

# **A STUDY ON BELLANDUR TANK AND CHANGES DUE TO URBANISATION**



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## 1. Introduction

Bellandur Tank, which is located in east Bangalore and covers an area of 960 acres, is one of the biggest water bodies in Bangalore Urban district. This water body has for years together been providing sustenance for people in the settlements adjoining it. The waters of this tank have been used to irrigate fields of rice and vegetables as well been extensively used for fishing purposes. Upto one point, the waters were also used for household purposes such as drinking, washing and cleaning. Apart from this, the tank also had a cultural significance, symbolised by periodic rituals undertaken on its shores and waters. This has given rise to a relationship between communities residing around the tank with the tank. The many expressions of this relationship come through in the modes in which the tank and its surrounding areas have been used.

However, due to changes that have been happening to Bangalore city, facilitated by urbanisation, the tank has been affected. Among these changes are domestic as well as industrial pollution, changes in land usage, destruction of wetlands. This has seriously affected the utility of the tank and the environment around it, which has led to a change in the relationship that the residents around the tank have had with it. The aim of this research study is to delve into this relationship, how this has changed over a period of time and what have been the factors responsible for the change. This will be looked at in the context of the changing meaning of notions of ownership and consequent responsibility for maintenance of such common property resources. The Public Trust Doctrine\* talks about the state and its machinery being trustees of commons. This notion and how it has been interpreted by the state machinery and what this has meant to the local residents as well as ultimately to the state of the tank, will also be explored.

The changes that have happened to the condition of the tank and therefore to the lives and livelihoods of the dependent people, have at different times elicited different responses from various individuals and groups. These responses will be looked at and an attempt will be made to understand who are responding and why and also in what manner.

The methodologies that have been used primarily include direct interviews, group discussions, observation, and visual documentation through photographs, secondary sources of data, other related studies, media reports and government departments. The various people interfaced with in this process, included residents from around the tank, local leaders (including those from unions and the panchayat) and government officials. The sample areas of the research consisted of the villages of Bellandur, Kariaymana Agrahara, Kempapura, Nagasandra, Yemlur and Challagatta. These areas were chosen as they represented the various occupations that were undertaken by the local populace with the help of the tank waters and they also cover different shores of the tank.

*\* The Public Trust Doctrine primarily rests on the principle that certain resources like, air, sea, waters and forests have such a great importance to the people as a whole that it would be wholly unjustified to make them a subject of private ownership and such resources being gift of nature should be made freely available to everyone irrespective of the status in life. The doctrine enjoins upon the Government to protect the resources for the enjoyment of the general public rather than to permit their use of private ownership or commercial purposes.*



## 2. Bellandur Tank – Background



**Picture 1- Bellandur Tank**

Bellandur Tank is located in East Bangalore and is on a gentle slope, located at a height of 870 metres above mean sea level. Bellandur tank is part of the Bellandur drainage system that drains the southern and the southeastern parts of the city. The tank is a receptor from three chains of tanks. One chain, originates in the north, from Jayamahal, covers the eastern portion and is referred to as the eastern stream. Another chain originates from the central part of the city, from around the K.R.Market area and covers the central portion and is called the central stream. The other chain, that reaches the tank is through the

southwestern region and is called the western stream. The catchment area of Bellandur tank is an area of about 148 sq kms. Water from this tank flows further east to the Varthur tank, from where it flows down the plateau and eventually into the Pinakani river basin.<sup>1</sup>

It was during the reign of Kempe Gowda II, the son of Magadi Kempe Gowda, who had established the settlement of Bangalore that the tanks in Bangalore, including Bellandur were built. These were built mainly for agricultural and domestic purposes in the 17th century. During Magadi Kempe Gowda's time, when the first settlement was established, this was done along a main ridgeline that took advantage of the higher elevation. This advantage, which facilitated natural valleys, was later used to build a series of tanks that stored the rainwater and served the water needs of the surrounding population. The smaller settlements were distributed next to these tanks, which usually took their names after the settlement around it.<sup>2</sup>

Bellandur tank is surrounded by various villages, including Bellandur, Kariyamana Agrahara, Yemlur, Nagasandra, Challagatta and Kempapura. Bellandur and other areas mentioned before comprise the southern shore of the tank and places like Yemlur, Kempapura, Nagasandra and Challagatta, comprise the northern shore. The user groups of the tank waters differ across villages. While villages like Bellandur and Kariyamana Agrahara are focused on agriculture and growing vegetables, Yemlur and Kempapura use the tank waters more for fishing.

The various government bodies that are responsible for the Bellandur tank are as follows:

- Bangalore City Corporation or Bruhat Bangalore Mahanagara Palike (BBMP), in whose jurisdictional area the tank is located and who is responsible for the maintenance of the storm water drains leading to the tank.
- Bangalore Water Supply and Sewerage Board (BWSSB), which regulates the flow of sewerage into the tank.
- Pollution Control Board - Responsible for monitoring and controlling pollution of the tank.
- Fisheries Department, which regulated the fishing activities in the tank.
- Minor Irrigations Department, which has ownership over the tank.
- Lake Development Authority (LDA), which is the body entrusted with maintaining tanks in Bangalore.

