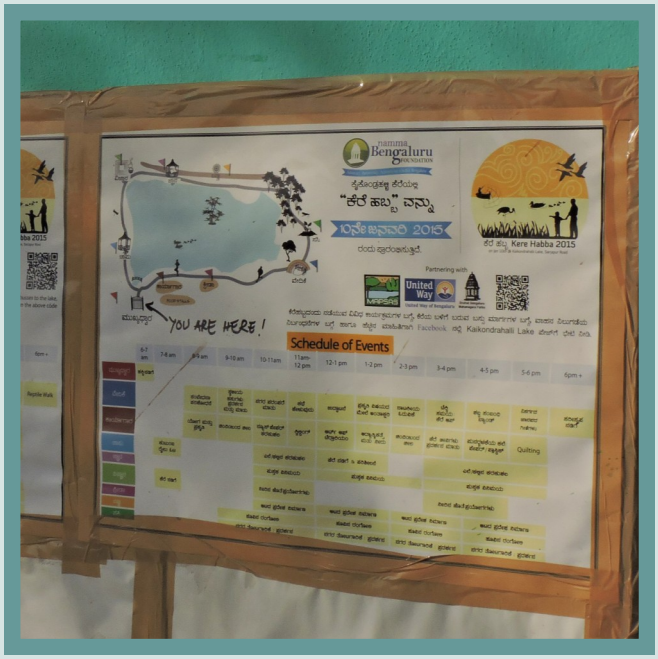

Restoration of the Kaikondrahalli lake in Bangalore:

Forging a new urban commons

Harini Nagendra

Azim Premji University

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Author: Harini Nagendra

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Abstract

The Kaikondrahalli lake at the south-eastern periphery of Bangalore city has experienced drastic changes in ecology, land use and management over the past decade. Once managed by the local village community, this lake was polluted, affected by solid waste dumping, and nearly dry when a collaborative network of local residents began to work with researchers and the local government on a three year program to restore the lake. A lake trust managed by local residents has since worked with a variety of stakeholders to maintain the lake, which now forms an important locus of social activity for local residents, and a local biodiversity hotspot. The challenge of the Kaikondrahalli lake experience has to been to forge new approaches for the governance and management of the urban commons, in a fast growing city where the communities that live around the lake are constantly in flux. This report examines the experiences of the Kaikondrahalli lake restoration, which is one of the few reported successes in the overall backdrop of ecological degradation in Bangalore. The success of the lake restoration has inspired a number of other community activities in this area. Yet local residents face constant challenges in their efforts to maintain the lake, challenges which have significant lessons for others working to protect the urban commons in cities across India. This report also draws on research and participatory work conducted by the author since 2007 on this lake, drawing on satellite remote-sensing and analyses of old maps, discussions with local communities living around and working on these lakes, field studies of biodiversity, and observations of challenges such as pollution, encroachment, and debris dumping at these lakes.

Introduction

The processes of urbanization have generated large scale global and local sustainability challenges across the world, and in India as well. Bangalore, India's third largest city, provides a typical example of the sustainability challenges confronting many Indian cities. With a population of over 10 million, compressed into an area of 709.5 km^2, the city has gone through a massive growth spurt in recent years, increasing its population by 38% between 1991-2001, and again by 49% between 2001-2011 (Patil et al., 2015). The landscape around Bangalore has been populated for millennia: yet the city itself traces its history to the creation of a market town in 1537. Unlike many other cities, Bangalore lies in the rain shadow of the Deccan hills, relatively distant from large rivers that can provide fresh water. The undulating topography of the landscape around Bangalore was effectively utilized by local rulers and communities, who dammed a series of small, mostly seasonal streams, to form multiple series of tanks throughout the larger region: a practice also followed across much of peninsular south India. These dammed water reservoirs, called tanks or lakes locally, recharged the ground water supply and provided the city with much of its water supply until the late 19^{th} century, when Bangalore began to import water from distant reservoirs and rivers, signaling the decline and decay of many of these lakes.

Historically, lakes were managed by surrounding communities, sometimes with administrative and financial support from local rulers (Rice, 1897). Specific kin-groups were in charge of activities such as the maintenance of lake canals and bunds, or desilting, and other groups were permitted to use the lake for specific activities such as fishing, collection of fodder, or agriculture. These specialized, seasonally prescribed roles were later replaced by formal governance structures imposed by the Mysore princely state and British Government agencies. A confusing mix of government departments is involved with various aspects of lake management, with overlapping jurisdictions: including, but not limited to the Department of Minor Irrigations, Department of Fisheries, Ecology and Environment Department, Karnataka Forest Department, Lake Development Authority, Karnataka State Pollution Control Board, the Bangalore Development Authority, and the BBMP (Nagendra, 2010). Public interest litigations, active engagement by civic action groups (among which the Environment Support Group

has played an especially prominent role) and action by the Karnataka courts have been very critical in the remaining lakes of the city achieving legal protection from encroachment and from development.

