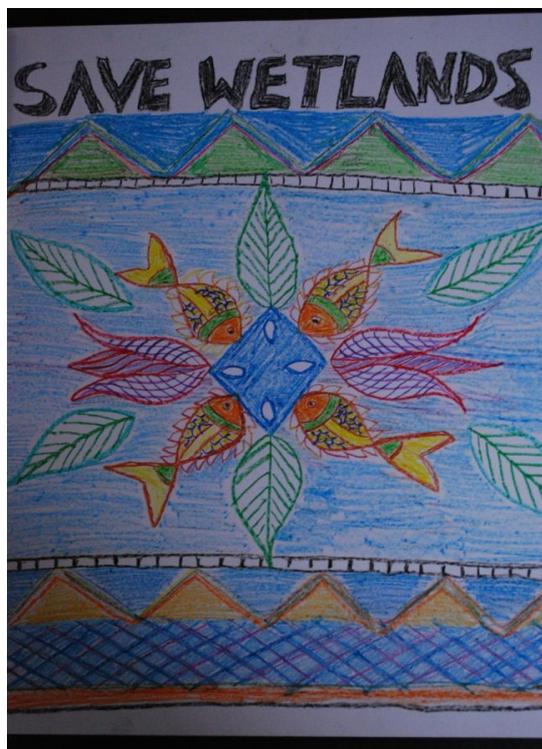


**Submission of wise use practices for the protection,  
management and rehabilitation of lakes in Karnataka with  
special emphasis on Bangalore and other urban areas**



**Submission made by**

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in Public Interest Litigation  
WP No.: 817/2008**

**with Expert Interventions  
by  
Dr. S. Subramanya  
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**in compliance with the directions issued by**

**Hon'ble Justice Mr. N. K. Patil  
Chairman  
Karnataka High Court Legal Services Committee  
February 2011**

# Recommendations for Protection, Restoration, Conservation and Rehabilitation of Lakes (Tanks) of Karnataka

## Background:

1. The Government of Karnataka confirmed its intent to conserve lakes of Bangalore by accepting *in toto* the findings of the Lakshman Rao Committee Report on "Preservation, Restoration, Or Otherwise of the Existing Tanks in the Bangalore Metropolitan Area" per PWD GO No. 82 IMB 85 dated 11 February 1988. The order vests the responsibility for undertaking the stated tasks primarily on the Karnataka Forest Department, and in some cases on the Bruhat Bengaluru Mahanagara Palike (BBMP) Bangalore Development Authority (BDA), Bangalore Water Supply and Sewerage Board (BWSSB) and the Karnataka State Tourism Development Corporation (KSTDC), etc. For some years thereafter, there was energetic effort on the part of the Karnataka Forest Department to recover encroached lake lands and to restore many lakes in and around Bangalore. The early part of last decade also witnessed the Dept. of Ecology and Environment taking initiative through the Indo Norwegian Environment Programme (INEP) to intelligently rehabilitate Hebbal, Agara and Nagawara lakes. The rehabilitation of Hebbal lake was considered so impressive that none less than the Prime Minister of Norway visited the water body to regard the good work done.
2. These gains, however, were not consolidated upon and in subsequent years the overall situation of lakes has worsened. Most are being polluted and encroached in blatant disregard of the recommendations of the Lakshman Rao Committee and various orders of this Hon'ble Court and the Supreme Court of India. Some that are rehabilitated by BBMP and BDA (Eg. Yediyur lake in Jayanagar) have been done purely from the standpoint of civil engineer's vision and understanding of what these lakes are meant to be -mere water storing aquifers. As a consequence the ecological functionality of such rehabilitated lakes has been disastrously interfered with, or worse, destroyed. Thus requiring, wholly unnecessarily, high maintenance costs to keep the lake waters from turning eutrophic. Besides such engineering efforts have discarded various traditional and cultural rights that helped protect and conserve lakes.
3. Alongside, many large infrastructure projects were being promoted that encroached, polluted and occupied lakes in and around Bangalore in total disregard to Judicial pronouncements and the law. A cardinal example of such environmentally destructive and illegal practices, actively tolerated by the administration, is the Bangalore Mysore Infrastructure Corridor Project (BMICP). According to evidence gathered from the Government's own records, this one project alone has already encroached and/or destroyed 9 tanks, of the 23 tanks handed over illegally and questionably to this private corporation. A table providing the details of these tanks currently in possession of M/s NICE is annexed at **Annexure A**.
4. Such practices are in blatant disregard of this Hon'ble Court's interim directions in a PIL that was initiated by Padmashree Zafar Futehally and ors. vs. the State of Karnataka and ors (WP No. 31343/1995) against the encroachment and pollution of lakes, and with a prayer to strictly enforce the recommendations of the

Lakshman Rao Committee report. In fact, Mr. Lakshman Rao was also a petitioner in this PIL. While issuing interim directions in this PIL, still in force, this Hon'ble High Court took on record allegations of the petitioners that: "there is large scale indiscriminate grant and unauthorised occupation of tank bed areas in and around Bangalore" thereby seeking "interim direction to the respondents for the protection of the tanks on the ground that any such grant of tank bed lands or encroachments are made, it will cause great injury to the general public". The direction is clear and categorical that to protect lakes the State with specific regard to tanks is "**not to make any grant or allotment of the lands situated in the Bangalore Metropolitan area until further orders**". (Emphasis added)

5. In an extraordinary and unprecedented effort on the part of the Karnataka State Legislature, a "*Joint Legislature Committee on Encroachments in Bangalore Urban District*" was constituted under the chairmanship of then MLA Mr. A. T. Ramaswamy. An Interim Report – 1 of this Committee was submitted to the Legislature during February 2007. In regard to the neglect of lakes in the Bangalore area, the Committee noted in this report its grave concern over the state of affairs as follows:

"Almost all small and big tanks in the Bangalore Urban District have become sewage disposal tanks. Such tank bed encroachment is caused by two types of violations. Firstly, the local bodies namely, City Municipal Councils, Town Municipal Councils or the Bangalore Mahanagara Palike and Bangalore Development Authority, without enquiring with Departments such as Revenue, Survey and Settlement and Lake Development Authority as to whether the buildings encroach the tanks bed area, issue building construction license, Commencement Certificate and Completion Certificate. It is surprising that the Bangalore Development Authority during the period from 1963 to 1970 issued Commencement Certificates for the construction of multi-storeyed buildings u/s 15 of the Town and Country Planning Act by collecting the Development Charges without enquiring with Revenue Department or Survey and Settlement Department or refer to the City Survey Records regarding the status of the lands on which apartment buildings have come up encroaching upon tanks beds..... The second violation is the pollution of the lakes. The Karnataka Pollution Control Board has not exercised its powers u/s 24 of the Act to punish those who pollute the tank bed by encroachment has allowed it to continue. There is provision in the Act which requires every apartment to install a sewage treatment plant (STP) in the building..... The Karnataka Pollution Control Board has failed in taking action for pollution control giving excuses and a false reason that only the Central Pollution Control Board is required to take action in respect of high rise buildings."

In a subsequent submission by way of Interim Report – II on 26 July 2007, the Committee noted as follows:

"According to the report of the Deputy Conservator of Forests, Bangalore Urban Division dated 14-2-2007, there are about 48 tanks with a total tank bed area of 3,379 acres of which about 313 acres are under encroachment by 441 persons which has strangely gone up to 553 encroachers as on 30-5-2007. **A**

**cursory examination of the names and addresses of encroachers shows that these are not farmer in the neighbouring areas who have encroached the tank bed but are mostly residents of different parts of the city who have encroached residential and commercial plots in the tanks bed. It is quite likely that some important and powerful persons have formed 'layout' in these tank beds and have sold to the city residents.** The Forest Department has not even given the extent of encroachment by each person while giving the total area of encroachment as 312A 33G.”

Highlighting the commercial gains that can be made by so encroaching tank lands, the Committee brought to the attention of the Legislature the case of Byrasandra tank within the NIMHANS campus in Bangalore, encroached by a builder, one Mr. K. V. Shivakumar, in active collusion with BBMP officials. About this exercise the Committee observes:

“(t)he Government property thus toyed with and abetted in land-grabbing by the BMP is 3A 26G i.e., 17,666 sq yards or 158,994 sq. ft. This NIMHANS land is situate in a central area of the city and each square foot will fetch not less than Rs. 8,000. The property is therefore worth Rs. 127 crores. It is this property the BMP officials have been helping the builder-land grabber to possess illegally.” (Emphasis added.)

6. Responding to this alarming situation, this Hon'ble Court while finally ruling on a PIL against lake encroachment and pollution in Krishna Bhat Vs. State of Karnataka and ors. (W.P. No. 1841/2006), reiterated its serious intent to ensure lakes are protected and conserved as functional ecosystems and the commons with the State as custodian across Karnataka. The operative portion of the direction issued by this Hon'ble Court on 17 September 2008 is as follows:

“(i) The sewage or garbage will not be diverted to the lakes and tanks.

(ii) The lake area as per the revenue records will be surveyed by the Revenue Department and would be fenced at the cost of the respondents.

(iii) The Forest Department shall undertake planting of the trees and saplings after getting necessary technical opinion from the experts concerned.

(iv) The Member Secretary of the State Legal Services Authority shall act as a co-ordinator among all the respondents herein including the revenue department and the forest department for both monitoring the implementation of the undertaking of the above respondents in implementing, executing the work and the ecological and environmental condition of the lakes.”

Despite this direction, and the active monitoring by this Hon'ble Court, compliance with this order has been rather lax.

7. The stated intent of the Government of Karnataka in constituting the Lake Development Authority (LDA) is to

ensure comprehensive rehabilitation of lakes of all municipalities in Karnataka. LDA sought to do this by almost entirely privatising the development, management and control of lakes. LDA initially signed four agreements handing over to various commercial entities in Bangalore Hebbal lake (for Oberoi Hotel), Nagawara lake (for Lumbini Developers), Vengaiahnakere (for Par C) and Agara lake (for Biota). LDA's intent was to sign at least 30-40 such agreements and then spread this programme to include lakes in other cities of Karnataka. This was based almost entirely on the unsubstantiated claim that the Government did not have resources to rehabilitate lakes on its own. The privatisation initiative was widely criticised and campaigned against by hundreds of individuals and organisations and is now a subject matter of a PIL initiated by Environment Support Group and ors. Vs. State of Karnataka and ors. (WP. 817/2008). Issuing an interim order in this case, this Hon'ble Court relying on the consent of lease/licensee parties has been pleased to direct that **“the Lake Development Authority shall not enter into any fresh agreement with whomsoever and with reference to whatsoever lake is concerned”**. This Hon'ble Court also directed the learned Government Advocate to “ascertain the view of the Government as to the future course of action for maintaining the lakes and gardens in the city as well as in the State of Karnataka, and to avoid commercial activities so that the ecology and environment of the lakes and gardens shall be maintained and made available to the common man”. Submitting the State's position in a statement filed before this Hon'ble Court on 21-01-2009, the Government of Karnataka submitted as follows: **“(i)t is reiterated that the government, at this juncture, is not keen in leasing out of the lakes/tanks, nor is it keen in extending the lease period”**. This matter is awaiting final arguments and disposal. In addition to the aforementioned directions, this Hon'ble Court while deliberating various connected matters thought it fit and proper to seek the services of this Hon'ble High Court Legal Services Committee to solicit all progressive views relating to the long term restoration, management and maintenance of lakes and appointed a Committee of Secretaries of various Depts. to assist in this matter. (Emphasis added.)

8. The Hon'ble Supreme Court has also been watching with anguish the terrible state of affairs in protecting lakes and other public commons across India. The Hon'ble Supreme Court has consistently held that lakes and such other commons must be protected for the benefit of current and future generations, to build water security for all and also in supporting traditional livelihoods and the conservation of biodiversity. To effectively ensure that statutory authorities take their responsibilities with all the seriousness that it deserves, the Hon'ble Court has reaffirmed the importance of being guided with several cardinal principles that have a strong bearing on building ecological security for humanity: *the Public Trust Doctrine, the Doctrine of Intergenerational Equity, Polluter Pays Principle and the Precautionary Principle*. Relying on these doctrines, the Hon'ble Court in a most recent decision of 28 January 2011 in Jagpal Singh and Ors. vs. State of Punjab and Ors. (Civil Appeal No. 1132/2011 @ SLP © No. 3109/2011, arising out of SLP (Civil) CC No. 19869 of 2010), has laid down fundamentally the interpretation of law and practice with regard to management and conservation of lakes as public commons. Further, considering the task of protecting such water bodies for the benefit of current and future generations, the Hon'ble Supreme Court has directed as follows:

“Let a copy of this order be sent to all Chief Secretaries of all States and Union Territories in India who will ensure strict and prompt compliance of this order and submit compliance reports to this Court from time to time.” The Court clarifying its intent to ensure no dereliction of its orders has further directed that the matter “...be listed before this Court from time to time (on dates fixed by us), so that we can monitor implementation of our directions herein. List again before us on 3.5.2011 on which date all Chief Secretaries in India will submit their reports.”