Apart from these bodies, until, February 2007, when Greater Bangalore came into existence, the Panchayat of Bellandur as well as the CMC of Mahadevapura had jurisdiction over the areas adjoining the tank.

### **3. Bellandur Tank in the 1970s – Urbanisation and Changes**

Water bodies such as Bellandur, in Bangalore, were serving various needs of the population of the city right upto the 1970s. It was upto this decade that the tanks, especially Bellandur, contributed fully to the livelihood, social and cultural needs of the people living near them. These included water for drinking as well as household purposes, for agriculture and fishing. The weeds that grew in the wetlands as well as some parts of the tank were used as fodder for cattle. The tank also had its value as a cultural symbol and provided leisure as well as recreational values. It also was home to a wide variety of fauna, especially birds.

In this period, people from as many as 18 villages depended on the waters of Bellandur tank to lead their lives. These included Haralur, Aambalapura, Kudlu, Balagere, Hanathuru, Devara bisanahalli, Kadu bisanahalli, Nagasandra, Kempapura, Belur, Ramagondinahalli, Siddapura, Munne Kolalu, Yemlur, Kariyammana Agrahara, Bhoganahalli and Gunjur.

As recalled by some of the older residents from both shores of the tank, the water used to be clear and pure till the latter part of this decade. One local even shared that the water was so clear at one point, that if a coin were thrown in, it would be visible. Another person recalled how he used to drink water from the tank directly. Some old residents even compare the taste of the tank water in earlier days to milk.

#### **3.1 Agriculture**

The waters of the tank were also used for irrigation purposes. A variety of crops, including rice and ragi as well as vegetables were grown. When the tank used to fill up earlier, one crop was grown annually. Even pulses and spices such as coriander were grown around the tank. Some



**Picture 2 - Paddy Fields, Bellandur**

locals recall times when people never used to purchase vegetables and spices, but instead grow them. The crops used to be transported to K.R.Market and be sold. An old farmer recalls how they used to avoid fertilisers and instead crush a combination of leaves of shrubs and trees including mango, into the soil. Some of the members of communities like the Thigala, used to also cultivate flowers using the tank waters and sell them. Some of these crops, especially rice are still visible, in the wetlands downstream of the tank. One of the locals shared how he owned two and a half acres of land and grew paddy on it.

No one is involved in agriculture anymore. Most of the agricultural land has been converted into built up land. Till last year, before this area came under BBMP, 330 acres of common land around the tank was used for agriculture, mostly rice, 2 crops a year. But after BBMP was formed and this area came under that, the authorities have prohibited anyone from practicing agriculture on that land as it belonged to the government.



### 3.2 Fishing

Bellandur tank was also famous for its fish. The fishing community, especially on the northern shore, was a significant one. According to some people there, there used to be over 100 families depending on fishing. Many shared stories of the varieties and sizes of fish, especially catfish, which used to be famous there. One old fisherman also shared that the fish and the prospects of fishing in Bellandur tank were so famous in the decades of the 60s and 70s that people migrated here from far off places. He himself migrated here from Huskur in Anekal taluk along with his brothers in the 60s. Others shared how people even came from as far as Andhra Pradesh to fish here. Another local, a lady, who was married to a fisherman from Kempapura thirty years ago, said that fishing used to be profitable earlier. In the 70s, the rate of fish varied from Rs.1.50 to Rs.3 per kilo. On an average each fisherman used to catch at least Rs.50 (10 plus kilos) worth of fish per day.

Fishing used to also be a fairly organised activity in Kempapura and surrounding areas, upto the late 1970s. There used to be a fishermen's society, which had a membership fee and used to provide various benefits to its members. Fishing licenses were also given to the fishermen by the state fisheries department at the rate of Rs.5 per month. There also used to be a fish market in Kempapura, where the fish caught were sold locally. Some of the fish was also transported to other villages and towns and sold there.



An operator of a pump house attached to the Hindustan Aeronautics Ltd Sewerage Treatment Plant, who is also a local, showed the location of the former fish market, which is now defunct. The fish were caught and sold for commercial purposes largely by the Muslims and the Thigala community. Others like the Reddys used to catch fish for their consumption and depended more on agriculture as a livelihood. Weeds and other grass that grow on the shores of the tank as well as in its wetlands are fed to cattle as fodder and also sold.

**Picture 3 - Old Fish Market, Kempapura**

### 3.3 Cultural Role

Upto this period, the tank also has played a cultural and religious role in the lives of communities around it. Jagannath, the ex-Panchayat President of Bellandur Gram Panchayat, described how earlier, the deity of a local temple was taken around in a boat in the tank as part of a ritual.



Another local, who is now a caretaker of the temple where one of the deities, called Duggamma, is worshipped, described how this festival was celebrated on an annual basis and people came from 20 villages around, to offer prayers and perform rituals like pujas to the deities of Duggamma and Gangamma as well as to the Bellandur tank. Some communities, like the Thigala, celebrated the Karaga festival in where the deity Yellamma was worshipped and prayers were also offered to the tank. There also exists a mosque of the Muslim community near the shores of the tank.