Over the past eight years, a group of local residents living in the south-east part of Bangalore has engaged with the Bruhat Bangalore Mahanagara Palike (BBMP), to rejuvenate and maintain one of the lakes in the city: the Kaikondrahalli lake. The lake is now maintained by the BBMP and a local trust, Mahadevpura Parisara Samrakshane Mattu Abhivrudhi Samiti (MAPSAS).

The process of people coming together in a city to work on an issue of public interest has been a difficult one, with ongoing challenges. Yet the experiences of the group working on Kaikondrahalli lake has been overall a positive one, despite a number of persisting challenges. These experiences provide insights that can help us understand the challenges and possibilities of urban collective action for other Indian cities. This is the focus of this narrative.

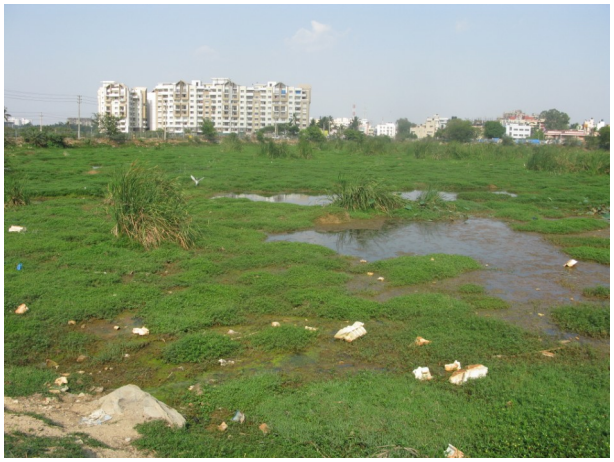
Methods

The author has been involved with lake mapping, assessment, restoration, and monitoring in Kaikondrahalli lake and the surrounding area since 2008, engaging closely with the informal, collaborative network of local resident associations, researchers, and government organizations that worked on restoration of the lake; and later engaging with the MAPSAS trust that now maintains the lake. This report draws on her observations and records during this period, as well as research that includes analyses of satellite remote-sensing data sets and maps, personal observations and discussions with other local residents (as described further in Nagendra 2010; Nagendra and Ostrom 2014; and Nagendra et al., 2014). This understanding was updated with observations of visitors to the lake during lake events including lake walks, and the Kaikondrahalli kere habba (lake festival) in January 2015 and 2016, as well as discussions with active residents engaging in lake and neighbourhood social activities, conducted between December 2015 and February 2016.

About the lake

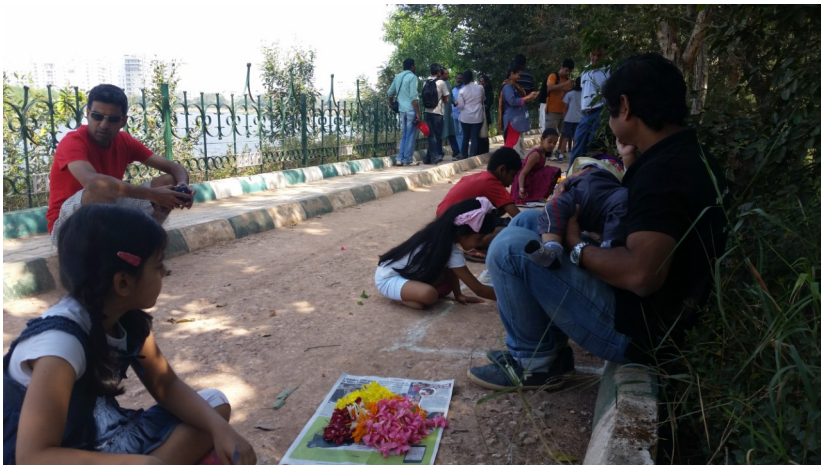
Kaikondrahalli lake is located in the south east of Bangalore, on Sarjapur road. The area surrounding the lake has experienced a multi-fold increase in real estate value in the past decade. Sarjapur road, which runs past one edge of the lake, is congested with traffic, while the lake itself is surrounded by all the dystopic elements of modern Indian cities - malls, apartments, and IT companies along with shanties and tented slums. Older residents around the lake describe a much different landscape. As recently as 2000, the lake was filled with fresh water, surrounded by groves of fruiting trees, and frequented by birds, foxes, and snakes. By 2003 the lake had begun to dry up, with the incoming channels to the lake blocked by construction and the dumping of debris and garbage. By 2007, the lake bed was a slushy malarial bed of sewage and waste. On one memorable walk around the lake in early 2008 in which I participated, we came across an illegal and disused borewell, a recently dug grave, a number of broken alcohol bottles, a discarded pack of playing cards and a tarpaulin sheet, the carcass of a dead pig, and a breathtaking swarm of iridescent dragonflies: an indicator of the eclectic mix of undesirable activities and ecological and environmental uses of the lake.

