnataka Compost Development Corporation (KCDC, the plant was created in 1975, closed down in 2008 and reopened in 2013) plant is located near the lake and to access the composting plant, the government built a road in the lake bed area. Additionally, the lake is getting leachate from the plant, because in the KCDC plant there is no proper method to collect the leachate and convert it to the Refuse to Derive Fuels (RDF). According to the Karnataka State Pollution Control Board (KSPCB), the lake falls under the 'E' category of lake classification, the lowest water quality index (WQI) category.

38	Save Sompura Lake, Save Lake of Sarjapura, Friends of Lakes	Sompura Lake	Several private investors have encroached on the lake's buffer zone. Local village panchayat built a road on the lake's buffer zone resulting in blockage of rainwater flow. They have also affected farmers depending on the lake for irrigation purposes.
39	Ulsoor Lake, Bengaluru	Ulsoor Lake	Idol immersion, sewage, and other effluents encroachment by the homeless
40	Uttarahalli Rising	Uttarahalli Lake	Encroachment, sewerage effluents
41	Say Trees	Vabasandra Lake	Encroachment, untreated sewerage effluents, garbage dumping
42	Namma Bengaluru Foundation, Varthur Rising	Varthur Lake	Garbage and untreated sewerage from the neighbouring apartments and industrial sectors, encroachment
43	Aikyam Community for Sustainable Living Group	Varthur Tanks	A significant amount of garbage and untreated sewerage from the neighbouring apartments and industrial sectors is dumped. Due to this, groundwater has been contaminated, and it contains a high level of pollutants. Farmers of the neighbouring area are severely affected. The reason is that earlier they used water from the lake for cultivating vegetables and crops. Additionally, people are facing numerous health-related problems (increased high number of stomach and gastro patients), dengue, and stench
44	BPAC	Vijinapura Lake	Encroachment, untreated sewerage effluents, garbage dumping
45	Save Yelachenahalli Lake	Yelachenahalli Lake	Untreated sewerage effluents, encroachment, garbage dumping

Source: Compiled by the author from the different sources (Newspapers, Blogs, Websites, Journals and Articles)

Table 2: Ecological importance of the lakes

Social, economic and environmental benefit	Flora	Fauna
Supply of drinking water, groundwater recharge, reduce urban floods, providing a livelihood, improve bio-diversity, provide water in agriculture, industry and domestic uses, recreational uses and control local climate, improve the tourism sector	**Fruit**: guava, custard apple, pomagranate, cluster beans, brinjal, tomato Grassland, trees, shrubs and medicinal plants	**Birds**: Woods and Piper, Kingfisher, Peafowl, Sun Bird, Baya Weaver, Egret, Spot Billed Pelican, Grey Heron, Pond Heron, Darter, and Purple Moorhen, White-breasted Kingfisher, Magpie Robin, Little Egrets, Common Mynas, Brahminy Kites, Black Drongos, Bulbuls, Greater Coucals, purple sunbirds, and ducks. The city lakes are also an excellent habitat for several migrant birds (from Europe and Central Asia). **Reptile**: snakes, frogs, lizards, amphisbaenians **Animals**: jackals, foxes, cattle,

Source: Compiled by the author from the different sources (Newspapers, Blogs, Websites, Journals and Articles)

Table 3: A Number of Civic Society Groups Active in Lake Rejuvenation

Involvement of a single civic group in lake rejuvenation		Involvement of more than one group in lake rejuvenation		Total no of Lakes
Name of lakes	***No***	***Name of Lakes***	***No***	
Kaggadasapura, Horamavu, Yelachenahalli, Pattandur Agrahara, Rachenahalli, Sarakki, Arakere, Puttenahalli, Mahadevapura, Iblur, Jakkur, Alahalli, Seegehalli, Munnekolala, Kowdenahalli	15	Hebbal, Hasaraghatta, Sompura, Somasundarapalya, Varthur, Bellandur, Narsipura, Lalbagh, Kaikondrahalli, Lower Ambalipura, Kasavanahalli, Haralur, Hosakerehalli, Singapura, Ulsoor, Kundalahalli,	16	31