**Picture 4 - Duggamma Temple**



### **3.4 Initial Urbanisation of Bangalore - 1970s**

Bangalore, in the 1970s, was witnessing industrial growth. This was largely due to the setting up and prospering of public sector companies such as HMT, ITI, BEL, BEML, BHEL etc on the one hand and the growth of the garment industry on the other. This led to a growth in the population and subsequent demand for more land and amenities like electricity and water, for both industrial as well as household purposes, at a scale much larger than earlier. The rising demand for these resources, especially water, which could not be met from existing sources of water along with the fall in the levels of groundwater and insufficient planning, with no focus on methods such as rainwater harvesting, meant that a new source of water had to be tapped.

This was when the city started utilising the waters of the Cauvery River, which lay over 100kms away, to serve the water needs of a growing city. Given the fact that this 'new' source of water had been 'discovered' and accessed, the existing sources including the Koramangala and Challagatta valley started facing neglect and abuse. This included, especially in this decade, the pumping of untreated sewerage of south Bangalore, being released into the tank.

This disconnect from and abuse of traditional systems seems to be symptomatic of urbanisation in the city, which was given impetus in the 1970s. Rather than preserve them and respect the fact that they also serve other purposes such as channeling the rainwater, influencing microclimate and being habitat to flora and fauna, they started being subjected to misuse in this period.

What is also interesting here is to look into the various user groups and try and understand their control and influence over the city and its systems. With the emergence of Bangalore as an urban centre, along with the pressure this created, particularly on land and water, it also started giving rise to a demanding and forceful middle and upper class. With the increasing earning and consequent buying power of this group, government systems and processes started tilting in their favour. So much so that, the very fact that a tank like Bellandur, which served the needs of close to twenty villages, was not given the requisite protection, in favour of the needs of the middle and upper classes. A tank, which now didn't serve the water needs of this group, was starting to be seen and used as a depository of sewerage.

In contrast to this group is the user group of the tank, which included farmers, fishermen and villagers. Their relative lack of control and influence over systems has meant that they started struggling from this period to try and protect their source of livelihood. There was not much local resistance to these changes in this period. This perhaps may be due to the fact that the impact of the sewerage being pumped into the tank had not started making a visible and damaging impact on the water quality yet.

### **4. Bellandur Tank in the 1980s – Encroachments and Land Use Change**

While the end of the 1970s signified the starting of pollution of Bellandur tank, the 1980s saw encroachments on the chain of tanks leading to Bellandur, and conversion into housing layouts. In some cases these encroachments were done with the knowledge of the authorities. As some locals in Challagatta shared, there also used to be a Challagatta tank, which was part of the chain of tanks starting from K.R.Market. They recalled how this tank was filled in and converted into a golf course (the Karnataka Golf Association golf course) during the tenure of Ramakrishna Hegde as the Chief Minister in the early 1980s. They also said that there was another tank, upstream of Challagatta tank, called Appa Reddy Palya Kere, which has also been destroyed by being converted into housing localities. This also started in this decade.



This is the case in the chain known as the central stream. Similar breakages have occurred in the western stream, starting from Puttenehalli in J.P.Nagar, leading to Madiwala tank and further to Agara tank and onto Bellandur tank. This chain has been broken due to construction of various layouts as well as main roads. The Hosur road came up between Madiwala tank and Agara tank. Koramangala, as a middle class residential locality started gaining prominence in the late 1980s, largely due to the set up of some number of Information Technology companies in south Bangalore. This meant more demand for residential area, which led to more built up area, which in turn interrupted the chain of tanks. In some cases, tank beds were filled in and constructed upon.

Thus a combination of the breakage in chains as well as unchecked industrial, residential as well as commercial development, resulted in insufficient rain water reaching the tank and excess untreated sewerage and effluents laden water being the main constituent of the tank. This further led to a decrease in aquatic life, which affected the livelihoods of the fishing community. Water from the tank for irrigation purposes continued in this period.

### **5. Bellandur Tank in the 1990s – Further Urbanisation**

The decade of the 1990s in Bangalore ushered in further urbanization at a level higher than before. This was largely due to the Information Technology (IT) boost, which was facilitated by the government. The setting up of various industrial parks such as the Information Technology Parks Ltd (ITPL) in Whitefield, in East Bangalore and the Electronics City in Bommasandra in South Bangalore in the early 1990s, facilitated the set up of many IT companies in Bangalore. Electronics City, which though was set up in the 1970s, was now attracting much more attention in the form of more IT companies setting up base there. This meant further pressure on land, water, electricity and infrastructure in Bangalore, through more demand for office as well as residential space. The fact that the geographical location of both these major IT parks were in close vicinity to the Bellandur tank, meant that there was more pressure focused on the tank and surrounding areas.

Apart from the changes that took place in demand for land in the vicinity of the tank, a key impact on the life and state of Bellandur tank and inhabitants in this period was the move by the BDA to set up a ring road connecting ITPL to Electronics City. This move and period saw the mobilisation of the locals, especially in Bellandur against the Ring Road as well as against the pollution of the tank.