A group of spotbill ducks near the lake

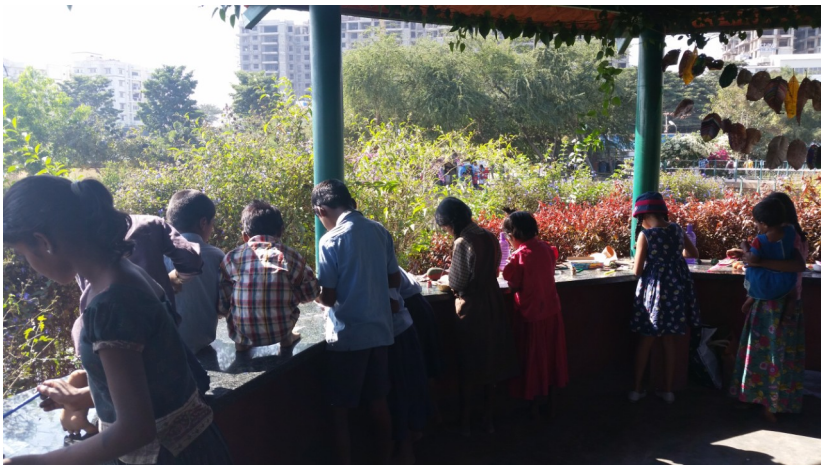


Kaikondrahalli lake in polluted condition in 2009, prior to restoration

A group of local residents surveying the lake, and identifying locations of water inlet channels blocked by construction.



Children painting leaves and stones at the Kere Habba (lake festival) of 2015.



Children and parents working on flower and leaf art at the Kere Habba of 2015.

Lake rejuvenation

In 2008, a local resident and documentary film maker, Priya Ramasubban, who had recently moved to live close to Kaikondrahalli lake, saw a short report in the newspaper about a proposed government (BBMP) initiated rejuvenation program for the lake. She and another resident, Ramesh Sivaram, a social activist who also lived close to the lake, had been concerned about the deteriorating condition of the lake, and saw this as an opportunity to do something "positive". Yet they also knew of many similar projects of lake rejuvenation in Bangalore that had proved unsuccessful because of corruption, bad design, and lack of long term maintenance. A small core

group of local residents was formed, and this core group invited other members with technical expertise in specific aspects of planning relevant to the rejuvenation, including ecologists and architects, to join them. The process of lake rejuvenation has been well documented in a video documentary "Kaikondrahalli Lake: The Uncommon Story of an Urban Commons", which can be viewed at https://www.youtube.com/watch?v=RAN4IGZi3pI.

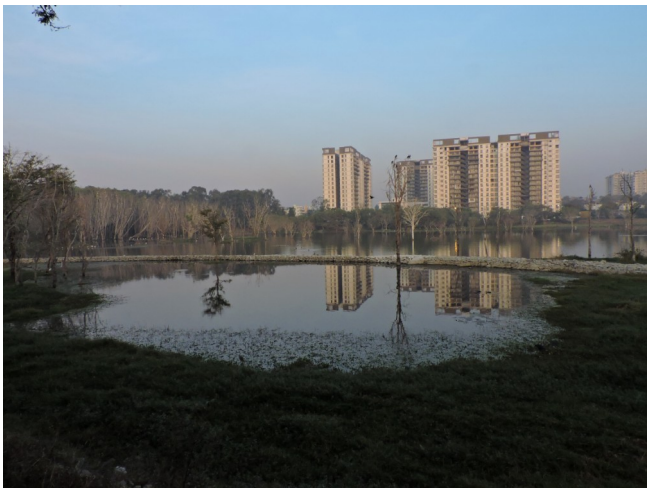
At the time when the group contacted the BBMP and asked to be involved with the lake rejuvenation, the Detailed Project Report (DPR) for rejuvenation had already been prepared, and was ready to be advertised to procure tenders. Members of the group, many of whom had very limited experience with the technical terms used in the DPR, had to hit the ground running, and talk to technical experts and familiarize themselves with the jargon used in the report. In this process, they were able to involve themselves closely with, and to change key elements of an already prepared DPR, in part because of a very responsive Chief Engineer of the BBMP Lakes Division, Mr. B.V. Satish, who believed strongly in the merits of working with a responsive group of local residents. This collaboration between the BBMP and the (then informal) group of local residents was a key factor in enabling the early progress of the rejuvenation effort.

The group scrutinized ecological and social aspects of the rejuvenation which needed to be better modified to fit local needs. For instance, the initial DPR included plans for an expensive, large ornamental garden landscaped with exotic flowering species. This group felt that this money could be much better utilized in other ways, and had the plans to develop an ornamental garden removed from the DPR. Local residents contributed funds, and collected hundreds of saplings of native species for plantation in the lake premises. The original DPR also planned to convert large parts of the lake into wooded areas. The area around the lake is dependent on ground water, though, and the group felt it was much more important to preserve the original waterspread area of the lake: thus the DPR was redesigned to retain as much area under water as possible.