This order of the Hon'ble Supreme Court has a direct bearing on the current cause of action relating to developing a management plan for the protection and conservation of lakes in Karnataka, and thus the order is extensively excerpted here. In dismissing the appeal of Jagpal Singh who encroached a village pond, the Hon'ble Court directs as follows:

“13. We find no merit in this appeal. The appellants herein were trespassers who illegally encroached on to the Gram Panchayat land by using muscle power/money power and in collusion with the officials and even with the Gram Panchayat. We are of the opinion that such kind of blatant illegalities must not be condoned. Even if the appellants have built houses on the land in question they must be ordered to remove their constructions, and possession of the land in question must be handed back to the Gram Panchayat. Regularizing such illegalities must not be permitted because it is Gram Sabha land which must be kept for the common use of villagers of the village. The letter dated 26.9.2007 of the Government of Punjab permitting regularization of possession of these unauthorized occupants is not valid. We are of the opinion that such letters are wholly illegal and without jurisdiction. **In our opinion such illegalities cannot be regularized. We cannot allow the common interest of the villagers to suffer merely because the unauthorized occupation has subsisted for many years.**”  
(Emphasis added)

The Hon'ble Court illustrates the consistency by which such illegalities have been dealt with by citing various earlier orders and categorically describes the extremely rare situations when encroachments of lake lands can be condoned, and that too only on humanistic terms to correct age-old social injustices:

“14. In **M.I. Builders (P) Ltd. vs. Radhey Shyam Sahu**, 1999(6) SCC 464 the Supreme Court ordered restoration of a park after demolition of a shopping complex constructed at the cost of over Rs.100 crores. In **Friends Colony Development Committee vs. State of Orissa**, 2004 8) SCC 733 this Court held that even where the law permits compounding of unsanctioned constructions, such compounding should only be by way of an exception. In our opinion this decision will apply with even greater force in cases of encroachment of village common land. Ordinarily, compounding in such cases should only be allowed where the land has been leased to landless labourers or members of Scheduled Castes/Scheduled Tribes, or the land is actually being used for a public purpose of the village e.g. running a school for the villagers, or a dispensary for them”. (Emphasis added)

Recognising the illegal practices engaged in by several State Governments in assisting encroachers of common lands against the law, the Hon'ble Supreme Court has ruled as follows:

“15. In many states Government orders have been issued by the State Government permitting allotment of Gram Sabha land to private persons and commercial enterprises on payment of some money. In our opinion all such Government orders are illegal, and should be ignored.”

9. Dwelling on ancestral wisdom in building water security for a country dependent on non-perennial rivers and the monsoons, the Hon'ble Court states as follows:

“17. In this connection we wish to say that our ancestors were not fools. They knew that in certain years there may be droughts or water shortages for some other reason, and water was also required for cattle to drink and bathe in etc. Hence they built a pond attached to every village, a tank attached to every temple, etc. These were their traditional rain water harvesting methods, which served them for thousands of years.

18. Over the last few decades, however, most of these ponds in our country have been filled with earth and built upon by greedy people, thus destroying their original character. This has contributed to the water shortages in the country.

19. Also, many ponds are auctioned off at throw away prices to businessmen for fisheries in collusion with authorities/Gram Panchayat officials, and even this money collected from these so called auctions are not used for the common benefit of the villagers but misappropriated by certain individuals. **The time has come when these malpractices must stop.** (Emphasis added.)

10. On the basis of such reasoning, and in an extraordinary effort to curtail the ruin of our water-bodies and thus water security, the Hon'ble Court issued a direction to all States and Union Territories to come up with a scheme to protect and conserve these resources for the benefit of all and also the future generations:

“22. Before parting with this case we give directions to all the State Governments in the country that they should prepare schemes for eviction of illegal/unauthorized occupants of Gram Sabha/Gram Panchayat/Poramboke/Shamlat land and these must be restored to the Gram Sabha/Gram Panchayat for the common use of villagers of the village. For this purpose the Chief Secretaries of all State Governments/Union Territories in India are directed to do the needful, taking the help of other senior officers of the Governments. The said scheme should provide for the speedy eviction of such illegal occupant, after giving him a show cause notice and a brief hearing. **Long duration of such illegal occupation or huge expenditure in making constructions thereon or political connections must not**

**be treated as a justification for condoning this illegal act or for regularizing the illegal possession. Regularization should only be permitted in exceptional cases e.g. where lease has been granted under some Government notification to landless labourers or members of Scheduled Castes/Scheduled Tribes, or where there is already a school, dispensary or other public utility on the land.”** (Emphasis added.)

11. Responding to the precarious situation nation-wide with ever increasing threats and disturbances to lakes as wetland ecosystems, the Union Ministry of Environment and Forests (MoEF) has enacted the **Wetland (Conservation and Management) Rules, 2010** under the Environment Protection Act, 1986, a copy of which is annexed at **Annexure B**. The Preamble explains the purpose and intent of these Rules, and are excerpted here to highlight the emerging standards for wetland protection and rehabilitation in India:

“Whereas the wetlands, vital parts of the hydrological cycle, are highly productive, support exceptionally large biological diversity and provide a wide range of ecosystem services, such as waste assimilation, water purification, flood mitigation, erosion control, ground water recharge, micro-climate regulation, aesthetic enhancement of the landscape while simultaneously supporting many significant recreational, social and cultural activities, besides being a part of cultural heritage;

And Whereas many wetlands are seriously threatened by reclamation through drainage and landfill, pollution (discharge of domestic and industrial effluents, disposal of solid wastes), hydrological alterations (water withdrawal and inflow changes) and over-exploitation of their natural resources resulting in loss of biodiversity and disruption in goods and services provided by wetlands;

And whereas India is a signatory to the Ramsar Convention for the conservation and wise use of wetlands, which includes in its ambit a wide variety of habitats, such as rivers and lakes, coastal lagoons, mangroves, peatlands, coral reefs, and numerous man-made wetlands, such as ponds, farm ponds, irrigated agricultural lands, sacred groves, salt pans, reservoirs, gravel pits, sewage farms, and canals;

And whereas the Central Government has identified certain wetlands for conservation and management under its conservation programme and provides financial and technical assistance to the State Governments and Union territory Administrations for various conservation activities through approval of the Management Action Plans;

And whereas the National Environment Policy, 2006 recognises the ecological services provided by wetlands and emphasizes the need to set up a regulatory mechanism consistent with the Ramsar Convention to maintain the ecological character of the identified wetlands and develop a national inventory of such wetlands;”

The restrictions imposed under these rules are as follows:

“The following activities within the wetlands shall be prohibited, namely:-

- (i) reclamation of wetlands;
- (ii) setting up of new industries and expansion of existing industries;
- (iii) manufacture of handling or storage or disposal of hazardous substances covered under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 notified vide S.O. Number 966 (E) dated the 27<sup>th</sup> November, 1989 or the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms/Genetically engineered organisms or cells notified vide GSR number 1037 (E) dated the 5<sup>th</sup> December, 1989 or the Hazardous Wastes (Management, Handling, and Transboundary Movement) Rules, 2008 notified vide S.O. Number 2265 (E), dated the 24<sup>th</sup> September, 2008;
- (iv) solid waste dumping: provided the existing practices, if any, existed before the commencement of these rules shall be phased out within a period not exceeding six months from the date of commencement of these rules;
- (v) discharge of untreated wastes and effluents from industries, cities or towns and other human settlements: provided that the practices, if any, existed before the commencement of these rules shall be phased out within a period not exceeding one year from the date of commencement of these rules;
- (vi) any construction of a permanent nature except for boat jetties within fifty metres from the mean high flood level observed in the past ten years calculated from the date of commencement of these rules.
- (vii) any other activity likely to have an adverse impact on the ecosystem of the wetland to be specified in writing by the Authority constituted in accordance with these rules.”

12. Keeping the above in view, the following steps are proposed for the conservation and protection of lakes as functional ecosystems, cultural and livelihood supportive spaces and as public commons.

### **Immediate Efforts Needed to Protect, Conserve and Rehabilitate Lakes:**

13. **Identifying spatial spread of lakes and determining extent of encroachment:** Based on a review of the Revenue Map, matched to appropriate scale with the 1973 Survey of India toposheets, and overlaying these with time series maps publicly accessible in Google Earth imageries, and also comparing these with the Land Use Plans (such as Comprehensive Development Plan of Bangalore) as and where available, it is extremely critical to first and foremost demarcate the legal boundaries of the lake. Once this is achieved, the next important task is to undertake field verification to identify and enumerate the nature and extent of

encroachments – keeping in view the guidelines issued in the ruling of the Hon'ble Supreme Court in Jagpal Singh. Such mapping and assessment efforts do not need any high end technological or monetary support, and can easily encourage the involvement of local bodies, educational institutions, volunteers, etc. The Karnataka State Remote Sensing Agency has already built a satellite imagery base map of the entire State including various layered details. Such public information can be extensively utilised in this purpose without any additional cost or effort.

14. **Removal of encroachments:** Once the extent of the lakes have been identified, action must be initiated through the relevant agencies for removal of such encroachments. Where communities who are poor have encroached water bodies, they must be humanely rehabilitated, wherever possible, in neighbouring public lands in accordance with Rehabilitation norms and policies, in accordance with the Jagpal Singh ruling of the Hon'ble Supreme Court. In case the encroachments are by landed class, realtors, business units/companies, infrastructure projects and such other non-poor and non-socially disenfranchised communities, strict legal action must be taken for their eviction and recovery of the lake lands for the benefit of current and future generations. In addition, such encroachers must be severely penalised. The monies recovered, if any, from such recovery actions, must be set aside for exclusive use of rehabilitation of lakes.
15. **Live fencing of Lakes as a permanent protection measure:** The immediate next action in heavily populated and densely built urban areas should be to fix appropriate pillars for marking the boundaries. A suitable approach could be to adopt a live fencing approach as directed by this Hon'ble Court in the Krishna Bhat case – thus saving hundreds of crores of public money from needless construction of stone walls. (Live fencing can be intelligently and aesthetically developed to serve as a biodiversity zone and as a source of nutrition and minor forest produce to local communities – an age old practice can thus be revived). In extreme cases where encroachment is widespread and aggressive, fencing by barbed wire or chain links, in addition to live fencing, may be adopted. The potential tree and shrub species for such live fencing are provided in **Annexure C**.
16. **Strengthening of Lake Bunds:** Most lakes were protected as long as the bunds were secure. Due to encroachment and poor maintenance, many lake bunds are in poor shape and thus result in the waterbodies losing water holding capacity and becoming dry very soon. This enables encroachments of various sorts. To prevent the loss of water holding capacity, it is critical that the bunds of all lakes must be strengthened by appropriate stone pitching (not concrete lining) both on the lake side and also towards to the *Atchkat* (downstream flood plains, normally cultivated). In the lake side of the bund, sparse planting of *Pandanus odoratisema* (abundantly available in Ranganathittu) may be undertaken, as it stabilises the bund. On the *Atchkat* side, *Pongamia pinnata* or *Acacia nilotica* may be planted in a single row half way down the bund to provide for a shady walking path that also attracts insects and birds. A typical planting plan for strengthening the lake bund is illustrated in **Annexure D**.
17. **Desilting:** Most lakes have been silted up due to poor maintenance of lakes and their watersheds. It is

extremely important to ensure that appropriate desilting of lakes is undertaken to improve the water holding and recharging capacities of lakes. This should be done by ensuring that desilting is undertaken extremely sensitively so as not to adversely affect the appropriate structure of the lake, as indicated in **Annexure E**. The extent of desilting should be decided based on the spatial spread and the depth of the lake near the bund. The ratio of desilting should be such that the base of the lake should not exceed more than a metre below the lowest point near the bund. The desilting should be graded in a manner that is gradually sloping from the foreshore all around towards the bund. There should not be any deep trenches or surprise pits (such as those caused by mudlifting for brick making or sand mining) to ensure public safety and mitigate erosion. It is strongly recommended that desilting of lakes should be taken-up only when absolutely necessary and where it is established beyond any reasonable doubt that the lake bed has been silted-up. Even in such instances, minimal desilting should be taken-up so that it involves minimal costs, such as in transportation of desilted mud. Desilting should be done carefully without altering the natural structure and slope of the lake bed from foreshore and the high water mark along the sides and towards the main bund.

18. **Overflow wiers:** Overflow wiers of all lakes need to be immediately strengthened and restored. Lack of maintenance of such critical features of a lake is resulting in loss of water and thus the lake itself. Proper stone pitching must be the basis for rehabilitating the wiers as they have a longer life than concrete wiers.
19. **Survey and management of Raja Kaluves:** The flow of Raja Kaluves must be surveyed, identified and mapped for each and every lake both upstream and downstream. The typical spread of a Raja Kaluve from the point of discharge at the overflow wier to the next receiving lake must be identified. The Raja Kaluves must be surveyed and their areas demarcated in a manner similar to that of the spatial spread of the lake. Wherever feasible, the Raja Kaluve encroachments must be removed and the canals restored.
20. **Management of Raja Kaluves:** No encroachment, sewage inflow or garbage dumping must be allowed into Raja Kaluves. In addition, appropriate silt and waste trapping structures may be set up at regular distances of the Raja Kaluve. Protection of these canals are critical as they lifelines for the survival of lakes and harbour immense potential for biodiversity conservation, recreation, and grazing and farming, including urban community gardens. With imagination and innovation, Raja Kaluves can easily become the space for building ecologically committed communities in urban areas. The Raja Kaluves that are not encroached, or partially destroyed, must be protected from further encroachment and destruction by live fencing as though they were tree wedges interlinking lakes. A list of species that may be planted along Raja Kaluves is annexed at **Annexure F**.
21. **Prevention of sewage inflow into the lake:**<sup>1</sup>Sewage treated to secondary treatment standards must only be allowed into the lake bodies. No raw sewage or trade effluents must be allowed into lakes bodies. Violators must be severely penalised and criminal proceedings initiated per appropriate law. Wherever possible,

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1 Delhi has about 40% of the total STP capacity in India, and yet it has made no difference to pollution levels in water or in improving access to water.

treated sewage must be made to flow through dense reed beds and/or constructed wetlands, designed in a manner that is both aesthetic, ecologically viable and also low maintenance. These reed beds/constructed wetlands aid in cleaning up/filtering the waters, improve local micro-climatic conditions, increase ground water recharge between the lake bodies. In the extreme situation where there is not any space for location of STPs, they must only be located close to the foreshore, carefully limiting space needed by engaging extremely intelligently designs. Where the watershed is un-disturbed, the run-off may be directly allowed to flow into the lakes. Where watershed is heavily built up or disturbed, the run-off must be directed to the sewage treatment plants and only then should the treated water allowed to flow into the lake. This will mitigate the extent of pollution of water due to run-off over polluted soil.