The farmers in Bellandur and adjoining areas got together in 1997, when land started being notified for the ring road and formed an association, Raitha Horatta Samiti, which resisted the land acquisition by the BDA. Their struggle went on for a few years and although could not prevent the ring road from being constructed, they did get manage to force some changes into the plans of the BDA. This included plans for a development zone being dropped and also less land than what was originally planned, being acquired. The construction of the ring road was completed in 2000. This association existed for few years but doesn't exist as an active entity anymore. The farmers, according to the locals put up a strong resistance, even going to the extent of blocking the roads for a period of time. But, given the might of the state machinery as well as its legal strength of being the owners of all land in the country, it was not difficult for it to break the resistance, using force as well as legislations such as the Land Acquisition Act, 1894. It is also rumoured by the locals that the farmer's association split into two groups, where one group had taken money from real estate developers to give up the struggle.

While this struggle was in direct response to the ring road, another struggle was already on around the same time, i.e., 1997. This one focused on trying to save the tank from pollution and



was spearheaded by Jagannath Reddy, the then Panchayat president. Ramamurthy, who is an environmental enthusiast and activist from Koramangala as well as the other villagers, supported him. It was around that time that the media also started developing an interest in the issue. The trigger for this as Ramamurthy shared was the National Games, which were held in Bangalore in 1997. Bellandur Lake was identified as a spot for the water sports of the event. Before the games, a private organization was doing some reconnaissance around the lake. While doing that, they found the silt that had accumulated made the lake too shallow to have sports in it. Therefore the lake was then rejected for the national games. This led to a lot of interest in the condition of the lake. Some newspapers like Times of India, Deccan Herald, and Indian Express started showing interest in the issue.

A group of villagers protested against the actions of the BWSSB (Bangalore Water Supply and Sewerages Board) at the Challagatta sewerage treatment plant, when they were dispersed by the police through a lathi charge. Along with such modes of public protest, Jagannath and the villagers also initiated legal action. As President of Bellandur Gram Panchayat, Jagannath, invoked a clause in the Panchayati Raj Act and issued notices against the BWSSB and other government bodies. A case was also filed in the high court on this issue, which was won by them and led the court to direct the authorities to initiate cleaning up and prevention of untreated sewerage entering into the lake. The Sewerage Treatment Plant at the inflow of the lake was upgraded as a result of the ruling.

However, the untreated sewerage still continues to flow in. But their struggle has resulted not only in a court case victory, but also increased attention on the lake from the press, which has forced the authorities to also work on the issue. A monitoring committee for the lake has also been set up, which involved some authorities as well as independent experts. Parallely a Lok Adalat case on the tank continues, which focuses on household as well as industrial pollution of the tank and the means and measures taken by the government bodies such as the BBMP, BWSSB and the Pollution Control Board to control it.

## **6. Bellandur Tank – 2000s to Present**

The Bellandur tank having played a vital role in the lives of communities around it earlier is now in decline. Observing it now, one can see a large part of it covered by weeds. The colour of the water is dark and opaque in appearance. There is also a foul stench coming from it. There are hardly any birds visible near the tank. At the outlets, downstream of the lake, heavy foaming is visible, indicative of the presence of effluents.

Studies done on the quality of water in the tank over various periods in time, give an idea of the polluted nature of the waters. A study done by Sreekantha And K.P. Narayana of Indian Institute of Sciences, in the year 2000, titled - 'An Overview Of Human Activities Polluting Bellandur Tank In Bangalore'<sup>1</sup> indicate that there is a high content of chemical substances in the tank



**Picture 5 - Bellandur tank outlet**

waters, making the water unfit for human consumption. Another study done by Chandrasekhar JS, Lenin Babu K, Somasekhar RK of the Environment Sciences Department of Bangalore University in the year 2003, titled - 'Impact of urbanization on Bellandur Lake, Bangalore – a case study'<sup>2</sup> state that "The addition of effluents from urbanized Bangalore city has changed the characteristics of the Lake from being a natural ecologically healthy Lake to an artificial reservoir of domestic sewage and industrial effluents."

The Lake Development Authority in its website lists the pH level, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD) in Bellandur tank as follows:

**Table 1 - Water Quality of Bellandur Tank as per the Lake Development Authority**

Name of the Lake	pH	DO	BOD
Bellandur Tank	7.0-7.9	0.3-8.8	12-275

The primary water quality as per them is as follows:

**Primary Water Quality Criteria**

pH	DO#	BOD#
6.9	4.0	3.0

Source: [http://www.ldakarnataka.co.in/status\\_of\\_lakes.htm](http://www.ldakarnataka.co.in/status_of_lakes.htm)

The DO or Dissolved Oxygen indicates the amount of gaseous oxygen (O<sub>2</sub>) dissolved in water. Adequate dissolved oxygen is necessary for good water quality. As dissolved oxygen levels in water drop below 5.0 mg/liter, aquatic life is put under stress. As is indicated in the measurements, the DO fluctuates between 0.3 and 8.8 in Bellandur tank. This happens due to the excess amount of waste and the need for microorganisms to use this oxygen to decompose the waste.