Source: Compiled by the author from the different sources (Newspapers, Blogs, Websites, Journals and Articles)

Table 4: Number, Representation of People and Institutions Involved

Sl.No.	Name of the Lake	No. of People	Institutions involved (Academic and Government)
1	Kaggadasapura Lake	4	1
2	Horamavu Lake	3	2
3	Yelachenahalli	3	-
4	Hebbal Lake	5	1
5	Pattandur Agrahara Lake	4	2
6	Rachenahalli Lake	5	10
7	Hasaraghatta Lake	1	2
8	Sarakki Lake	11	2
9	Somasundarapalya Lake	4	1
10	Arakere Lake	5	2
11	Sompura Lake	5	1
12	Varthur Lake	10	7
13	Bellandur Lake	13	8
14	Puttenahalli Lake	8	6
15	Narsipura Lake	5	3
16	Lalbagh Lake	6	4
17	Mahadevapura Lake	5	4
18	Kaikondrahalli Lake	6	2
19	Lower AmbalipuraKere	2	2
20	Kasavanahalli Lake	7	3
21	Haralur Lake	6	2
22	Iblur Lake	-	3
23	Jakkur Lake	1	8
24	Hosakerehalli Lake	4	2
25	Alahalli Lake	4	6
26	Singapura Lake	1	2
27	Seegehalli Lake	3	3
28	Ulsoor Lake	4	3
29	Kundalahalli Lake	-	1
30	MunnekolalaLake	-	1
31	Kowdenahalli Lake	-	2

Source: Compiled by the author from the different sources (Newspapers, Blogs, Websites, Journals and Articles)

Table 5: Problems Encountered in Lakes

Sl. No	Lakes	Solid waste dumping	Sewage effluent let into lakes	Encroachment	Weeds	Others
1	Rachenahalli	✓	✓	✓	✓	
2	Hebbal	✓		✓		Lack of maintenance, privation of Hebbal lake
3	Hesaraghatta					GoK initiated to convert lake natural grassland into a commercial area such ac film city, resort and amusement park
4	Sarakki	✓	✓	✓		Maintenance issue
5	Somasundarapalya	✓	✓	✓		Government built a road in the lake buffer area
6	Arakere	✓	✓	✓		
7	Kaggadasapura	✓	✓	✓		BBMP plan to build 30 feet walking road in the lake bed
8	Horamavu	✓	✓	✓		
9	Bellandur	✓	✓	✓		
10	Yelachenahalli	✓	✓	✓		
11	Pattandur Agrahara	✓	✓	✓		BBMP plan to build 80 feet road to connect Whitefield police station to GR-ECC Road
12	Sarjapura	✓		✓		
13	Sompura			✓		Local Panchayat built a road in the lake bed area
14	Puttenahalli	✓	✓	✓	✓	
15	Narsipura	✓	✓	✓	✓	
16	Lalbagh		✓			Garbage burning (dry leaves) at the lakeside area
17	Mahadevapura	✓	✓	✓		
18	Haralur	✓	✓	✓		
19	Kaikondrahalli Kere	✓		✓		
20		✓	✓	✓		
21	Lower Ambalipura Kere	✓	✓	✓		Government apathy
22	Kasavanahalli	✓	✓	✓		Buffer zone violation
23	Dodda AmbalipuraKere	✓	✓	✓		
24	Iblur	✓	✓	✓		
25	Jakkur	✓	✓	✓		
26	Hosakerehalli	✓	✓	✓		
27	Alahalli		✓	✓		
28	Singapura	✓		✓		
29	Kempambudhi		✓	✓	✓	
30	Uttarahalli		✓	✓		
31	Seegehalli	✓	✓	✓		
32	Kundalahalli	✓	✓	✓		
33	Agrahara	✓		✓		
34	Munnekolala	✓	✓			Idol immersion
35	Hoskere	✓	✓	✓		

36	Vijinapura	✓	✓	✓		
37	Rampura	✓	✓	✓		
38	Kalkere	✓	✓	✓		
39	Vabasandra	✓	✓	✓		
40	Kowdenahalli	✓		✓		

Source: Compiled by the author from the different sources (Newspapers, Blogs, Websites, Journals and BBMP Data)

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