Other challenges included the needs of an adjacent aided school for low-income children. The play area of the school was on lake land, and the original DPR would have fenced off the lake from the school. But this would have meant that the children lost their access to a play area, and to scenic open spaces that they could use adjacent to the lake. Instead, the DPR was redesigned by the group, using inputs from a local architect, so that access was provided to lake visitors as well as to the children of the school. Washroom facilities were also provided (through donations from a corporate organization located close to the lake), designed so that they could be used by the children of the school, especially the girls, who lacked access to secure, clean bathroom facilities. To serve the needs of Ganesha idol immersion, and other religious festivals which involve use of lake water but which could also pollute the lake, a separate enclosure was formed at one corner of the lake.

Other efforts at social inclusivity and cooperation were less successful, however. Getting the heterogeneous population of local residents together to discuss and collaborate on lake management has not been successful. While many local residents have involved themselves in aspects of lake management at different times, it has been difficult to get the participation of the majority. Some high end apartments, commercial establishments and local residences upstream of the lake discharge untreated sewage into the lake, polluting the lake and requiring close monitoring and concerted action by the lake management group.

Taking into account the requirements of cattle owning households from the nearby peri-urban villages, the core group of residents working with the BBMP had requested a separate cattle



Apartments near the lake

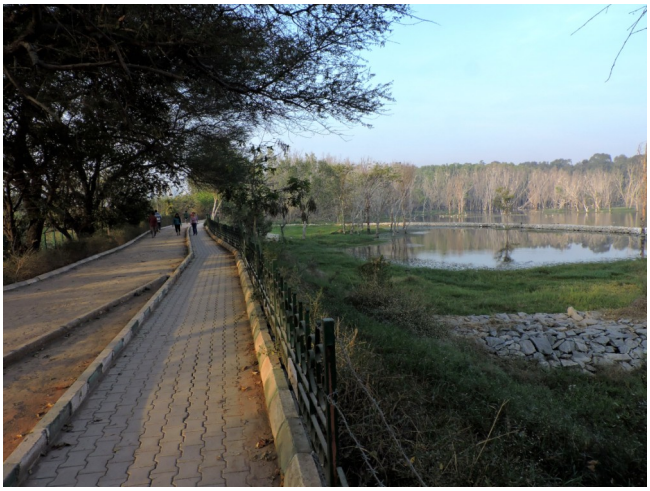
entrance at one end, and a small enclosure that could serve as a cattle wash area. They had also requested that a small enclosure be set aside to serve domestic needs such as clothes washing for an adjacent slum dominated by migrant labour, who lack access to water. Yet this could not proceed: the BBMP was not willing to concede to all the requests of the group, and especially unwilling to concede to these, citing challenges that they anticipated, of lake maintenance. In many ways, this led to the lake being an ecological commons, but with the curtailment of important extractive uses of the lake such as the use of water for washing cattle or washing clothes, on which marginalized residents, including migrant labour, depend.

Another historical use of the lakebed area was for cattle grazing. Here, a partial solution was worked out. Local residents were enabled to enter and harvest grass from the marshy edges of the lake, which they could take back to feed their cattle, without payment. Fishing continues, but is given out on contract to fishermen who bid for the rights to use the lake: angling for personal consumption is not permitted, nor is the contract specifically awarded to local residents. This is not unique to Kaikondrahalli lake: the Department of Minor Irrigations is in charge of granting fishing rights to the lake, and to all lakes in the city. While the preference of the local resident group would have been to grant fishing rights to local fishermen, who would be involved stakeholders in maintaining the lake, they lack control over these decisions.

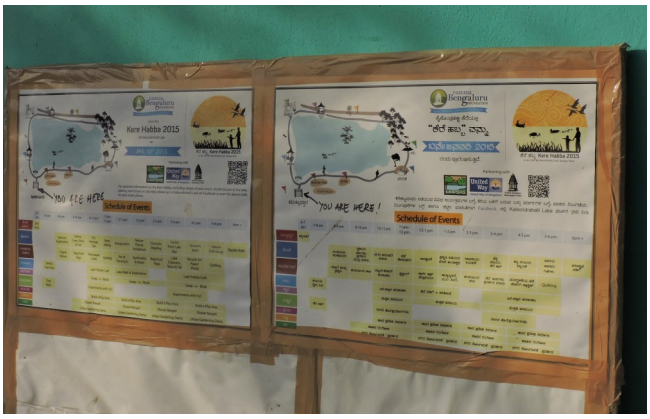
After rejuvenation: challenges and opportunities

Rejuvenation was completed in two phases, between 2009-2011. After rejuvenation, some members of the core group including Priya Ramasubban, joined by others such as David Lewis, a retired senior citizen who contributes much of his time to overseeing daily activities, and Rajesh Rao, another local resident who oversees the management of the neighbouring Ambalipura lake, formed a trust, the Mahadevpura Parisara Samrakshane Mattu Abhivrudhi Samiti (MAPSAS). MAPSAS entered into a tri-partite agreement with BBMP, and a corporate funding body United Way, to manage Kaikondrahalli lake.