22. **Bifurcation of monsoon runoff channels from sewage channels:** Historically, all the lakes received water during monsoon due to surface runoff from the surrounding catchment areas. Unfortunately, at a number of lakes, the surrounding catchment areas have been extensively encroached and built-up, thus curtailing the natural gradient inflow of water into the lake. Taking this into consideration, it is proposed to maintain storm water-drains separately and not to mix the storm water (or run-off water) with sewage. Such waters may be allowed into lakes only after due wetland filtering by passing it through a dense reed-beds; these are low or no maintenance approaches that also provide habitats for a variety of flora and fauna.

### **Comments on current Lake Development Model:**

23. **Moving away from Civil Engineer's model for lake rehabilitation:** The present lake development model being adopted by LDA, BDA, BBMP is a civil engineering design that does not take into consideration the lake structure, ecology and the biodiversity they support. The model is aimed at maximum desilting, and utilization of the desilted mud *in situ*, essentially to curtail costs involved in transporting and dumping mud elsewhere. This forces the agencies to resort to unnecessary constructions within the lake area, such as ringed-elevated-wide jogging tracks. Often enough, bird islands are developed even when they serve no ecological role due to the small size of the lake. Such desilting and rehabilitation practices contribute to the gradual or rapid destruction of the natural structure of the lake. All south Asian (human built) lakes are based on the practice of ensuring that there are concentric zones of varying water depths with the deepest zone close to the bund and decreasing water depths towards the foreshore. The current design model unintelligently deepens the lakes, often contributing to the collection of polluted waters resulting in extensive pollution of ground water aquifers, besides causing a variety of public health problems. Also, while considering lakes for development or restoration, each lake should be considered as a unique case and an universal development model should not be formulated or adopted.
24. **Reversing privatisation of lakes:** In accordance with the directions of the Hon'ble Supreme Court in the Jagpal Singh case, the Karnataka Government must abandon all plans for the privatisation of lake management and other commons. All agreements currently entered into must be annulled and a compliance

report must be filed by the Chief Secretary of the State before the May 2011 deadline proposed by the Hon'ble Supreme Court.

25. **On Island Design:** Islands are used by birds and other biota for resting roosting and nesting. For this, islands needs to be well away from human activity and should be located at sufficient distance from the main-bund and water-edge in such a manner that the surrounding water provides sufficient insulation from ground predators and human activity. Tree planting on the islands must be based on careful selection and based on a clear understanding of bird use of islands as seen, for example, at Ranganathittu Bird Sanctuary. The design of islands and choice of trees for plantation is given in **Annexure G**.
26. **Walkways above High Water Mark instead of Jogging Tracks:** Instead of ringed elevated jogging tracks, a packed-mud/ cobble-stone **ground-level** walkway can be developed with a width not exceeding 3 m (three meters). This can be established all around the lake perimeter beyond the high-water mark or close to the perimeter fence. Such ground-level walkways will not obstruct the inflow of run-off water from the surrounding catchment area, wherever it is still exists.
27. **Planting of tank area with trees and bushes above high water mark:** In the open lake area that spreads above the high-water mark and the perimeter fence, select trees and bushes that are beneficial to birds, butterflies and other biota can be planted. List of such trees is listed in **Annexure H**.
28. **Lakes are not spaces for commercial amusement parks:** As per the laws governing the wise use of wetlands, the lakes should not be turned into amusement parks, public parks and water sport complexes, particularly for commercial gain. Not only do such practices cause severe disturbance to the local biota/biodiversity, but also limit the possibility of recharging of ground water aquifers. Given the dire water scarcity situation, no effort should be spared to rehabilitate lakes as water-bodies. If such public recreational facilities are required, space may be acquired adjoining lakes, especially in moist *atchkat* areas, for the development of such parks.
29. **Construction of Kalyanis:** Kalyanis should be constructed near lakes, wherever necessary, to facilitate controlled immersion of Ganesha idols. This way, the immersion of Ganesha idols, or any other such festival idols, directly within the lake can be prevented. The contaminated waters of the Kalyanis should not be discharged without treatment into the lake waters to prevent increase in turbidity, heavy metal poisoning (from paints) and eutrophication of lakes. Kalyanis must only be developed outside the water-spread area of the lake.

**Prospective planning to protect lakes and build water and ecological security:**

30. **Caution to be exercised to protect lake systems when developing new neighbourhoods, infrastructure projects and industrial areas:** As lakes provide several critical ecosystem services, such as acting as lung

spaces, groundwater recharge units and flood control units, besides maintaining considerable biodiversity, wherever and whenever there is a need to develop new residential or industrial layouts or infrastructure projects, or expand existing ones, care should be taken to maintain the sanctity and integrity of lakes, its immediate surrounding areas and the accompanying Raja Kaluves. At the planning stages itself the concerned agencies must integrate these protective features to demarcate the lake area and the Raja Kaluves and thus protect them. Similarly, storm water drains should be planned by linking roadside water run off channels such that the drains would empty only pure monsoon run off into the lake. No sewage or industrial effluents should at all be let into these storm water drains, and in any case they must be discharged after appropriate treatment in accordance with the Water (Prevention and Control of Pollution) Act, 1974 and the Wetland Rules, 2010. If the plan includes discharge of such domestic and trade effluents into lakes, appropriate plans should be made at the planning stages itself, and their strict implementation ensured, to accommodate the transfer of post-treated waters through a network of separate underground canals into the lakes. The concerned agencies, corporations, apartments, neighbourhoods, authorities, etc. should be strictly penalized if raw sewage or trade effluents are discharged directly into the lakes without conforming to these standards and norms. The provisions of the Karnataka Town and Country Planning Act, 1961, in particular those provisions that provide for public consultation in planning and implementation of town and country planning schemes and projects, must be fully conformed with as directed by this Hon'ble High Court in Environment Support Group and ors. vs. Bangalore Metro Rail Corporation Ltd. (PIL: WP No. 13241/2009).

31. **Designation of lakes as bird sanctuaries (with no boating and commercial fishing):** Historically, the lakes in Karnataka have supported immense aquatic biodiversity including birds and other biota. Lakes that have a past history of supporting high bird diversity in terms of species richness and their numbers should be identified in consultation with competent personnel/birdwatchers and declared as bird sanctuaries. An *in situ* development and management plan should be drawn-up by treating each lake as a unique case. Such lakes should be identified as unique bird habitats, should be kept free of all disturbances like boating and other water-sports, commercial fishing, poaching, etc, and notified for protection as per the Wetland Rules, 2010. Regular watch and ward should be put in place by the Forest Department during the breeding and bird migration seasons, by invoking provisions of the Wildlife (Protection and Conservation) Act, 1972, Forest Conservation Act, 1980, Biological Diversity Act, 2002 and Convention on International Trade on Endangered Species (CITES).
32. **Local Rights to be recognised for wise use of wetlands:** In any effort to protect and rehabilitate lakes, the local traditional and customary rights must be fully recognised per law, and special effort taken to protect those whose livelihoods depend on lakes. Any management plan should incorporate the possibility of involving such communities in the management and protection of lakes. Examples include those who undertake subsistence fishing, washer communities, those harvesting aquatic plants, cattle grazers, vegetable growers, etc.

33. **Lakes as educational spaces:** While lakes have served as cultural and livelihood spaces from time immemorial, an emerging dimension of these water-bodies is as critical educational spaces. While no effort must be spared to revive the social practice of lakes as cultural and livelihood spaces, special initiatives must be undertaken to appreciate lakes as spaces for experiential and creative education. Students from all schools and colleges must be involved in some aspects of lake management as part of their educational experience. In addition, special educational programmes ought to be developed to encourage a wholistic and deeper understanding of the roles that lakes play in providing as ecological security and also as social, cultural and livelihood support spaces. Such educative efforts must not only be limited to students, but should also include local communities.
34. **Involvement of Local Governments in Lake protection and management:** The Panchayat Raj and Nagarpalika Acts clearly mandate the fundamental involvement of elected local governments in all aspects relating to planning and utilisation of natural resources and environmental conservation, by way of formulation of District Management Plans. Unfortunately, Karnataka is amongst those States which has not constituted District or Metropolitan (as applicable) Planning Committees, as mandated by these Acts. Appropriate directions may be issued to the State to comply with these constitutional mandate. Any plans for lake rehabilitation must form a fundamental basis for preparation of District Management Plan. The notification of lakes as ecologically sensitive areas and as Ramsar sites must begin by including such items in the District Management Plans, as envisaged in the Rio Declaration.
35. **Involvement of local communities in lake protection and management:** The Panchayat Raj and Nagarpalika Acts clearly require the involvement of local communities in management and utilisation of natural resources through the Gram Sabhas and Ward Committees, as applicable. An extensive effort is needed to ensure that these constitutionally mandated and representative local community engagement bodies are facilitated to undertake activities relating to lake protection, rehabilitation, management and conservation.
36. **Monitoring of Lake water quality:** By a special programme, all lake waters must be monitored at least twice a year against pollution parameters and the results made available online. Such taskx may be undertaken by extending the laboratory facilities of Dept. of Mines and Geology (which monitors wells) and Karnataka State Pollution Control Board (which has the mandate to monitor quality of all waters). This effort is immediately required and undertaken on a war footing. Critically polluted water bodies must be clearly and publicly notified so that no fish or other sources of food (Eg. Vegetables) may be consumed from these water bodies as a public health measure.
37. **Appropriate model for ecologically sensitive and humane lake development:** Environment Support Group with assistance from a student of Architecture from BMS College of Engineering, Bangalore, has developed a model for a humane and ecologically sensitive rehabilitation of Venkatappa Kere (also known as Setty Kere or Subramanyapura Kere), in Uttarahalli Hobli, Bangalore south. This lake is heavily encroached by poor and

wealthier communities, and only recently has been seriously contaminated by the effluent discharge from massive apartments of Mantri Tranquil and Gokulam Apartments (of ISKCON) off Kanakapura Road. This lake can still be comprehensively rehabilitated including with its Raja Kaluve, which is largely intact. The common lands (Gomala lands, grazing pastures) have been illegally encroached by large land-holders and builders. A detailed proposal to recover the encroached lands, rehabilitate poor communities humanely, and restore the lake to its pristine state in an ecologically wise way is proposed, and the same is enclosed as **Annexure J** (series). Also enclosed is a report of the workshop organised by Environment Support Group and Karnataka State Council for Science and Technology on “Urban Lakes as Ecological, Cultural and Public Spaces”, annexed at **Annexure K**.

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**ANNEXURE A**

**TANK IN BANGALORE HANDED OVER TO M/S. NANDI INFRASTRUCTURE CORRIDOR ENTERPRISE LTD. (NICEL), WHICH DOES NOT ARISE FROM THE FRAMEWORK AGREEMENT BETWEEN GOVT. OF KARNATAKA AND M/S. NICEL, DT 03.04.1997**

<b>Sl. No</b>	<b>Sy. No.</b>	<b>Villages</b>	<b>Total Extent</b>	<b>Extent Transferred</b>	<b>Excess</b>	<b>Remarks</b>
1.	43.	Manganahalli	6-22	6-22	5-32	Road utilizes 30 guntas
2.	48.	Begur	6-05	6-05	5-35	10 guntas used for the road
3.	38.	Kammanahalli	18-37	2-30	1-00	1A 30G covered by road
4.	13.	Doddathoguru	44-31	44-31	38-36	5A 35G covered by road
5.	38.	Gollahalli	19-10	5-02	0-27	4A 15G used for road
6.	71.	Gottigere	37-13	5-00	3-00	2 acres like to be occupied by road
7.	6.	Ramasandra	7-06	3-00	1-10	1A 30G utilized for road
8.	46.	Ramasandra	28-01	1-00	0-10	30G occupied by road
9.	48.	Madavara	43-38	1-01	0-11	30G occupied by road
10.	24.	Varajasandra	13-09	13-09	13-09	Not utilized for road formation
11.	4.	Hemmigepura	4-11	4-11	4-11	Do
12.	25.	Hemmigepura	8-25	7-25	7-25	Do
13.	113.	Doddathoguru	12-39	12-39	12-39	Do
14.	43.	Beratena Agrahara	29-10	28-10	28-10	Do
15.	51.	Konappana Agrahara	28-10	28-10	28-10	Do
16.	48.	Manganahalli	4-00	4-00	4-00	Do
17.	43.	Manganahalli	6-22	6-22	6-22	Do
18.	25.	Gonipura	8-26	8-26	8-26	Do
19.	45.	Gonipura	17-28	17-28	17-28	Do
20.	60.	Gonipura	12-14	12-14	12-14	Do
21.	22.	Doddakuntanahalli		117-32	-	-
23.	259	Kodiala Karenahalli		04-31	-	-