BOD or Biological Oxygen Demand is a measure of the oxygen used by microorganisms to decompose waste. If there is a large quantity of waste in the water supply, there will also be a lot of microorganisms present working to decompose this waste. In such situations, the demand for oxygen will be high and so the BOD level will be high as is apparent in the measurements given in the column in Bellandur tank – from 12 to 275.

It is thus clear from this that the water quality in Bellandur tank is over the prescribed limits of good quality water. This present state of the lake has resulted from various decades of neglect. As one of the fishermen shared, before this the lake used to be 30 feet at its deepest point, but now was only 5-6 feet deep, the reason for this being the accumulation of sludge. One of the locals even recalled a recent instance where a boat was stuck in the sludge and a helicopter had to be called from HAL to rescue the people in the boat.

**6.1 Sewerage Treatment, Industrial Pollution**

In order to understand the reason for this high level of pollution better, a visit was made to the main Sewerage Treatment Plants at Challagatta. Known as Kormangala & Challagatta (K&C) Valley Sewerage Treatment Plant, the complex consisted of three plants. The Junior Engineer there explained that these plants received sewerage from areas like Koramangala, JP Nagar, Jayanagar and areas mostly in the south of Bangalore. He went on to explain that the oldest of these plants had a capacity of 163 Million Litres a Day (MLD), to which an addition of 55 MLD of capacity was made in November 2006.

This plant was designed, built and being operated by VA Tech, WABAG, which is a German firm. Another STP,



**Picture 6 - K&C Valley STP**



with a capacity of 30 MLD was also visible in the same compound, which was designed, built and being operated by Degremont, a French firm. This amounted to a total of 248 MLD. According to the Bangalore Water Supply and Sewerage Board (BWSSB), in a presentation made by them at a Lok Adalat hearing, in September 2007, out of the 248 MLD capacity, only 110 MLD was being utilised, which means that the difference, 138 MLD, is the amount of untreated sewerage going into the Bellandur Tank.

What this has done, as it has to many other tanks in Bangalore is to make it a perennial tank. All tanks in Bangalore traditionally have been seasonal, having been built to store rainwater. In the non-monsoon months, especially in the summer, the tanks used to be dry. Jagannath recollects a time when he and the others used to cross over from Bellandur to the other shore of the tank by walking on the dry tank bed. But due to the continuous inflow of water as well as sewerage, that is a feature of the past.

There is also another cause for the pollution of the tank due to the release of untreated industrial effluents into it. As per the BBMP, in a presentation made to the Lok Adalat in September 2007, there are 48 polluting companies, mostly Small Scale Industries, in this area, which release effluents into the storm water and sewerage drains, which in turn find their way to the tank. Another source of pollution is solid waste, hospital waste as well as waste from establishments such as vehicle service centres, which finds its way into the tank through storm water drains.

All this has further led to the tank waters not being of as much use to the communities. Fishing as a means of livelihood started declining from the late 70s onwards, from when the lake waters started getting polluted with sewerage. There is almost no fishing in the tank now. The people who used to depend on it for their livelihood have been forced to seek other livelihood options, like selling the weeds as fodder as one local shared with us. She was married into a fisherman's

family but is now selling grass as fodder, which goes for about Rs.40 per bundle. She and some other members also said how they have planted some vegetables on the shores of the lake and are selling them for livelihood. Some are engaged in construction labour, when there is such work, at the rate of Rs.100 per day. Many others have also been forced to go to other less polluted tanks for fishing. Given the polluted nature of the water, the fisheries department has also stopped issuing licenses to fishermen. An order came from the Minor Irrigations department, which has ownership rights over Bellandur tank, to fill the area,



**Picture 7 - Minor Irrigations Dept. notice**

where the old fishing market used to exist in Kempapura and prohibit anyone from using it.

The growing of paddy, ragi and other crops as well as vegetables, which used to be largely grown in and around Bellandur have now almost stopped. Growing of crops or vegetables is not a viable proposition anymore. Landless labourers who cultivated these crops have either migrated to other areas or have taken some other jobs like housework, construction labour etc. Many of those who own land have turned to other work, including working in companies, factories or renting out their lands. In a very few patches of land, rice continues to being grown, but is not profitable. Many paddy fields have been either converted to grass growing plots or have been built upon. Grass is sold to areas like Hosakote, Chikka Thirupathi and Sarjapura as cattle fodder.



## **6.2 Impact of the Outer Ring Road**

These changes in Bellandur and surrounding areas can be seen as a direct consequence of the polluted nature of the water as well as some other factors, which have caused changes in Bellandur and surrounding areas. This includes the construction of the Outer Ring Road in 2000, as mentioned earlier. This caused a change in the land use patterns of these places, which saw farmland give way to Information Technology/ Information Technology Enabled Services companies. This had a cascading effect on land use. Large real estate projects came up to cater to the white-collar workforce of these companies along with other service based industries like restaurants, clubs, life style based shops, motor vehicle showrooms, service stations etc. The government bodies played a large role in facilitating these changes. Locals recall how government bodies such as Bangalore Development Authority (BDA) and Karnataka Industrial Areas Development Board (KIADB) acquired land from the villagers and sold them to corporate houses. In some cases, they allege that the KIADB sold acquired land to real estate groups such as Mantri Developers. They also say that while on the one hand these government bodies acquired land from them, real estate groups, playing on their fear of getting low rates from these bodies, coerced them to sell the land to them.