Over the years, local residents have seen the



Kaikondrahalli walkway and cycle track



Public events frequently held at Kaikondrahalli

ecological recovery of the lake. A year after restoration, the lake was found to attract over 50 species of birds, and a rich variety of butterflies, frogs, toads, and snakes: the variety of animal and insect biodiversity around the lake has grown substantially since then, with many more bird species added to this list. A large and growing number of people living around the lake visit the lake frequently, and have participated in a number of activities associated with lake restoration, maintenance and fund raising over the years. No ticket fees are charged for entry, and the lake is maintained using donations and funds from local individuals and organizations.

The importance that the lake occupies in the Sarjapur area is clear from a casual visit. People visit the lake in large numbers, often with cameras and binoculars in hand, with young children on cycles or in prams, and groups of senior citizens gathering around a set of benches on the side. An amphitheatre near the lake has hosted a number of community events that are

free access, and open to all, focusing on the broad theme of sustainable living, within which they have covered activities as varied as the screening of nature films, talks on recycling, readings of children's books, and training on the making of eco-friendly clay Ganesha idols, nature photography, yoga and organic composting.

A "kere habba" (lake festival) held in January 2015 attracted over 3000 visitors in a single day, while a follow up event in January 2016 had close to 4,000 visitors. Children from elite international neighbourhood schools and children from the slum adjacent to the lake have participated in these festivals, painting stones and leaves, and creating temporary art installations (rangoli) with flowers and grasses. A tree near the gazebo, planted by Nobel Laureate Elinor Ostrom in 2012 in honour of the restoration of this urban commons via efforts of local residents, is a regular attraction and inspiration for casual visitors.

Yet this seemingly idyllic scenario has not been achieved without a number of challenges, some of which are those of ongoing maintenance, while others include complex persistent long term issues. A frequent problem is when neighbouring land owners and residents let in sewage into the lake, typically in the middle of the night when it is most difficult to monitor the lake. While the lake has been fortunate in having a large intact wetland upstream, which helps to clean up the sewage and recharge the lake in the monsoon, a number of buildings are slated to come up in this wetland in the coming years, which will severely impact the long term sustainability of the lake. Despite the fact that this construction violates environmental norms, efforts by MAPSAS to halt construction have failed to make headway so far. Economic sustainability is another long term challenge. The lake was funded for several years by a corporate donor, United Way, but with the donor now slowly decreasing funding support, the trust has struggled to raise money for regular maintenance of the lake. While many residents have been willing to contribute to activities of lake protection, there remains a constant challenge of fund raising which is time and effort-intensive, and fatiguing for the people working on this.

Overall, perhaps one of the most important challenges is the constant commitment of time and energy that it demands from a relatively small group of people in the trust who spend the most time working on the lake, such as Priya Ramasubban. In her words "We had a set of people who got together initially. Over the years, some stayed on… and some started working on other issues. But the baton keeps passing to new people who care about taking things forward. We have a new core team and more volunteers on board to keep this lake the valuable community resource that it is." Yet finding sustained support from new volunteers is a constant challenge. As Priya says, the true sustainability of this work will be demonstrated when lake maintenance reaches the stage that it can be completely handed over to another group, who could work on this with renewed energy and a fresh vision for future activities: enabling the current group to move on towards other, larger-scale city-wide issues such as working to revise city government policy on the governance of environmentally sensitive areas.

MAPSAS has served as an important node that has played a role in generating a number of other collective activities. As a consequence of the group's efforts, the BBMP, which otherwise looked at restoration of lakes in a piecemeal manner without taking into account the interconnectivity of lakes, initiated a program to restore a set of seven connected lakes (of which Kaikondrahalli forms a part). Restoration work on a few of these lakes – Haralur, Kasavanahalli and Soule Kere (downstream and upstream of Kaikondrahalli lake) is proceeding well, though MAPSAS has had mixed success in locating local residents who can take up the activities of fund raising and maintenance in these lakes. MAPSAS has also worked with a local non-profit water research group (BIOME), and a corporate (WIPRO), to examine and identify biological options for sewage treatment that can be applied in the sub-chain of lakes around Kaikondrahalli. The goal of this exercise is to identify low-cost, simple, ecological/biological approaches to deal with the problem of cleaning up the increasing volumes of sewage that are anticipated to flow into lakes in this fast growing peri-urban area in the coming years and decades. The technical knowledge and social experience that MAPSAS has gained as a consequence of the restoration and maintenance have proved helpful for other local groups working on restoration of a number of lakes in the adjacent areas of

Halanayakanahalli, Mahadevpura and Whitefield.

An unanticipated but very welcome outcome has been the use of the rejuvenated lake as a collective node where people from the neighbourhood can meet, and organize to work on other local problems (as described further in Box 1). For instance, an initiative called "2 bin 1 bag" formed by a core group of local women residents has worked to develop approaches to deal with solid waste management challenges in the Bellandur ward – this initiative has recently gained significant city-wide momentum with the High Court urging that it be applied across Bangalore. Other informal local groups that met during various lake-related activities now work on issues as diverse as that of local traffic and greening the neighbourhod. While some of these efforts have been relatively restricted to middle-class and wealthier residents, others have worked with school teachers, migrant workers and the residents of the urban villages who live in this formerly rural area.