## Annexure B

### Wetland (Conservation and Management) Rules, 2010

[TO BE PUBLISHED IN THE GAZETTE OF INDIA, PART II, SECTION 3, SUB-SECTION (ii)]

#### GOVERNMENT OF INDIA MINISTRY OF ENVIRONMENT AND FORESTS

#### NOTIFICATION

New Delhi the ..... of November, 2010

**G.S.R. ----- WHEREAS** the wetlands, vital parts of the hydrological cycle, are highly productive, support exceptionally large biological diversity and provide a wide range of ecosystem services, such as waste assimilation, water purification, flood mitigation, erosion control, ground water recharge, microclimate regulation, aesthetic enhancement of the landscape while simultaneously supporting many significant recreational, social and cultural activities, besides being a part of the cultural heritage;

**AND WHEREAS** many wetlands are seriously threatened by reclamation through drainage and landfill, pollution (discharge of domestic and industrial effluents, disposal of solid wastes), hydrological alterations (water withdrawal and inflow changes) and over-exploitation of their natural resources resulting in loss of biodiversity and disruption in goods and services provided by wetlands;

**AND WHEREAS** India is a signatory to the Ramsar Convention for the conservation and wise use of wetlands, which includes in its ambit a wide variety of habitats, such as rivers and lakes, coastal lagoons, mangroves, peatlands, coral reefs, and numerous man-made wetlands, such as ponds, farm ponds, irrigated agricultural lands, sacred groves, salt pans, reservoirs, gravel pits, sewage farms, and canals;

**AND WHEREAS** the Central Government has identified certain wetlands for conservation and management under its conservation programme and provides financial and technical assistance to the State Governments and Union territory Administrations for various conservation activities through approval of the Management Action Plans;

**AND WHEREAS** the National Environment Policy, 2006 recognises the ecological services provided by wetlands and emphasizes the need to set up a regulatory mechanism consistent with the Ramsar Convention to maintain the ecological character of the identified wetlands and develop a national inventory of such wetlands;

**NOW, THEREFORE**, in exercise of the powers conferred by section 25, read with sub-section (1) and clause (v) of sub-section (2) and sub section (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules for conservation and management of wetlands, namely:-

**1. Short title and commencement.-**

1. These rules may be called the Wetlands (Conservation and Management) Rules, 2010.

2. They shall come into force on the date of their publication in the Official Gazette.

**2. Definitions.- (1) In these rules, unless the context otherwise requires,-**

- (a) "Act" means the Environment (Protection) Act, 1986 (29 of 1986);
  - (b) "Authority" means the Central Wetlands Regulatory Authority constituted under rule 5;
  - (c) "dredging" means an excavation activity or operation usually carried out at least partly underwater, in shallow sea or fresh water areas with the purpose of gathering up bottom sediments and disposing them off at a different location;
  - (d) "National Park" means an area declared, as National Park under section 35 or section 38, or deemed to be declared as a National Park under sub-section (3) of section 66, of the Wild Life (Protection) Act, 1972 (35 of 1972);
  - (e) "Ramsar Convention" means the Convention on Wetlands signed at Ramsar, Iran in 1971;
  - (f) "UNESCO" means the United Nations Educational, Scientific and Cultural Organisation;
  - (g) "wetland" means an area or of marsh, fen, peatland or water; natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters and includes all inland waters such as lakes, reservoir, tanks, backwaters, lagoon, creeks, estuaries and manmade wetland and the zone of direct influence on wetlands that is to say the drainage area or catchment region of the wetlands as determined by the authority but does not include main river channels, paddy fields and the coastal wetland covered under the notification of the Government of India in the Ministry of Environment and Forest, S.O. number 114 (E) dated the 19<sup>th</sup> February, 1991 published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) of dated the 20<sup>th</sup> February, 1991;
  - (h) "wildlife sanctuary" means an area declared as a wildlife sanctuary under the provisions of Chapter IV of the Wildlife (Protection) Act, 1972 (35 of 1972) and shall include an area deemed to be sanctuary under sub section (4) of section 66, of the said Act.
- (2) The word and expressions used in these rules and not defined but defined in the Act, shall have the meaning respectively assigned to them in the Act.

**3. Protected wetlands.-**

Based on the significance of the functions performed by the wetlands for overall well being of the people and for determining the extent and level of regulation, the following wetlands shall be regulated under these rules, namely:-

- (i) wetlands categorised as Ramsar Wetlands of International Importance under the Ramsar Convention as specified in the Schedule.

- (ii) wetlands in areas that are ecologically sensitive and important, such as, national parks, marine parks, sanctuaries, reserved forests, wildlife habitats, mangroves, corals, coral reefs, areas of outstanding natural beauty or historical or heritage areas and the areas rich in genetic diversity;
- (iii) wetlands recognised as or lying within a UNESCO World Heritage Site;
- (iv) high altitude wetlands or high altitude wetland complexes at or above an elevation of two thousand five hundred metres with an area equal to or greater than five hectares;
- (v) wetlands or wetland complexes below an elevation of two thousand five hundred metres with an area equal to or greater than five hundred hectares.
- (vi) any other wetland as so identified by the Authority and thereafter notified by the Central Government under the provisions of the Act for the purposes of these rules.

**4. Restrictions on activities within wetlands.-**

- (1) The following activities within the wetlands shall be prohibited, namely:-
  - (i) reclamation of wetlands;
  - (ii) setting up of new industries and expansion of existing industries;
  - (iii) manufacture or handling or storage or disposal of hazardous substances covered under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 notified vide S.O. number 966 (E) dated the 27<sup>th</sup> November, 1989 or the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms/Genetically engineered organisms or cells notified vide GSR number 1037 (E) dated the 5<sup>th</sup> December, 1989 or the Hazardous Wastes(Management, Handling and Transboundry Movement) Rules, 2008 notified vide S.O. number 2265 (E), dated the 24<sup>th</sup> September,2008;
  - (iv) solid waste dumping: provided that the existing practices, if any, existed before the commencement of these rules shall be phased out within a period not exceeding six months from the date of commencement of these rules;
  - (v) discharge of untreated wastes and effluents from industries, cities or towns and other human settlements: provided that the practices, if any, existed before the commencement of these rules shall be phased out within a period not exceeding one year from the date of commencement of these rules;
  - (vi) any construction of a permanent nature except for boat jetties within fifty metres from the mean high flood level observed in the past ten years calculated from the date of commencement of these rules.

- (vii) any other activity likely to have an adverse impact on the ecosystem of the wetland to be specified in writing by the Authority constituted in accordance with these rules.

(2) The following activities shall not be undertaken without the prior approval of the State Government within the wetlands, namely:-

- (i) withdrawal of water or the impoundment, diversion or interruption of water sources within the local catchment area of the wetland ecosystem;
  - (ii) harvesting of living and non-living resources;
  - (iii) grazing to the level that the basic nature and character of the biotic community is not adversely affected;
  - (iv) treated effluent discharges from industries, cities or towns, human settlements and agricultural fields falling within the limits laid down by the Central Pollution Control Board or the State Pollution Control Committee, as the case may be;
  - (v) plying of motorized boat, if it is not detrimental to the nature and character of the biotic community;
  - (vi) dredging, only if the wetland is impacted by siltation;
  - (vii) construction of boat jetties;
  - (viii) activities within the zone of influence, as per the definition of wetlands, that may directly affect the ecological character of the wetland;
  - (ix) facilities required for temporary use, such as pontoon bridges, that do not affect the ecological character of the wetland;
  - (x) aquaculture, agriculture and horticulture activities within the wetland;
  - (xi) repair of existing buildings or infrastructure including reconstruction activities.
  - (xii) any other activity to be identified by the Authority.
- (3) Notwithstanding anything in sub-rule (1) or sub-rule(2), the Central Government may permit any of the prohibited activities or non-wetland use in the protected wetland on the recommendation of the Authority.
- (4) The State Government shall ensure that a detailed Environment Impact Assessment is carried out in accordance with the procedures specified in the notification of the Government of India in the Minister of Environment and Forests S.O. number 1533 (E) dated the September 14th, 2006 as amended from time to time.
- (5) No wetland shall be converted to non-wetland use unless the Central Government is satisfied on the recommendation of the Authority that it is expedient in the public interest and reasons justifying the decision are recorded.

5. **Constitution of Central Wetlands Regulatory Authority.-**

- (1) The Central Government, in exercise of the powers conferred by sub-section(3) of section 3 of the Environment (Protection) Act,1986 (29 of 1986), hereby constitutes Central Wetlands Regulatory Authority consisting of the following Chairpersons and members for the purpose of these rules, namely:-
- (a) Secretary, Ministry of Environment and Forests, Government of India – Chairperson;
  - (b) a representative (not below the rank of Joint Secretary) from Ministry of Tourism, Government of India – Member ex-officio;
  - (c) a representative (not below the rank of Joint Secretary) from Ministry of Water Resources, Government of India – Member ex-officio;
  - (d) a representative (not below the rank of Joint Secretary) from Ministry of Agriculture, Government of India – Member ex-officio;
  - (e) a representative (not below the rank of Joint Secretary) from Ministry of Social Justice, Government of India – Member ex-officio;
  - (f) Chairman or his nominee, the Central Pollution Control Board,- Member ex-officio;
  - (g) Joint Secretary or Adviser, dealing with the wetland in the Ministry of Environment and Forests, Government of India, - member ex-officio;
  - (h) Dr. Asad R. Rahmani, Director ,Bombay Natural History Society, Hornbill House, Dr. Salim Ali Chowk, Shaheed Bhagat Singh Road , Mumbai – 400 023; **Expert** Ornithology –Member.
  - (i) Dr. M. R.D. Kunadangar, Darul Aloom Qasmia Lane, Botshah Mohalla, Lal Bazar, Srinagar, Kashmir ; **Expert** Limnology- Member
  - (j) Dr. C.K. Varshney, 88 Vaishali, Pitampura, New Delhi-110034; **Expert** Ecology- Member
  - (k) Dr E. J. James , Director, Water Institute, Karunya University, Coimbatore, Tamil Nadu ; **Expert** Hydrology- Member;
  - (l) Director or Additional Director or Joint Director dealing with the Wetland in the Ministry of Environment and Forests-Member Secretary.
- (2) The term of the Authority shall be three years effected from the date of publication of the notification referred to in sub-rule(1).
- (3) The Authority shall exercise the following powers and perform the following functions, namely:-

- (i) appraise proposals for identification of new wetlands, projects or activities in consultations with the concerned local authorities;
- (ii) identify and interface with the concerned local authorities to enforce the provisions contained under these rules and other laws for the time being in force;
- (iii) grant clearances or identify in consultation with the local state government, the areas for the grant of clearance for regulated activities in the wetlands within their respective jurisdictions;
- (iv) determine, in consultation with concerned local authority, the zone of direct influence of the wetlands;
- (v) issue whatever directions, necessary for the conservation, preservation and wise use of wetlands to the State Governments.

(4) The Authority shall periodically review the list of wetlands and the details of prohibited and regulated activities under the rules.

(5) The Authority shall specify the threshold levels for activities to be regulated and the mode and methodology for undertaking activities in wetland.

**6. Process for identification of wetlands under different categories.-**

- (1) Wetlands covered under item (i) of rule 3 specified under Schedule shall be the wetland to be regulated under these rules.
- (2) The States Government shall prepare, within a period of one year from the commencement of these rules, 'Brief Document' identifying and classifying the wetlands within their respective territories in accordance with the criteria specified under Rule 3 and submit the same to Authority.
- (3) The 'Brief Document' of each wetland for identification shall comprise of following information, namely:-
  - i) broad geographic delineation of the wetland;
  - ii) its zone of influence along with a map (accurate and to scale);
  - iii) the size of the wetland;
  - iv) account of pre-existing rights and privileges, consistent or not consistent with the ecological health of the wetland.
- (4) The Authority, shall on receipt of the 'Brief document' under sub-rule(2), if consider it necessary refer in consultation with the State Government to a research institute or university having relevant multi-disciplinary expertise related to wetlands, to conduct a comprehensive survey of the wetland within a period of thirty days: provided that the institute or university to which the matter has been referred under sub-rule(4) shall submit a report within next ninety days from the date of such reference to Authority, which shall contain information with respect to the criteria specified under rule 3.
- (5) The Authority shall, thereafter, arrive at a decision in consultation with the State Government, on the proposal, within a period of ninety days from the date of receipt of the report under sub-rule(4)

- (6) The Central Government shall on the receipt of the recommendation of the Authority notify the area of wetlands as recommended by the Authority for public information inviting objections and suggestions from the general public likely to be affected to make representation to the Central Government within a period of sixty days;
- (7) The Authority shall consider all the representations which the Central Government may receive under sub-rule(6) and submit its recommendation on the such representations to Central Government within a period of sixty days for final notification;
- (8) The Central Government shall on receipt of the recommendations of the Authority under sub-rule(7) issue a final notification notifying therein the area of the wetland its category or classification to be regulated under these rules and display the said notification in public places in English and vernacular languages.
- (10) The Authority may, *suo moto* or on application made to it, review any decision under these rules or issue direction for inclusion of wetland under these rule.