These developments went on parallelly with the increase in pollution and deterioration of the tank. Thus, agriculture also started declining as a livelihood option. In Bellandur and surrounding areas, this move away from agriculture went side by side with a move into real estate and land-based occupations. Many people, who owned land started building on it and renting it out or sold land. Many others started playing the role of real estate agent as that seemed to be a lucrative profession in the changing environment. Also with the setting up of many companies along the ring road near Bellandur, lot of shops, hotels and other similar establishments have sprung up. Some of the locals in Bellandur also participate in this economy, further altering the face of the traditional economy.

With the tank getting increasingly polluted, cultural and religious rituals like the ones mentioned earlier, involving the Duggamma deity and surrounding villages as well as the Karaga festival also stopped being practiced. Now the Duggamma temple exists at the side of the tank, but is hardly the centre of attraction it used to be in earlier times. The religious and cultural sanctity that the tank used to be invested with exists only in the past, mostly in memories of the locals who have at some point taken part in rituals and festivities.

When one looks at the overall changes that have happened around the Bellandur tank, what is also visible is the change in the relationship between local communities and the tank. Alienation from the tank due to pollution and change of professions and subsequent decreased dependence on it, has affected the relationship negatively. What used to be the fulcrum of economic, social and cultural lives of several villages is now reduced to a pool of unhygienic water. Many residents around the tank view it as a nuisance that emits foul smell and is a breeding ground for mosquitoes and would possibly welcome it being filled in and developed, as has happened elsewhere in the periphery.

## **6.3 Resistance in the 2000s**

The mobilization and resistance of the Bellandur based individuals and groups were touched upon earlier. This happened actively in the second half of the 1990s. It is now interesting to observe that though the Bellandur group earlier were alone in trying to protect and preserve the tank, there has been an overlap of interests of certain middle class groups, especially in areas like Koramangala in the 2000s.

The interest of the Koramangala residents in preventing untreated sewerage from entering into the tank stems from the fact that due to mixing of sewerage into storm water drains as well as encroachment in them, the flow of water in them has been sluggish. Due to this, flooding of the low-lying areas of Koramangala happens. This is an interesting case, where some common ground has been found between what are otherwise groups, whose interests are divorced from each other.

Resident welfare Groups like the Koramangala Initiative, being fairly vocal, have managed to get themselves heard and this has influenced the authorities to work on the storm water drains. The people in Koramangala certainly seem concerned about untreated sewerage entering into the lake. But, whether this concern has translated into any action by them is perhaps another matter. It is due to this that we see only minimal involvement in the campaign to prevent the lake from being polluted, in the form of some one like Ramamurthy, who has strong environmentalist urges.

As far as the northern shore and areas like Yemlur, Kempapura etc are concerned; the users are fishermen as well as some farmers. The fishermen community in this area petitioned the government to provide them with housing plots under the various Ashraya housing schemes. The government also responded by allocating plots in a layout to them. However a visit to this plot and information from the locals gave the picture that though the land was allotted to the fishermen, it has been under litigation and an attempt is being made to grab the land by real estate developers.

Fisher groups also petitioned the previous Chief Minister, Kumaraswamy regarding the loss of livelihood through fishing. This petition was passed on to the Fisheries department, who did nothing but provide them with a cycle and a fishing net. Apart from this there is also a move by the locals in Kempapura to regroup and mobilize over the issue. As part of this, the previous fishermen's association, Kempapura Meenkara Sahakara Sangha, is being revived. As the Secretary of this association, Panduraj, shared, an application has been filed to re-register it. A meeting was held five to six months ago for which over 100 people from the area attended. The association has placed a set of demands before the government, which include not releasing sewerage into the lake. The fisheries department was approached and the demands given to them as well as to the Fisheries Minister. An attempt was made to put baby fish into the lake, but it didn't work out as the fish died. Letters have also been given to the Councilor and Tehsildar.

Even though the Kempapura residents have also been striving to save the lake, their voice is hardly heard in mainstream media as well as in government responses. There also seems to be a disconnect between them and the locals of Bellandur, who are striving to protect the tank. When this question was asked to Panduraj, Secretary of the fishermen's society in Kempapura, Kempapura Meenkara Sahakara Sangha, he retorted by saying that they have heard of Jagannath and what he has been doing for the tank, but their interests differed. Their interest in Kempapura primarily centered around fishing, which wasn't the case with Jagannath. This has presented an interesting picture of groups around Bellandur tank, whose lives are in some ways still connected with the tank, but in differing ways. This influences their responses.