Box 1: Reflections on the importance of the Kaikondrahalli lake restoration initiative, and remaining challenges, as articulated by five local residents who have contributed sustained time and energy towards a diversity of neighbourhood activities

1. Subramanian Sankaran: *"While I got involved in the KH lake work initially I never thought I would become part of a larger movement touching all lakes in the vicinity and from thereon to other issues like traffic management, questioning unplanned property developments, encroachments, street lighting, hawkers, pedestrian comfort/safety, solid waste management, wastewater management, fresh water management, etc. At no point in my early years of engagement with the lake did I think that I will in the future be investing considerable time meeting or in hearings with the Upa Lokayukta, BBMP/BDA/BWSSB commissioners, JCs, Corporators, CEEs, EEs, AEEs, MLAs, MPs, Police officers, other NGOs, volunteers, Rotarians, local landlords, villagers, fishermen, corporates, funding agencies, etc. I now am either in the midst or in the periphery of several different kinds of initiatives and forums as I get co-opted without any much ado on the assumption that I am willing and available :) …*

So spillovers do not happen by design but by accident is what I can sum up as an experience. I am not complaining though as I have now an extended group of friends and acquaintances with not necessarily similar ideas but who make great complementary teams when rallying around specific causes. I am able to see crowd-sourcing as a huge challenge when we need to force an issue upon the concerned authority. While there is always a couple of core members who drive around a specific initiative or two 24x7, there are volunteers flitting in and out of these causes subject to time availability. The success of each cause is dependent on consistency of follow up and the passion of the driving members. We have seen that in the Solid Waste Management (SWM) initiative which is hugely successful due to the driving force a handful of ladies. We are finding the KH lake success story not too easy to replicate in some other lakes as we have yet to find a couple of local community members from some lakes to form the core around which the rest of the volunteers can garner forces; although we have made some progress at other lakes."

2. Meera Nair: *"When we were looking to buy an apartment in Springfields, my father, an engineer and avid nature enthusiast, chose our unit based on one major consideration - the view of the Kaikondrahalli lake. By the time we moved in, the lake had all but dried up and then to see it revive step by step into it current glorious state has been nothing short of miraculous. As a family, we used to go there on weekends and spend time just doing nothing and my husband would snoop around trying to shoot some birds…on his camera. We would find several more shutterbugs in the bushes and then there would be a catching up and sharing of notes. Since coming to Bangalore, it was my first experience of tranquility and harmony with*

nature within city limits. For my kids it was the first brush with birdwatching.

Post rejuvenation, the lake has been the hub of activity. People in the surrounding communities have embraced it wholeheartedly and it is the first place people think of for relaxation and some quiet time. Of course there are the joggers, the walkers and the Yoga enthusiasts for whom the lake has been such a boon. The only other option would have been to go to Lalbagh or Cubbon Park which is pretty much a half day's work in the current traffic situation. Everyone who comes to the lake can't help but be touched by the magic that brought it back to life and they want to be part of the protective web around the lake. Several times I have heard of how random conversations at the lake have become the starting point for so many changemakers.

For those of us volunteering for civic issues, the lake has been a neutral space to meet and ideate. It has also been the starting point for several of our campaigns and activism. At the Kere Habba, we have like minded people from all walks of life converging and the positive vibes thrown up during the event are amazing. People get exposure to a plethora of topics in this one day and feel motivated to volunteer whatever they can in their area of interest. We share experiences and knowledge and get charged up with enthusiasm and motivation to continue on our path for the whole year."

3. Archana Prasad Kashyap: *"I think having a community lake is invaluable. We've met several times at the lake for SWM meetings and more importantly we were able to showcase and spread awareness on SWM at the two Kere Habbas. We managed to recruit quite a few volunteers during the Kere Habba as well. It gives us a sense of belonging.*

On the whole, I think KK lake has been the symbol of hope for a lot of us - that despite all that's wrong in the world, passion and focus can right a lot of the wrong. I hope it continues to grow in strength and inspire all who set eyes on it. "

4. Malini Parmar: *"Kaikondrahalli lake didn't bring us together or played a direct role in our SWM journey. And yet, it was like having comrades and the fact that they were able to achieve so much inspired us to keep pushing even during early dark days.*

Even now, when I have out of station visitors, as part of SWM tours, I do like bring them to Kaikondrahalli lake - so they know what few citizens getting together can achieve."

5. Shilpi Sahu: *"I think that with lake in front of my home, it is a huge community space for me. I have often met people here and taken guests for a walk.*

There are many friends and acquaintances I made while running or walking here. I met Priya Ramasubban here while we were doing a clean up in 2011. Now we are friends and work not only for the lake together but also on other community matters.

So, have other initiatives rolled out from people I met at the lake? Well at least not yet. Right now nothing particularly comes to mind, but it was a huge boost to my health as well as social life. I met people whom I would not have met otherwise. Most of these people were runners coming to the lake but not all. I don't think people whom I have met here with regards to lake rejuvenation got started on any other problems, but they did contribute and patronised the lake as my friends and because they knew many things about the lake through me. Misinformation and rumours abound in this age of social media and I felt it was important.