**7. Overlapping provisions.-**

- (1) The wetlands within the protected areas of the National Parks and Wildlife Sanctuaries shall be regulated by the provisions of Wildlife (Protection) Act, 1972(35 of 1972).
- (2) The wetlands within the protected or notified forest areas shall be regulated by the provisions of the Indian Forest Act, 1927(16 of 1972); the Forest (Conservation) Act, 1980(69 of 1980); and the Environment (Protection) Act, 1986(29 of 1986).
- (3) The gaps in the regulation of wetlands within the protected and notified forest areas, if any, under the provisions of the Indian Forest Act, 1927; Wildlife (Protection) Act, 1972; and Forest (Conservation) Act, 1980; shall be plugged by invoking provisions of the Environment (Protection) Act, 1986.
- (4) The wetlands situated outside the protected or notified forest areas referred to in sub rule(2) shall be regulated by the relevant provisions of the Environment (Protection) Act, 1986(29 of 1986)

**8. Enforcement of regulated activities.-**

- (1) The identified activities for management and wise use of wetlands situated within the protected or notified forest areas referred to in sub rule (2) of rule 7 shall be regulated by the Forest Department of the State concerned.
- (2) The identified activities for management and wise use of wetlands situated outside the protected or notified forest areas shall be regulated by the nodal Department or the relevant local state agencies to be designated by the State Government within a period of six months from the date of commencement of these rules.

**9. Appeals against the decisions of Authority-**

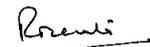
Any person aggrieved by the decision of the Authority may prefer an appeal to the National Green Tribunal constituted under the National Green Tribunal Act, 2010(19 of 2010) within a period of sixty days from the date of such decision: Provided the National Green Tribunal may entertain any appeal after the expiry of the said period of sixty days if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

**THE SCHEDULE**  
[see-rule 3(i)]

**List of wetlands in India identified as Ramsar sites under Ramsar Convention on Wetland**

Serial Number	Name of Wetland	State
(1)	(2)	(3)
1	Ashtamudi Wetland	Kerala
2	Bhitarkanika Mangroves	Orissa
3	Bhoj Wetland	Madhya Pradesh
4	Chilika Lake	Orissa
5	Deepor Beel	Assam
6	East Calcutta Wetlands	West Bengal
7	Harike Lake	Punjab
8	Kanjli	Punjab
9	Keoladeo National Park	Rajasthan
10	Kolleru Lake	Andhra Pradesh
11	Loktak Lake	Manipur
12	Point Calimere Wildlife and Bird Sanctuary	Tamil Nadu
13	Pong Dam Lake	Himachal Pradesh
14	Ropar	Punjab
15	Sambhar Lake	Rajasthan
16	Sasthamkotta Lake	Kerala
17	Tsomoriri	Jammu and Kashmir
18	Vembanad-Kol Wetland	Kerala
19	Wular Lake	Jammu and Kashmir
20	Chandratal	Himachal Pradesh
21	Renuka	Himachal Pradesh
22	Rudrasagar	Tripura
23	Upper Ganga	Uttar Pradesh
24	Hokersar (Hokersar)	Jammu and Kashmir
25	Surinsar and Mansar (complex)	Jammu and Kashmir

[F.No. J-22012/31/05-CS(W) ]

  
(R. Mehta)

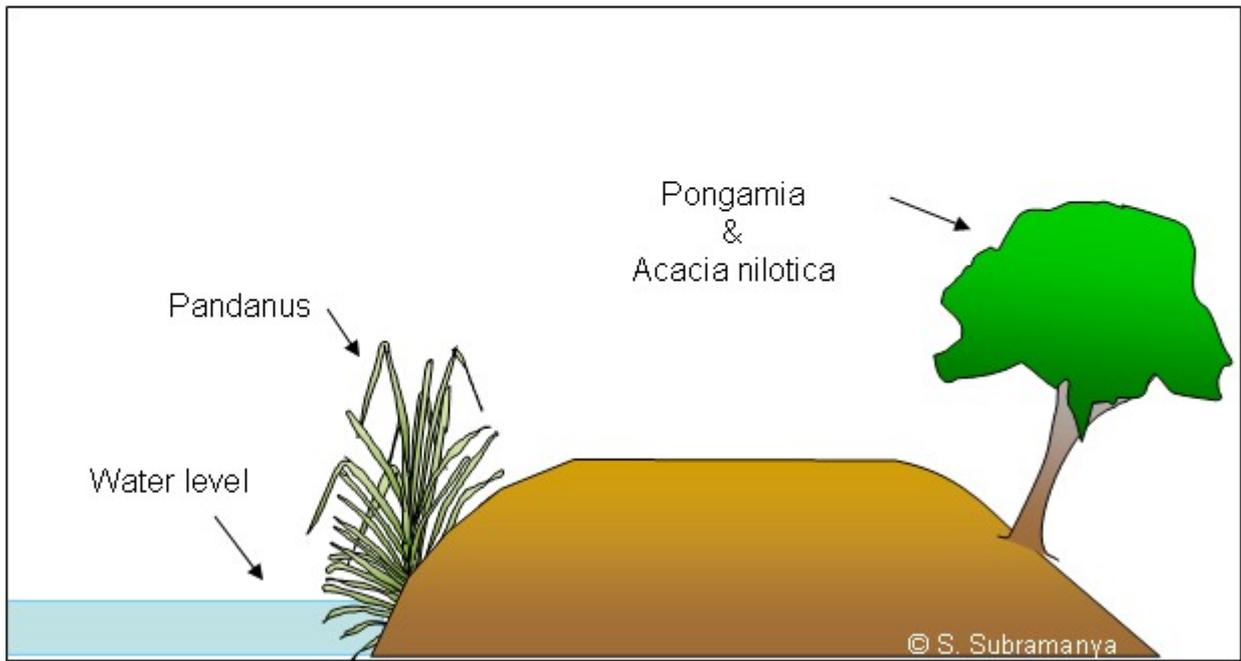
Adviser to the Government of India

**Annexure C**

**List of tree species for live-fencing around lakes**

<b>Sl.No.</b>	<b>Common Name</b>	<b>Scientific Name</b>
1.	Neem (Bhevu)	<i>Azadirachta indica</i>
2.	Peepul (Aarali Mara)	<i>Ficus religiosa</i>
3.	Ficus (Aathi hannu)	<i>Ficus recemosa</i>
4.	Banyan (Goni Mara)	<i>Ficus benghalensis</i>
5.	Jamun (Sanna Nerale Mara)	<i>Syzygium cumini</i>
6.	Red Silk Cotton (Buruga)	<i>Bombax ceiba</i>
7.	Flame of the forest (Muthuga)	<i>Butea monosperma</i>
8.	Indian Coral Tree (Harivana)	<i>Erythrina indica/verigata</i>
9.	Rain Tree	<i>Samanea saman</i>
10.	Bamboo	<i>Dendrocalamus strictus</i>
11.	Gliricidia	<i>Gliricidia sepium</i>
12.	Indian Cork tree	<i>Millingtonia hortensis</i>

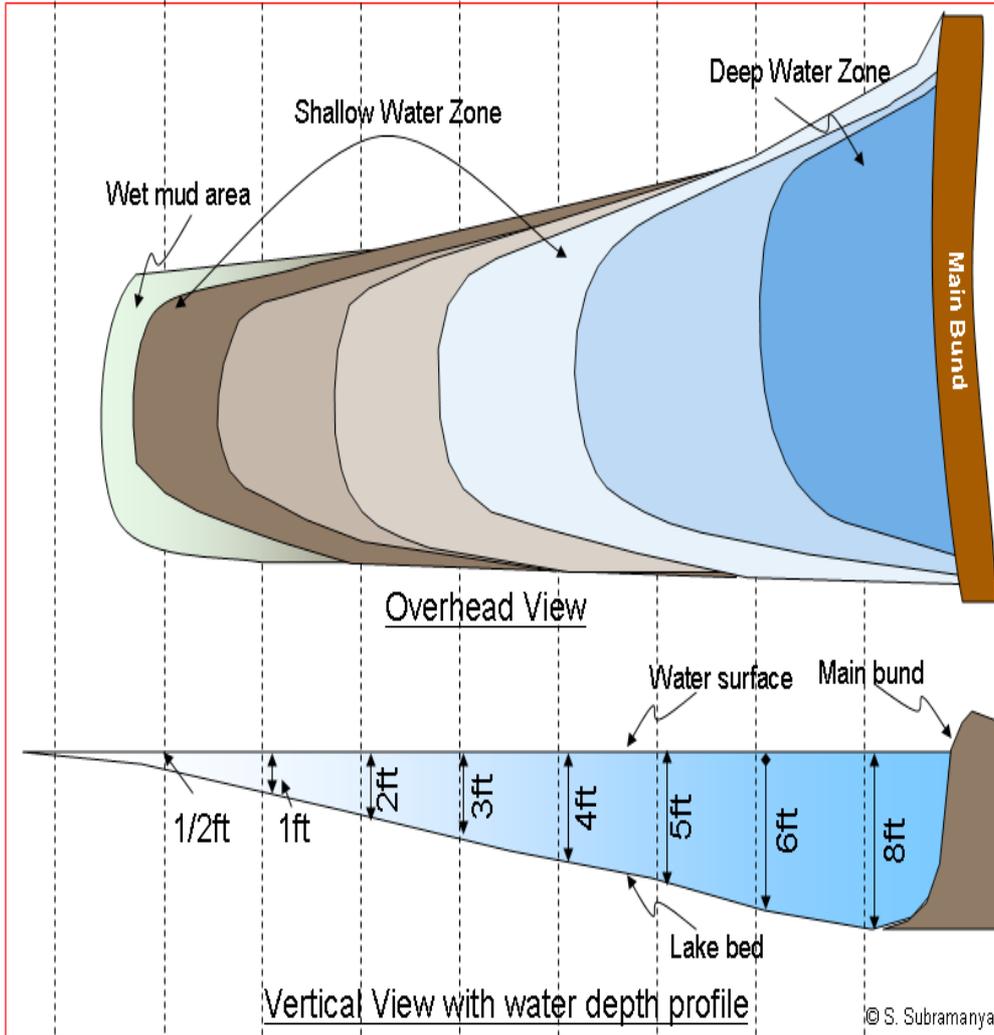
**Annexure D**  
**Planting plan for strengthening Lake Bund**