The responses by the locals around the Bellandur tank have managed to bring some attention back to the tank as well as managed to mobilize people, at least in Kempapura. The locals have approached or targeted several different government agencies depending on the focal point of the crisis at different times. They have also tried to utilize and leverage associations, like the defunct Kempapura fishermen's association, which was in a stage of non-existence. Its revival points out to an understanding of the locals of the need of alliance based and organized mobilisation, which

appealed or at least got the attention of the elected representatives more effectively. Though at this point, the association is focusing on coordinating licenses and other fishing related work for other tanks and not so much for Bellandur.

The responses of the different government agencies being different have also contributed to this type of strategising. For e.g., the BDA was responsive to the farmer’s agitation around the Ring Road, whereas the BWSSB or the PCB’s has not been that supportive or responsive of the household and industrial pollution of the tank.

As opposed to this, the MLA of Varthur, Krishnappa, has also taken up the issue and gone to the Chief Minister with it. This points out to the fact that elected representatives more often than not being from the respective areas can appreciate and respond to local pressures better.

#### **6.4 Responses of Government Agencies**

Given the current state of the tank, it is fair to assume that the various government agencies, responsible for various aspects of the tank, are not responding to the deterioration appropriately. Various forms of abuse being perpetrated on the tank place the onus on the people indulging in these abuses, which include dumping of sewerage, effluents and solid waste into storm water drains as well as encroachment of wetlands and tank bed, as well as on the government bodies who have failed to contain and prevent such acts.

It is due to the failure to act appropriately or in some cases act at all, which has led to a case going on in the Lok Adalat on the pollution of the Bellandur tank. The responses from the various bodies at the hearings of this case indicate this very fact. The Bruhat Bangalore Mahanagara Palike (BBMP), which is responsible for the storm water drains that flow into the tank, have in the hearings, shared the action taken by them to keep the storm water drains clean of sewerage, solid waste and effluents. The only action they seem to be taking is putting screens at various inlet points into Bellandur tank and the cleaning/desilting of storm water drains at some locations. As far as preventing effluents from coming into the storm water drains are concerned, the direction of the court was to shift the concerned industries away from near Bellandur tank. However, apart from issuing notices to the erring companies, nothing much seems to have been done. And the important point here is that, these actions taken by the BBMP are not pro active, but on directions by the court, which is an indication of their interest in the issue.

The Bangalore Water Supply and Sewerage Board (BWSSB) on its part has admitted in the court hearings to the under utilisation of the Sewerage Treatment Plants at Kormangala & Challagatta valley, being run by a German and a French organisation. The capacity of these plants as per the BWSSB is a total of 248 Million Litres a Day (MLD), of which only 110 MLD is being utilised. The volume of sewerage as per them in this valley is 237 MLD in 2006, which means that 127 MLD of untreated sewerage is finding its way into the tank. The main reasons that they give for this are non-connectivity of laterals to sub mains, direct discharge of sewerage into storm water drains, abuse of sewers and inadequate carrying capacity of sewers As per the projections of the volumes of sewerage they present (in table below), by 2021, the volume will go upto 359 MLD and by 416MLD by 2036.

**Table -2 - K&C Valley Sewerage Projections as per the BWSSB**

<b>K&amp;C Valley</b>	<b>Year</b>	<b>2006</b>	<b>2021</b>	<b>2036</b>
<b>Projections</b>	Volume of sewerage	237 MLD	359 MLD	416 MLD



How geared up is this body to cope up with such increased volumes? The plans they shared include an ongoing project funded by the National Rivers Conservation Program, costing Rs.46.27 crores, length of which is 29 kms and involves replacement and rehabilitation of sewers in Koramangala. 70% of this has been completed in Koramangala and 30% in Challagatta. They also have a plan, which involves a project under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), worth Rs.176.75 crores, to replace and rehabilitate sewers and set up 11 STPs amounting to a total capacity of 403 MLD across Bangalore. Given the present responses and the pace and directions of it, it will be interesting to observe the timeliness and completion of these plans of the programs.

The Pollution Control Board (PCB) from its side responded in the lok adalat hearing to the effluent producing industries and what they feel is the best solution. Their response was that it is best to relocate these industries to the outskirts of the city, where the PCB could from its funds help them to set up effluent treatment plants. The board also talked about issuing guidelines in the newspapers regarding penalties as far as medical waste pollution is concerned. The question that then arises here is that whose onus is it to take action on this point, i.e., facilitating and implementing relocation of the erring industries.

The Fisheries department, which is responsible for issuing fishing licenses as well as monitoring fish life in the tank, has been reactionary at best. Some of the fishermen spoken to in Yemalur and Kempapura shared how the fisheries department has stopped issuing fishing licenses for Bellandur tank, given the polluted nature of it. They have also filled in and closed the fish market at Kempapura recently. It is not clear what they have done to ensure rehabilitation of the affected fishermen as well as taking steps to ensure pollution of the tank comes down, by interaction and maybe even putting pressure on other concerned government bodies. Some of the fishermen related how they petitioned the Chief Minister, Kumaraswamy, on their plight in 2007. He then seems to have directed the Fisheries department to act on it, who then responded by giving the fishermen a cycle and a fishing net each. One of the fishermen, who shared this information with us, showed us the cycle he got from the department. At this point, the question that comes up is, if the tank water itself is not worthy of being fished in, indicated by the department canceling and not reissuing licenses, then of what benefit would a fishing net be?