So in conclusion I would say that the lake has helped not only me but many to have a place for recreation and social interaction. Many have come forward to be part of the lake maintenance committee. Whether it leads to something else in future, only time can tell".

Challenges and opportunities for collective action in an urban context

Although lake restoration programs have been conducted in many lakes in Bangalore, in many cases local community involvement has been lacking, and lake condition has deteriorated soon after. Part of the challenge is the piecemeal restoration of lakes. Although lakes are known to be interconnected, restoration does not take this into account. Thus, after a lake is rejuvenated, the lake upstream may continue to discharge sewage into the rejuvenated lake, such that it returns to its original polluted condition fairly soon.

The social challenge of lake rejuvenation in cities has been the difficulty of developing collective action in the Indian urban setting, with high levels of diversity and inequity, constant change in the socio-economic and cultural backdrop, and the apathy of real estate developers and many residents who, despite benefiting from living in high income neighborhoods around these lake, and visiting the lake frequently, are not willing to contribute to time, effort and/or money towards lake maintenance and funding.

Further, although the task of lake restoration brought together many local residents on a common platform, a working consensus on specific issues has sometimes been hard to achieve. On occasions, political contestations between different parties have threatened to enter the domain of lake protection efforts. Despite a number of challenges, MAPSAS steadfastly maintains its position as a non-partisan, apolitical actor engaging with the context of urban restoration.

A recent study by the author and Elinor Ostrom, using the Ostrom Social Ecological Systems framework, examined the conditions that seemed to have facilitated successful collective action in the context of a set of lakes in Bangalore (Nagendra and Ostrom, 2014). This study identified a specific set of facilitating variables in the context of Kaikondrahalli lake. Dependence on the lake emerged as a strong motivation for collective action. Rapid construction and excessive extraction of ground water in the peri-urban surroundings of Kaikondrahalli lake have resulted in a severe scarcity of ground water, on which these communities are dependent. There has been tremendous recognition of the importance of the restoration of this lake, and the need for the restoration of other lakes in this neighbourhood in order to restore ground water levels.

In addition, what seems to have set apart the Kaikondrahalli lake (and another restored lake in Bangalore, the Puttenhalli lake in J P Nagar) is the success of networking with government agencies, in this case the BBMP. In the case of Kaikondrahalli, this was greatly facilitated by the presence of an extremely collaborative senior officer, the Chief Engineer of the BBMP Lakes Division Mr. B V Satish, and his team. In other lakes in Bangalore, where support from government agencies in charge of specific lakes has not been as forthcoming, restoration projects have struggled to get off the ground. A number of lake groups have formed in the past 4-5 years in Bangalore, of which many – though not all - interact under the broad umbrella of the Save Bangalore Lakes initiative, receiving inputs from the experiences of MAPSAS and the Puttenehalli Neighbourhood Lake Improvement Trust (PNLIT). Yet in large part these groups have not been able to successfully restore their lakes (although some efforts such as the restoration of Mestripalya lake in Koramangala have moved farther along than others), due mostly to the lack of responsiveness of government agencies and officers in charge. A contrasting problem also persists, of several lakes where restoration efforts are underway, initiated by various Government agencies, yet where local resident support has not been as forthcoming. Based on past experience, the long term sustainability of lake restoration is unlikely unless there is serious, committed engagement by local residents, with close monitoring of the lake and quick action to prevent reversals in lake condition as has been constant in the case of Kaikondrahalli lake.

When local actors and government agencies cooperate, the chances of long-term success of lake rejuvenation are also greater. Understaffed government agencies such as the BBMP now routinely contract out the task of developing lake restoration project reports to consultancy agencies. Unfortunately such agencies mostly provide identical, shoddily prepared proposals for rejuvenation that fail to take into account the unique social-ecological context and requirements of each lake. Citizen groups such as

the earlier informal group working on Kaikondrahalli lake, on the other hand, have the local knowledge of social needs, and can work closely with technical ecological and engineering experts to draft restoration plans for each lake, taking into account their specific requirements as this group did.

Local residents, because of their presence near the lake, are also well situated to undertake challenges of monitoring to identify problems such as land encroachment, blocked water channels, and the dumping of solid waste or inflow of sewage and industrial effluents. Yet, it is well beyond the scope of residents to tackle these problems unaided. In contrast, government agencies have the legal authority to prevent unwanted activities and harmful use of the lake, but rarely have the required information about what is going on at different locations. Thus, monitoring and maintenance of urban lakes requires the collaboration of local groups and government agencies.

An illustrative example of this is an instance in the early days of lake protection, when Kaikondrahalli lake was being polluted by the release of sewage at night, by a neighboring apartment under construction. Local residents were unable to deal with this alone, but eventually addressed this issue by putting sustained pressure on the Pollution Control Board to serve a notice to the apartment, managed by various means including staging a protest, and attracting media attention to the issue. The interactions between local residents, government bureaucracy, elected representatives, corporate bodies, and the media is complex, but the experience of MAPSAS indicates that links between these different groups need to be carefully and strategically used in order to achieve change in the desired direction.