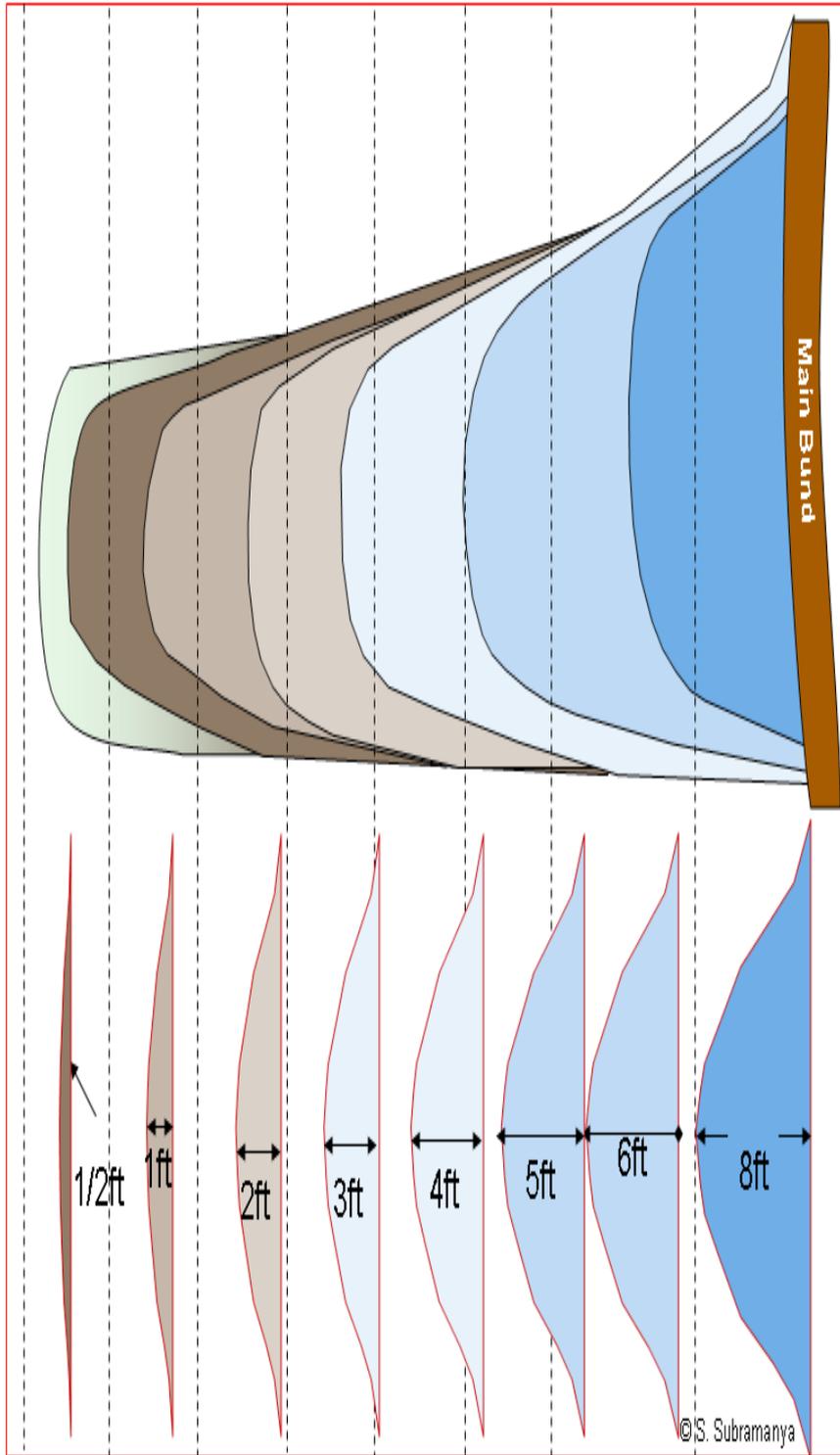


**Planting plan for main bund in Lakes**

Annexure E

**Desilting Pattern and Depth Profiles to be maintained in a typical lake**





Cross-sectional view of depth profiles

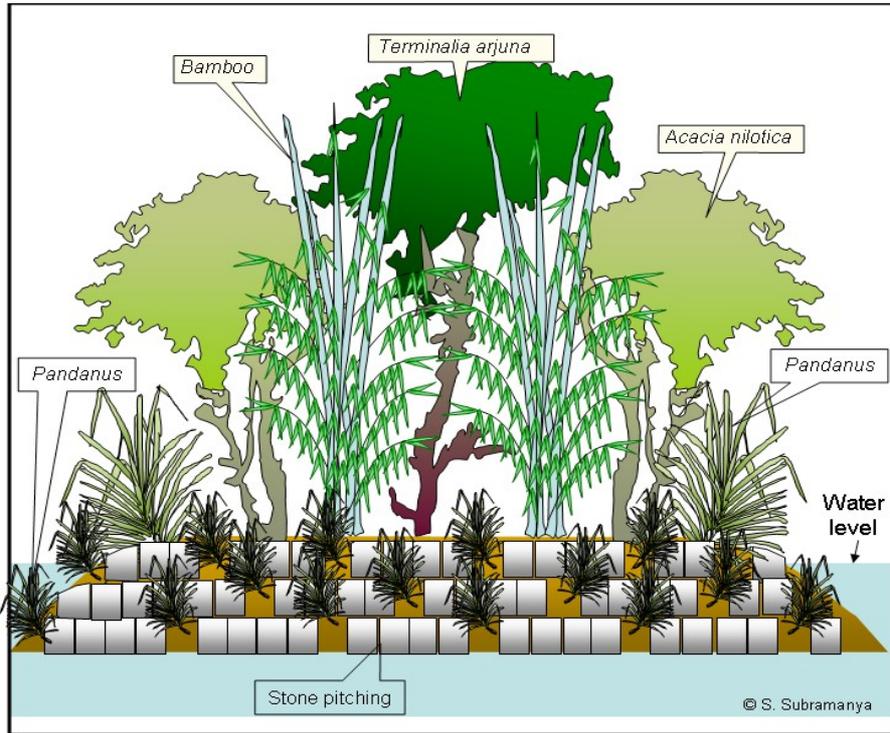
**Annexure F**

**List of tree species for planting along RajaKaluves**

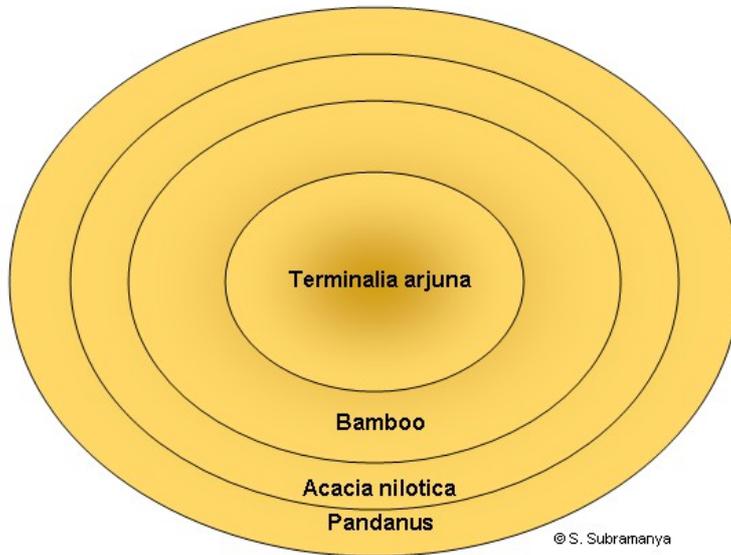
<b>Sl.No.</b>	<b>Common Name</b>	<b>Scientific Name</b>
1.	Neem (Bhevu)	<i>Azadirachta indica</i>
2.	Ficus (Aathi hannu)	<i>Ficus recemosa</i>
3.	Pogamia (Honge)	<i>Pongamia pinnata</i>
4.	Jamun (Sanna Nerale Mara)	<i>Syzygium cumini</i>
5.	Flame of the forest (Muthuga)	<i>Butea monosperma</i>
6.	Indian Coral Tree (Harivana)	<i>Erythrina indica/verigata</i>
7.	Bamboo	<i>Dendrocalamus strictus</i>
8.	Gliricidia	<i>Gliricidia sepium</i>
9.	Indian Cork tree	<i>Millingtonia hortensis</i>
10.	Peepul (Aarali Mara)	<i>Ficus religiosa</i>

**Annexure G**

**Island Design and choice of Tree Species**



Design and Planting plan for islands to be formed within lakes



Planting plan for Islands: Planting different tree species in concentric zones

## Annexure H

### Bird Attracting Plants

*S. Subramanya*

PHT Scheme, 'J' Block, GKVK Campus, University of Agricultural Sciences, Bangalore 560 065. E-mail: [subbu.subramanya@gmail.com](mailto:subbu.subramanya@gmail.com)

#### **A. Fruit yielding bushes/trees**

<b>Sl.No.</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>
1.	Meliaceae	Neem (Bhevu)	<i>Azadirachta indica</i>
2.	Moraceae	Peepul (Aarali Mara)	<i>Ficus religiosa</i>
3.	Moraceae	Ficus (Aathi hannu)	<i>Ficus recemosa</i>
4.	Elaeocarpaceae	Singapore Cherry / Jamaican Cherry (Gasagase Mara)	<i>Muntingia calabura</i>
5.	Moraceae	Paper mulberry	<i>Broussonetia papyrifera</i>
6.	Moraceae	Banyan (Goni Mara)	<i>Ficus benghalensis</i>
7.	Moraceae	Mulberry (Hippu Nerale)	<i>Morus alba</i>
8.	Myrtaceae	Jamun (Sanna Nerale Mara)	<i>Syzygium cumini</i>
9.	Linaceae	Bastard's Sandle (Devadaru/Jivadali)	<i>Erythroxylum monogynum</i>
10.	Euphorbiaceae	Indian Snow Berry (Bilehuli Gida)	<i>Securinega leucopyrus</i>

**B. Nectar yielding trees**

<b>Sl.No.</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>
1.	Bombacaceae	Red Silk Cotton (Buruga)	<i>Bombax ceiba</i>
2.	Fabaceae (Papilionaceae)	Flame of the forest (Muthuga)	<i>Butea monosperma</i>
3.	Fabaceae (Papilionaceae)	Indian Coral Tree (Harivana)	<i>Erythrina indica/verigata</i>
4.	Fabaceae (Papilionaceae)	Erythrina (Mullu muruku)	<i>Erythrina suberosa</i>
5.	Fabaceae (Papilionaceae)	Eryrhina (Keechige)	<i>Erythrina stricta</i>
6.	Myrtaceae	Bottle Brush	<i>Callistemon lanceolatus</i>
7.	Fabaceae (Papilionaceae)	Gliricidia	<i>Gliricidia_sepium</i>
8.	<i>Bignonaceae</i>	Indian Cork Tree (Birate mara /Aakasha Mallige)	<i>Millingtonia hortensis</i>
9.	Mimosaceae	Badminton ball tree	<i>Parkia biglandulosa</i>
10.	Bignoniaceae	Jacaranda	<i>Jacaranda mimosifolia</i>
11.	Bignoniaceae	Red Tulip Tree	<i>Spathodea campanulata</i>
12.	Cochlospermaceae	White Silk Cotton (Kaduburuga)	<i>Cochlospermum gossypium</i>
13.	Sterculiaceae	Scarlet-Sterculia	<i>Firmiana colorata</i>

**C. Nectar yielding bushes**

<b>Sl.No.</b>	<b>Family</b>	<b>Common Name</b>	<b>Scientific Name</b>
1.	Fabaceae (Papilionaceae)	Erythrina	<i>Erythrina crista-galli</i>
2.	Malvaceae	Tubular Hibiscus (Kolave Dasavala)	<i>Malvaviscus arboreus</i>
3.	Sterculiaceae	East Indian Screw Tree (Karurigida)	<i>Helecteres isora</i>
4.	Fabaceae (Mimosoideae)	Powder-puff	<i>Calliandra haematocephala</i>
5.	Bignoniaceae	Orange Trumpet Flower	<i>Tecoma smithii</i>
6.	Rubiaceae	Scarlet bush	<i>Hamelia patens</i>
7.	Labiatae	Cup and Saucer Bush	<i>Holmskioldea sanguinea</i>
8.	Lythraceae	Fire-Flame Bush	<i>Woodfordia fruticosa</i>
9.	Verbenaceae	Pink snakeweed	<i>Stachytarpheta mutabilis</i>
10.	Verbenaceae	Queen's Wreath	<i>Petrea volubilis</i>

**D. Butterfly attracting bushes**

<b>Sl.No.</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Family</b>	<b>Method of Planting</b>
1.	Ivory Wood (Beppale/ Kodmurki)	<i>Wrhitia tinctoria</i>	Asclepiadaceae	Single trees in corners
2.	<i>Star Cluster</i>	<i>Pentas lanceolata</i>	Rubiaceae	In lawn corners or 15-20 bushes along borders on opposite sides
3.	Indian Caper (Kathiramullu)	<i>Capparis sepiaria</i>	Capparaceae.	Thorny bush: 2-3 bushes between corners
4.	<i>Aristolochia</i>	<i>Aristolochia bracteolata</i>	Aristolochiaceae	
5.	Cherry Pie	<i>Heliotropium arborescens</i>	Boraginaceae	As low hedge as lawn borders
6.	Pink snakeweed	<i>Starchytarphata mutabilis</i>	Verbenaceae	20 plants as a dense patch between two corners
7.	Ornamental Lantana	<i>Lantana Camera</i>	Verbenaceae	Small patches of 5-6 plants

## ESG model proposal to rehabilitate Venkatappa Kere

### Study Structure

1. Introduction
2. Assessment of Morphology of Lake
3. Review of historical and spatial dimensions of the lake
4. Review of the Existing status of the lake based to identify issues and challenges
5. Proposals for rehabilitation of the lake in ecologically and socially sensitive manner

### Aim:

Conservation and rehabilitation of Subramanyapura lake in an ecologically viable and socially sensitive manner based on cost-effective and economically viable technologies.

### Objectives:

1. To identify threats and disturbances to the lake ecosystem.
2. To assess the extent of encroachment into the lake and its watershed on the basis of Survey of India, Revenue and Google Earth maps.
3. To propose appropriate measures for the protection of the lake territory and also that of its watershed.
4. To identify the potential for constructed wetland and tree park system in the Rajakaluve.
5. To identify alternative space for rehabilitation of poor families who have encroached the lake.
6. To promote ecologically wise methods to enhance the bio-diversity value of the lake.

### Profile of Venkatappana Lake:

Lake name:	Venkatappana kere (nee Subramanya pura Lake )
Assembly name:	176-Bangalore south
Ward name:	174-Uttarahalli
Area:	5.22 Ha ( As per topo sheet )
Perimeter:	1295.37 Mtrs ( As per topo sheet )
Survey number:	uftara halli -64,63,116,120,117
Status:	Polluted

### Location:

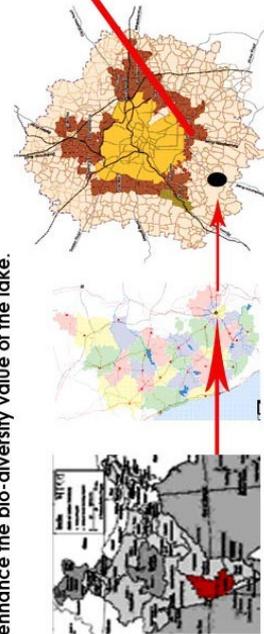
Located in Bangalore South, in Subramanyapura village limits, Uttarahalli Hobli.

### Key Threats and Disturbances to the Lake

- Lake area is seriously compromised by encroachment along the margins.
- Lake waters are highly polluted and eutrophic due to inflow of untreated sewage from Gubbiala village discharge from large apartments blocks of Mantri and Gokula (ISKON).
- Lake is contaminated by disposal of garbage as a means to landfill and encroach from the margins.
- 90-100% coverage by water Hyacinth during 2009-10, prior to which lake waters were relatively clean.
- Serious encroachment along its northern and eastern borders for housing, especially by poor families.
- Watershed is threatened by potential encroachment
- Immersion of Ganesha Idols during the festival.
- Serious threat to lakebed area from potential road widening.