The Minor Irrigations department, which has ownership over the tank, does not seem to have a coherent plan of action relating to the rehabilitation of this tank. In fact, this department seems to have been slack as far as even preventing encroachments on the tank bed. The Joint Legislature Committee to probe into the encroachment of government lands in Bangalore has uncovered at least three cases of encroachment on the tank bed<sup>3</sup>. The committee expressed their concern over the failure of the officers of the Revenue Department and the Minor Irrigation department to take action against such violations.

The Lake Development Authority (LDA), which was set up in 2002 to maintain the tanks in Bangalore also seems to have not taken any concrete steps to restore and protect the tank. The LDA on its website lists Bellandur tank as one of the tanks it plans to undertake bio-remedial measures on under the National Lake Conservation Program (NLCP). However the status of this program is unclear as of now and the activities planned for the tank have not been started. The LDA seems to be more concerned with leasing tanks out to private bodies on a commercial basis, as is evident from the fact that three tanks, i.e., Nagavara, Hebbal and Venkanakere have been leased out to private enterprises<sup>4</sup> and by the list of tanks it has listed out on its website<sup>5</sup> as available for development by private parties on a develop operate transfer basis.

The changes that have taken place in the tank and the facilitators, causal factors of these changes indicate a reconfiguration in the way in which access and usage of resources and therefore control



of them has happened in Bangalore. To start with the key stakeholders in this tank, i.e., the local communities, who have for years together utilised the tank waters for various purposes and thus have had a relationship with it, are now in a position where very little is in their hands. The new stakeholders seem to be the various governmental bodies and to some extent the judiciary, who are key players in the health of the tank. To a lesser extent, the affluent residents of Koramangala, who belong to the middle and upper classes, are also pushing for changes in the status quo, primarily to protect and preserve their homes and neighbourhood from flooding.

At this point it is interesting to note that the Bellandur panchayat had issued a notice to government bodies like the BWSSB for failing to prevent untreated sewerage into the tank. Here an attempt was made by an elected government to save a common property resource. The panchayat in this case, consisted of members belonging to the areas in and around Bellandur who were therefore in a position to understand and appreciate the problem faced by the tank and people depending on it.

## **7. Concluding thoughts**

The alienation of the traditional residents from Bellandur tank seems to be almost complete at this point, with them having hardly any say in protecting and preserving the tank. Consequently their relationship with the tank also stands fractured. Through their usage and therefore relationship with the tank, the local communities at earlier points could be said to have had ownership claims over the tank. But the ownership of tanks in Bangalore are with one government department or the other as is the case with Bellandur tank, which is 'owned' by the Minor Irrigations department. If one looks at the public trust doctrine mentioned earlier and its notion of the state and its machinery being trustees of commons, this has in the context of tanks in Bangalore, been taken to be ownership and therefore control over common property resources.

What can be seen playing out around the Bellandur tank is alienation of the local communities at two different levels. Firstly, through the pollution and encroachment and subsequent destruction of the quality of the common property resource and secondly, through not having any ownership or other kinds of rights to be able to initiate, push for positive action to protect the tank. Any action of this sort has to come through the government bodies in which the ownership rests. What has been seen so far is that these departments, by virtue of not having direct livelihood or social stakes in the common property resources, tend not to be proactive in matters connected to protecting and maintaining these resources.

Affirmative action by locally elected representatives, which has been observed in Bellandur as well as Varthur, seems to indicate that the communities are best represented by them and there is a higher likelihood of them responding to local pressures. However, with the creation of Greater Bangalore, the role of decentralized governance that local governments played seems to be eroding. For one, since the formation of Greater Bangalore in February 2007, there exist no elected representatives in the areas of Greater Bangalore, as local body elections have not been held. Apart from that, what can also be seen is that the new configuration of the wards under Greater Bangalore means that there are lesser representatives for the people, by the sizes of each ward going up and therefore the electorate in each ward. This could again alienate the elected representative from micro level issues thus eroding the democratic accountability chain that ties elected representatives to the needs of their constituents and the constituency.

What also needs to be contemplated is the nature in which common property resources like tanks are being managed in the country now. If one looks back, historically resources used to be managed by the collective, until the British Empire took control of them through government bodies. This system has followed us into independent India as well. The time has come to look at

the viability of reverting back to community based management systems of resources. The relationship that local communities have with the resources, more often than not ensure proper maintenance of these resources. This is due to the fact that protection and preservation of these resources amounts to protection of livelihoods of local communities. When this is replaced by disconnected bureaucratic systems, as is visible in the case of Bellandur tank, the results are there for all to see. Disuse and destruction of a life sustaining system is much more easily possible when the one managing it has no interest or relationship with it.

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CASUMM welcomes comments on this paper: [virtuallyme@gmail.com](mailto:virtuallyme@gmail.com)

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