Urban commons are central to the question of urban governance. The sheer scale of urban communities leads them to be very susceptible to tragedies of the commons (Hardin, 1968), converting areas where limits of extraction could be enforced by enduring, long term communities of local residents into open access areas, which lack norms of sustainable use, and where rules limiting use and degradation are difficult to collectively decide, let alone to monitor or enforce (Ostrom, 2005).

From being a productive ecosystem that supplied services such as food, fodder and water, the urban lake (across Bangalore) is being revisualized as a pristine ecosystem, to be mainly used for recreation and nature watching, and perhaps ground water recharge. There are severe limitations of such an approach, which reframes and reshapes the nature of the lake from an extractive common pool resource to a protected public good, but the experiences of the Kaikondrahalli lake restoration indicate that these are not limitations that can be combated at the local scale, and require larger interventions in city planning and policy.

Overall, the experiences of MAPSAS and the communities involved with the restoration of Kaikondrahalli lake indicate that there is hope for urban collective action of a new kind, via sustained engagement by an assorted group of heterogeneous urban residents. Coordinated action by a number of diverse groups, including the government, citizens, civic organizations, schools, non-government organizations, and business has been challenging. It has also been extremely difficult to bring together local residents, given their diversity, on a common platform, when their needs and priorities are so different, not to mention their cultural perceptions of what a lake ought to be.

While the progress achieved may not be optimum or ideal, it represents a major step forward, a bright spot in an environment that seems to be otherwise deteriorating on all fronts. The social capital and potential for collective action that has been built through this work seems to have been important in catalyzing other urban initiatives.

Yet, concerns of equity remain important. Some research indicates that citizen groups that organize for activities such as lake restoration can often exclude practitioners of traditional livelihoods such as fishers and fodder collectors, and restrict uses of the lake for washing clothes that may be extremely difficult for the urban poor, many of whom depend on lakes for daily domestic activities. Despite the efforts of the lake group working on Kaikondrahalli lake, for instance, many of the interventions they originally envisaged such as the provision of an area for cattle washing, and for the use of the neighbouring slum, could not be implemented because of city-wide policies of the BBMP.

Concerns of equity should be pre-eminent while working to protect and restore the urban commons, and these deserve much greater attention from planners, activists, the judiciary and citizen movements than is currently the case. Issues of urban equity and social justice constitutes one challenge to which upper to middle class citizen movements have largely failed to respond, and indeed have exacerbated via collective action in many Indian cities.

While it is too early to say that the restoration of Kaikondrahalli lake is an unqualified success, this effort has played an important role in throwing light on innovative approaches to reconcile urban growth with protection of ecological commons, via knowledge-based intervention, and a partnership between citizen groups and the government. The effort is also significant in a larger sense. The challenges of collective action in a city are severe, and making spaces for nature in the city, as well as for collective action in the city, requires thinking in new ways, and the demonstration of initiatives that inspire hope in others.

The experiences of the restoration of Kaikondrahalli lake in Bangalore is a small step that inspires hope, and is part of a new conceptualization of urban growth in a manner that gives nature, as well as people, their say and space in a frenzied city. When viewing the long term sustainability of the initiative through the framework of the "five pillars": key principles envisaged in the Vikalp Sangam's search for Alternatives (http://www.vikalpsangam.org/about/the-search-for-alternatives-key-aspects-and-principles-4th-draft/): the initiative does well on the principles of ecological sustainability and direct and delegated democracy. While the focus of the group has been on issues of social wellbeing and justice, some progress has been made, but the extreme inequities of the peri-urban growth process make it very difficult for a single group working in isolation to make meaningful headway in such processes. The group has been unable to achieve the last two pillars of economic democracy, or cultural diversity and knowledge democracy, due to the limited scope that resident groups have in an Indian city, where larger economic forces of capitalist growth and extreme cultural fragmentation due to very rapid social change create extremely difficult conditions for local efforts. Nevertheless, as the Vikalp Sangam framework indicates, it is not possible in most instances for groups working on alternatives to achieve progress towards all five of these aspects. Achieving progress on two (ecological sustainability and democratic principles), while remaining aware of the need to address the other challenges by maintaining conversations about these in various public and Government fora, the Kaikondrahalli lake restoration initiative has made significant progress to our understanding of how to rejuvenate the currently inhospitable living conditions of most Indian cities.

In summary, one of the most important lessons from the story of Kaikondrahalli lake is that ordinary citizens can make a difference, without necessarily waiting for perfect knowledge or perfect solutions that achieve all goals. In Priya Ramasubban's words "We tend to think that once a problem is highlighted it will be solved. But even if it is sub optimal problem solving...it still is progress in the right direction. Most people who are hesitant to get involved should realise that, even without domain knowledge or because of the fear that they may not do the perfect thing, they should come forward to help...otherwise the rich plethora of experience the lake can offer will soon pale to become a 'once was nice but now kinda passe place.'"

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