### Potential impacts of Neglect

- Possible encroachment of lake and its watershed, especially Rajakaluve.
- Eutrophication and consequent fish kills and extermination of other aquatic life forms.
- Public health hazard due to infection of drinking water sources.
- Extinction of habitat of birds, especially migratory waterfowl.
- Potential depletion of surface and ground water flows, resulting in local water scarcity

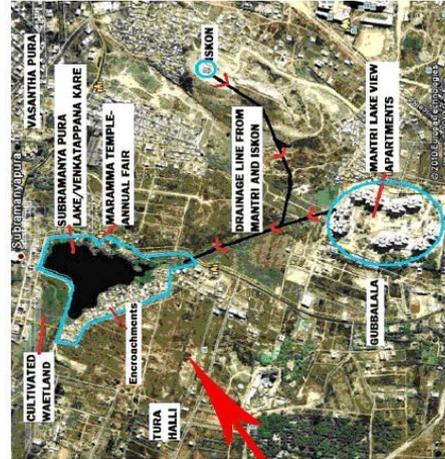


India

Karnataka

Bangalore

Venkatappana kere



**CONSERVATION OF VENKATAPPANA-KERE, SUBRAMANYAPURA, BANGALORE**

Kirti. V, III Sem M.Arch. B.M.S.C.E. Sh1: Introduction Advisor: Leo Saldanha, Coordinator, Environment Support Group, Bangalore

**Morphology of lake**



**Survey of Indic Map 1976**

The village map reveals the lake is surrounded by grazing pasture (Gomala) which are public commons. Today, these commons are severely encroached.



**Mantri apartments**

**Present lake photographs**



**Google Map 2000**



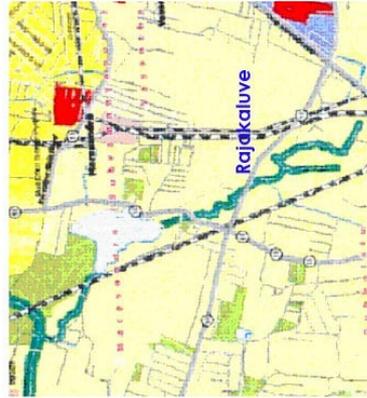
**Google Map 2005**



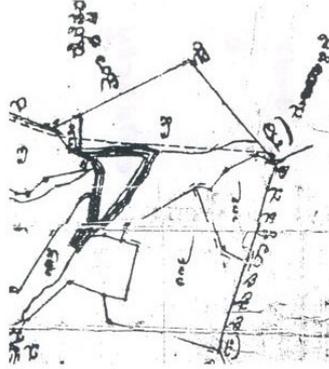
**Google Map 2010**



**Village Map-1993**



**Revised Master Plan-2015**



**Revenue Map-1992**

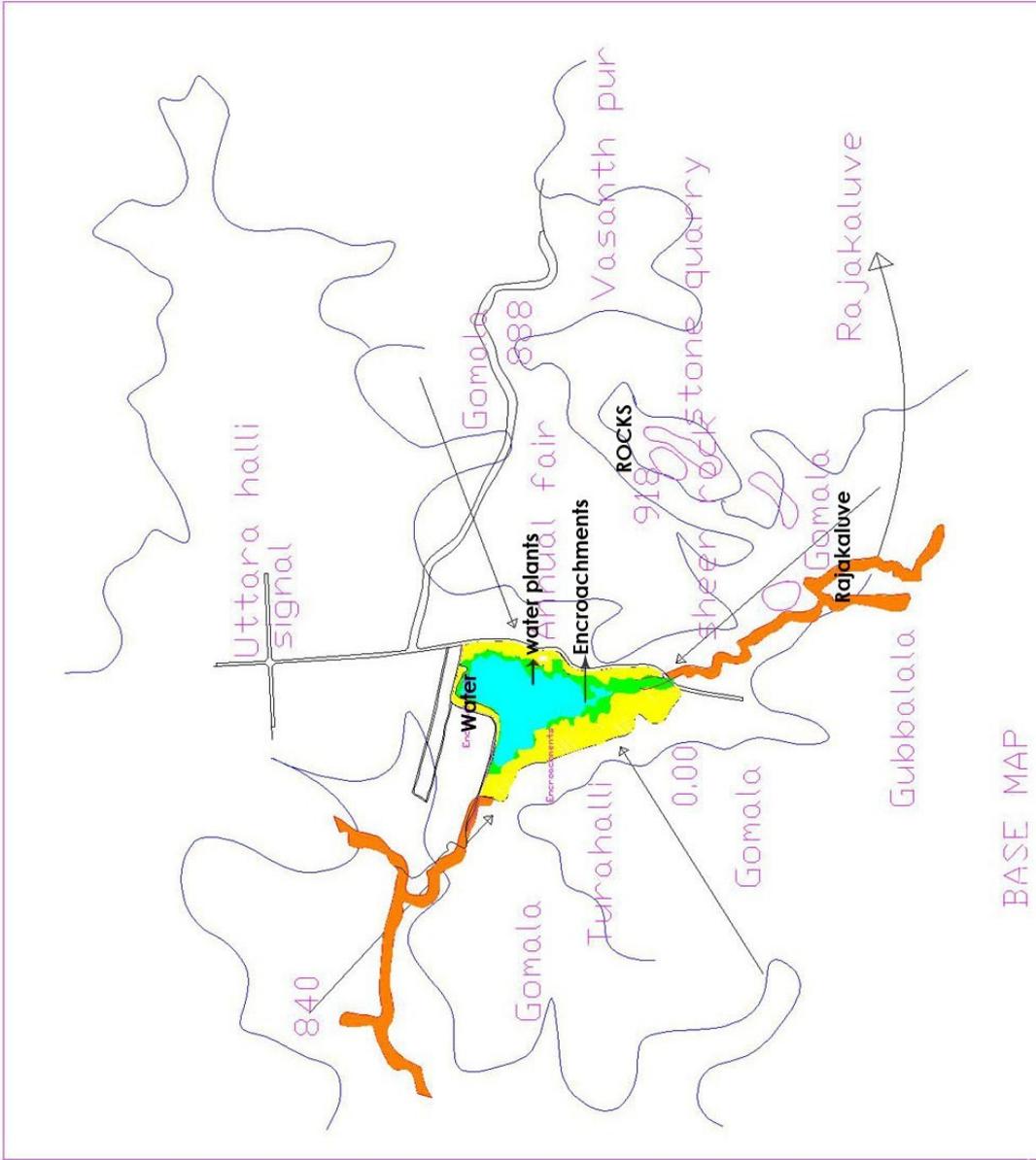
There is serious encroachment of Lake spread and catchment area.



**CONSERVATION OF VENKATAPPANA-KERE, SUBRAMANYAPURA, BANGALORE**

**Kirti. V. III Sem M.Arch. B.M.S.C.E. Sh2: Morphology, Advisor: Leo Saldanha, Coordinator, Environment Support Group, Bangalore**

**Base Map :**



A composite reproduction of Venkatappa Kere lake area and its watershed based on overlaying and comparison of Survey of India, Revenue, and Google Earth Maps.

The yellow area demarcates lake bed area, that is encroached by poor for housing.

The typical water spread is indicated in blue.

The water stream (Rajakaluve), which is largely undisturbed is indicated in red, surrounding which are grazing pastures.

The composite map reveals that the Gomala land is still open to public use, despite heavy encroachment.

Total Area of the Lake - 18.6 acres  
catchment area of lake - 6.6 acres

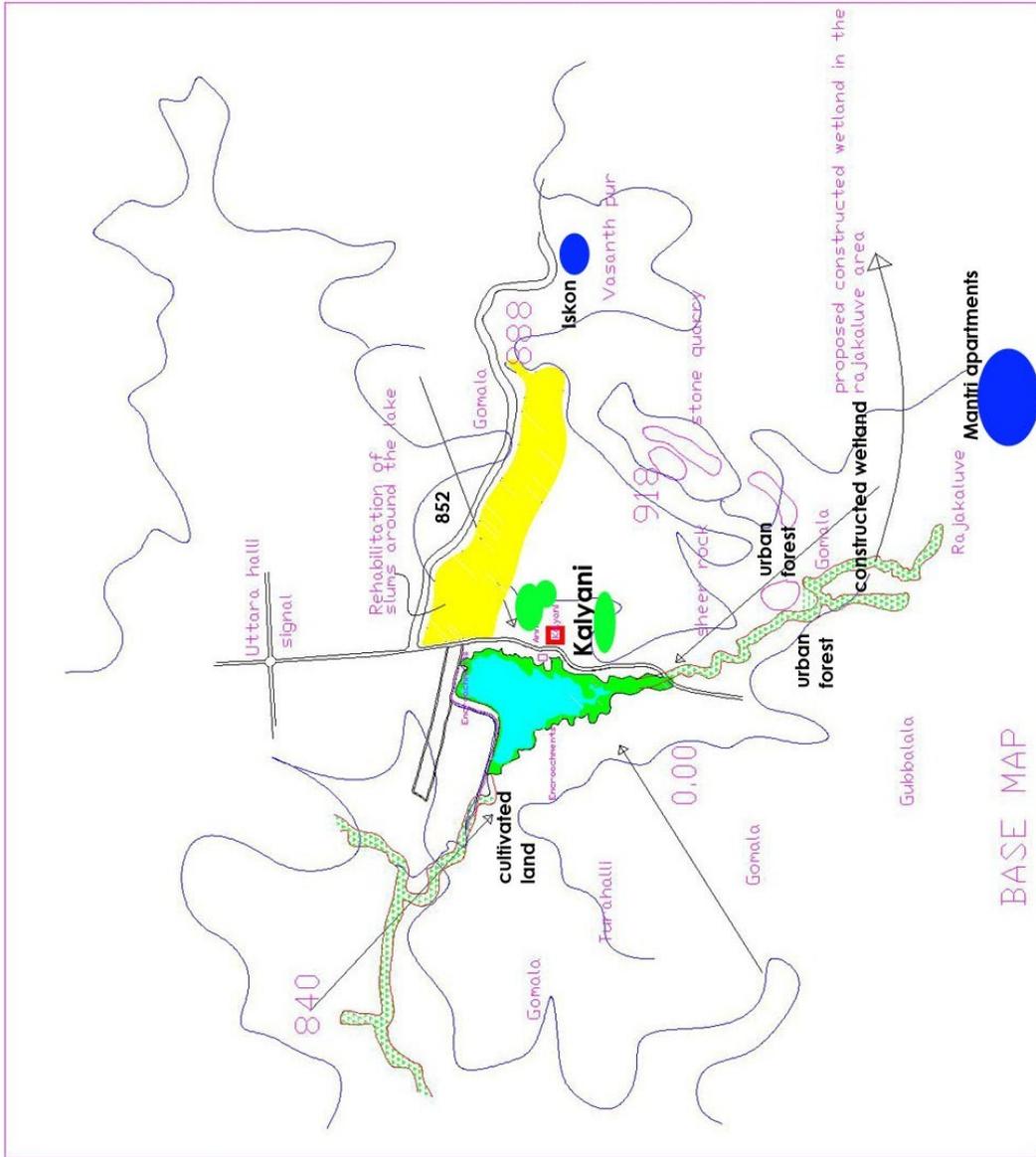
Approx. houses on the lake bed - 350  
Rajakaluve area - 40,000sq.mt



**CONSERVATION OF VENKATAPPANA-KERE, SUBRAMANYAPURA, BANGALORE**

Kirti. V, III Sem M.Arch. B.M.S.C.E. Sh3: Base map, Advisor: Leo Saldanha, Coordinator, Environment Support Group, Bangalore

**Proposals**



**Proposals:**

The existing encroachment into Lake Bed by poor can be humanely rehabilitated by designating an area of Gomala land for group housing. All other encroachers may be dealt in accordance with law.

The Rajakaluve can be converted into a Constructed Wetland to contain surface water pollution flowing into the lake.

The area around the Rajakaluve can be converted into and aesthetically pleasing and biodiversity rich free park.

A Kalyani can be provided in the upstream reaches of the Gomala land, as indicated, for immersion of the Ganesha idols, as well as for providing drinking water source for cattle.

The discharge of untreated sewage from large apartment complexes developed by Mantri and Gokulam Apartments must be immediately tackled. They must be allowed to discharge only treated sewage into the Rajakaluve.

Similarly, discharge from surrounding villages should be channelised into constructed wetlands for treatment.

No garbage disposal in the watershed or lake bed must be allowed.

The slums which have developed in and around the lake must be fully provided with sanitary facilities so as not to further contaminate the lake.

The lake has to be desilted in an ecologically sensitive manner.

A recreational park may be developed in the Gomala land including play facilities for children.

The CDP-2015 that does not recognise the Gomala land and lake area as public commons must be revised and corrected to provide for the above.



**CONSERVATION OF VENKATAPPA NA-KERE, SUBRAMANYAPURA, BANGALORE**

Kirti. V, III Sem M.Arch. B.M.S.C.E. Sh4: Proposals Advisor: Leo Saldanha, Coordinator, Environment Support Group, Bangalore

**Constructed Wetland:**

A constructed wetland is a transitional environment and the most biologically diverse of all eco-systems.

Plant life found in wetland are -

**Mangroves, Water lilies, Cattails, Sedges, Tamarack, Black spruce, Cypress, Gum, etc.**

**Animal life includes many different amphibians, reptiles, birds, insects and mammals.**

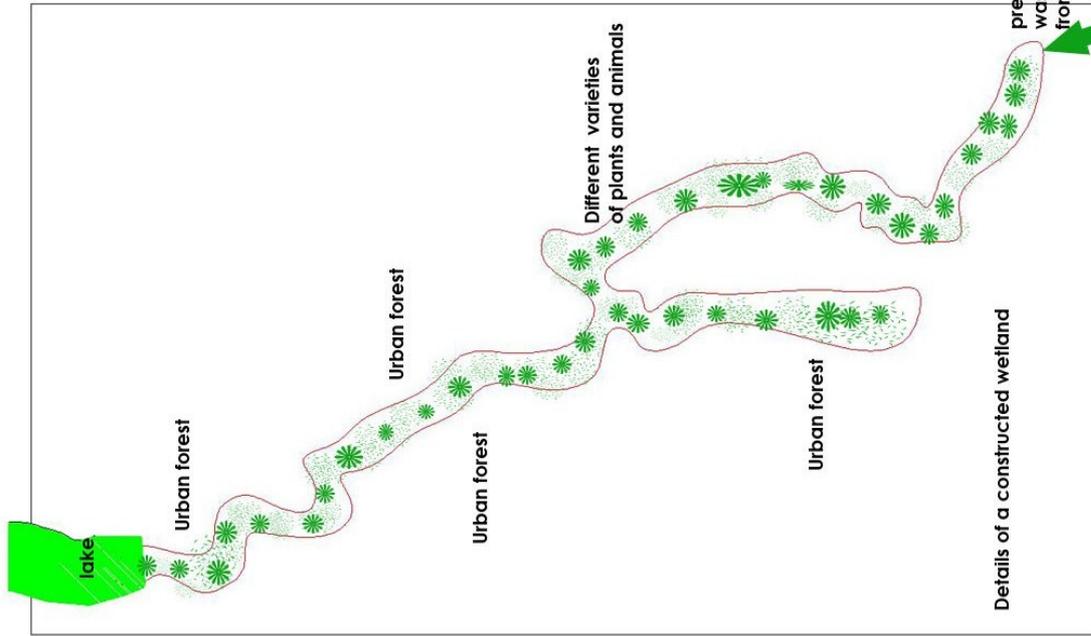
Constructed wetlands serve as natural waste water purification systems.

Raw or pre-treated waste water is piped into the plants and flows through. The elimination processes take place during this passage.

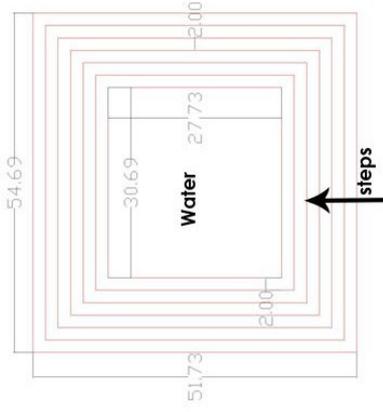
They are based on various complex physical, chemical and biological processes within the association of substrate, macro and micro-organisms.

Pollution reduction in constructed wetlands:

Pollutant	% reduction
Suspended solids	80%
Litter	70%
Total phosphorous	45%
Total nitrogen	45%



**Kalyani or Idol immersion tank:**



Since the ganesha idol immersion creates lot of pollution to the lake, it is proposed to have a separate Kalyani or idol immersion tank adjacent to the lake as shown in the base map.



N

## Annexure K

### Karnataka Lokayukta calls for active Public Action to save Bangalore Lakes

#### Report of workshop on "Urban Lakes as Ecological, Cultural and Public Spaces"

Organised by

**Environment Support Group**

in collaboration with

**Karnataka State Council for Science and Technology**

Dr. H. Marigowda Hall, Lalbagh, Bangalore

26 September 2009

([download report](#) - PDF, 160 KB)

Environment Support Group in collaboration with Karnataka State Council for Science and Technology organised a day long workshop on "Urban Lakes as Ecological, Cultural and Public Spaces" today (26 September 2009) at the Dr. Marigowda Hall, in Lalbagh, Bangalore.



Hon'ble Lokayukta of Karnataka, Justice Santosh Hegde addresses the gathering Seated from Left: Dr. Subramanya, noted ornithologist; Dr. D. S. Ravindran, IFS, and Dr. Esha Shah of the University of Sussex.

The keynote address for the workshop was delivered by Hon'ble Lokayukta of Karnataka Justice Santosh Hegde. He addressed the overall lake situation in Bangalore and then on more specific issues of governance that worsen conditions for lakes. He spoke of the undulating topography of Bangalore, lending itself to the huge system of

manmade lake chains that was in place until relatively recently. He went on to explain that building upon and encroaching on lakes leads to problems of flooding, since problems of overflow were previously handled by water flowing from the upper lakes of a lake series to those further down. He spoke of other problems facing lakes, such as pollution from sewage and heavy metal contamination.

Justice Hegde attributed the problems facing Bangalore's lakes to the negligent attitudes of short-sighted politicians and an unconcerned bureaucracy. He claimed that faulty governance and overcrowding of the city beyond its infrastructural capacities were both to blame for the death of the city's lakes. The only hope he saw was in people organising themselves to question the absolute collapse of the governance systems and engaging with each and every public action, demanding transparency, exposing corruption and ensuring only that development would take place that truly benefits the people. He spoke with alarm that less than 15% of public expenditure truly meets public objectives and cited the recent CAG report which exposed that Rs. 51,000 crores of investment in programmes like NREGA were unaccounted. In that sense he wondered if the the thousands of crores that the Government proposed to be invested in rehabilitating lakes should be perceived as benefiting the public to the extent of 15%? Justice Hegde also answered many questions from the audience and encouraged people to intervene at the very inception of a problem and not to presume it is not their problem at all.

Speaking on "A Historical Anthropology of Tank Irrigation Technology in South India" Dr. Esha Shah of the University of Suxsex investigated the history of tanks in Karnataka, studying in particular the folklore and songs that grew up around tanks. She disputed the common

assumption that in pre-colonial times tanks were collectively constructed and maintained by communities, attributing that assumption to a tendency to glorify and romanticise history.

Esha Shah discussed the system through which tanks were constructed, where temples would provide resources (donated by the elite of the community) and lower caste communities provided labour, often under cruel coercion. She spoke of folk tales passed on through the communities which support the latter theory, in which their people were through various means tricked and cursed into poverty and tank building. She also spoke of the complex mythology that would grow up around tanks, with songs and shrines created for women who were periodically sacrificed to make a tank provide water during droughts.

She also spoke of how tanks were not initially built with a view towards environmental sustainability. Of the over 35,000 tanks in Karnataka, merely 300 were built during the British period and most of the rest during the reign of the Vijayanagar Empire. The basic objective was to expand agriculture, particularly paddy cultivation, to places with water scarcity.

She concluded by saying that history does not hold the key to the problems of the present. Our history did not have the democratic structure of present day society, and thus its often brutal solutions to problems could not be replicated in society today. She said that we need alternative ways to imagine the future keeping well our memories from the past as a reminder of what to avoid.

Dr. S. Subramanya of the University of Agricultural Sciences spoke of the structure and ecological diversity of tanks, as well as strategies for their effective management. He explained that all tanks are man made, built so that the deepest zone lies closest to the bund, after which the water grows progressively shallower. They are also traditionally seasonal in nature, inundated during the monsoon and then dry by summer through a combination of evaporation and draining of water for irrigation. Both these factors, that of its structure and seasonality, are needed to maintain its ecological health.

The different zones of the tank support different types of wildlife, with deep water supporting birds such as ducks and pelicans and shallow water supporting birds such as sandpipers and stilts. The tank supports many other types of wildlife as well, from plankton to beetles, frogs and snakes. The health of the tank can be judged by the presence of certain sensitive organisms. For instance, in the presence of excess sewage giant water bugs cannot survive. He spoke of problems facing lakes in Bangalore, from the loss of the catchment area, to sewage inflow, to disturbance from fishing and poor redesign.

From left: Dr. Subramanya, noted ornithologist; Dr. D. S. Ravindran, IFS, Hon'ble Lokayukta of Karnataka, Justice Santosh Hegde and Dr. Esha Shah of the University of Sussex.

In the ensuing discussion the question was raised, of what role lakes have to play in today's social context, so different from that under which they were built centuries ago. His response was that lakes are good lung spaces for the city, and help recharge ground water. They control floods and provide a habitat for wildlife, which in turn can be good for the education of children. Esha Shah

added that at one point it was horrendously proposed by a British designer that the pyramids should be dismantled in order to use their material to build the Aswan Dam in Egypt. What we are now doing is no different, by widespread encroachment and purposive decay of tank systems. She strongly argued that lakes must be perceived as a part of our natural landscape and also as an accumulation of our cultural memories. Their current use must therefore be guided by wise choices that suits our present times while protecting the needs of the future.

Dr. D. S. Ravindran, IFS, who chaired the morning session complimented the speakers for their excellent, provocative and thought provoking presentations. Summarising this session he advocated a concentrated effort in saving lakes as public commons. He alerted that Bangalore



has amongst the lowest per capita open spaces and the denegeration of the quality and access to public spaces has taken place in a little over a decade. While attributing such major losses to poor planning, he stated that the current spate of flooding across the city was a result of callous encroachment of lakes and their interconnecting canal systems. Unless a serious effort was made to redeem the situation, and that not by investment in unnecessary infrastructure, but through a wholistic, and ecologically and culturally sensitive community based management process, quality of life in Bangalore is likely to worsen tremendously.

In the afternoon, the first talk was by Sunil Dutt Yadav. He explained the legal issues surrounding lake privatisation. Saying that the law represents the minimal level of morality, he claimed that all development must occur strictly in accordance with the law. This is the minimum the public expects of the Government. The state must be just as accountable to the law as individuals. It is only the active role of the public at large that will ensure that the state is accountable and there is simply no other way to prevent lawlessness. Moreover, we cannot just criticize illegal acts in privacy. In order to have any efficacy, we must bring our protests to the streets.

He explained the legal case against lake privatisation. According to Section 67 of the Karnataka Revenue Act lakes are the property of the state. In other words, it was not legal for the state to transfer sovereignty over lakes to the Lake Development Authority (LDA). The LDA set up as a non-profit to work for the regeneration of lakes cannot therefore use public money in order to make a profit off lakes by trading them for maintenance through commercial leases with private enterprises. Further, according to the Public Trust Doctrine that the Supreme Court has upheld in many cases, the public commons should be maintained based on the principle of intergenerational equity. Posterity must have access to the public commons, and that means it must have access for free. Citing an example here, he said the very fact that a poor person had to pay Rs. 2/- to use the toilet must be considered an outrageous act of violation of fundamental human rights. Toilets ought to be treated as public commons and the Government which invests thousands of crores in various projects should not find it difficult to provide toilets for the poor. By a similar principle, public commons should not be perceived as usable for only those with access to resources and it is the Government's obligatory function to ensure access to commons is open to all with reasonable restrictions on use.

Speaking next, Mr. A. R. Shivakumar, Executive Secretary of the Karnataka State Council for Science and Technology presented an engaging presentation on the massive public benefits of rain water harvesting. He spoke of the extreme water scarcity problems facing India today, and how Bangalore specifically can combat its water problems through rain water harvesting. Past wisdom of harvesting rain through thousands of tanks and sourcing its waters through millions of open wells, has now reduced us to a situation that such social intelligence which is common place is being ignored by the lure of expensive and inappropriate technological interventions. He argued that the borewell was a significant reason for the deliberate neglect of tank systems in rural and urban areas, and today despite drilling hundreds of feet water could not be sourced.

The solution for all this is fairly simple he argued. Simply by harvesting rain water that falls free on everyone's roof, and ensuring its storage to one's financial capacity, and making the overflow going into the ground, was the best insurance of water we could build. He cited the unfortunate tragedy of our times that Bangalore is flooded and yet people have to buy drinking water, when we are all very excited about finding some water on the moon. Rain water harvesting is simple common sense practice of protecting one's own living comforts, and comes for free. This should become a popular movement and one should not wait for government regulations or sheer necessity to force us into adopting such simple ways of securing our water needs.



Shri. A. T. Ramaswamy and Shri. Leo Saldanha of the Environment Support Group

Delivering the concluding address, Shri. A. T. Ramaswamy, formerly Chairman of the Joint Karnataka Legislature Committee on Encroachment

of Public Lands in the Bangalore area, lamented the gross forms of corruption that have taken over our systems of governance. The public at large is as guilty as politicians, bureaucrats and builders, as they encourage such dangerous practices with their silence and indifference. The need of the hour is public involvement in decision making and not public indifference.

He shared many instances of corruption that had led to loss of public commons. Citing a Revenue Department assessment, he said over 5,000 acres of public commons in Bangalore was encroached based on bogus documentation. No Government must be spared for such blatant aggression on public commons, as there was simply rhetorical commitment to enforce the rule of law, and no real action follows. On the matter of pollution of lakes, he lamented that the Karnataka State Pollution Control Board was very happy to issue hundreds of notices, but there is not one instance of conviction for the three decades the Board has functioned. Such failure of public agencies should not be easily forgiven by the people, as it is clearly indicative of the gross corruption in the system.

Citing Mahatma Gandhi, he encouraged people to develop a sense of justice based on the conscience within, than merely the rule of law. As is evident, the rule of law is easily subverted, especially by influential classes, including leaders in the government and the protectors of Constitutional rights. He wondered if the voice of reason and protection had itself turned into a murderer of peoples rights? Almost all of the 50,000 acres of public lands encroached in Bangalore was by the elite, the influential and the very connected powers in the Government. Were lakes and other public commons marginally encroached by the poor out of sheer necessity, one has to take a humanistic view and help them sustain their life and livelihoods. But today we are witnessing encroachment by greedy grabbers – people who have so much and feel they don't have enough. Only public opposition can end this menace of our society he argued.

Ms. Bhargavi S. Rao, Trustee and Coordinator (Education) of Environment Support welcomed the audience and also thanked them for all their excellent participation and cooperation.

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