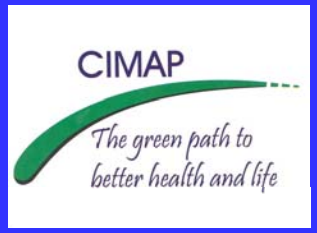
Conservation & Management of Urban lakes (water bodies) : Concerns & Strategies



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Why lakes ?

- Lakes (natural / man made) better called water bodies are reservoirs of water; serve as source of drinking water.
- Act as biological habitats (productive areas).
- Act as nursery ground for fish & other aquatic dwellers.
- Act as seasonal home for a variety of migratory birds.
- Offer economic, aesthetic & recreational values.
- Help in regulated cultivation of edible plants like *Nelumbo*.
- Absorb large quantities of storm water & minimize the flooding of adjacent areas.
- Assist in ground water recharge.
- Function as natural filters and help in keeping the urban areas cool

Lake types

- Depending upon the nutrient level of the lakes they are classified as:
  - Oligotrophic (nutrient poor) – clear, low concentration of biodiversity.
  - Mesotrophic (average level nutrients)
  - Eutrophic lakes (nutrient rich) have dense biodiversity.
  - Hypertrophic lakes (excessively nutrient rich) have poor clarity, low dissolved oxygen, rich algal bloom.
- Most lakes in & around Bangalore have already reached this condition due to human activities; such lakes are not of much value to humans and therefore are in urgent need of resurrection.

Current status of urban lakes

- Facing various degrees of environmental degradation due to encroachments, eutrophication & siltation.
- Increasing population in urban areas is targeting the water bodies as sinks for contamination.
- Anthropogenic pressures like infrastructure development, housing & encroachments of lake beds (common in Bangalore) coupled with public effluent sources are the prime factors for degradation of urban lakes. In 2006 high power land encroachment eviction committee revealed 708 unauthorised constructions in raja kaluves and lake beds
- Drinking water supply from urban lakes has become non potable.
- Biodiversity is threatened ; flood absorption capacity completely lost.
- Prolific growth of water hyacinth in most lakes has resulted in breeding of disease causing vectors.
- Last but not least, the immersion of idols (Ganesha festival) adds to the metallic pollution.

Eutrophication of lakes

- Most of the lakes surrounding Bangalore are gradually shrinking due to deposition of silt on account of undesirable human activities.
- Disposal of untreated sewage & dumping of garbage (domestic wastes including human wastes) by local residents residing in the surrounding lake beds.
- Majority of the urban lakes have already reached a critical stage with their changed hydrological, biological & ecological setting. Therefore, this calls for an urgent stock taking & even reversal of eutrophication process if we have to attempt conservation of lakes.

Encroachment of lakes*

- Most lakes in Bangalore have disappeared due to encroachment & construction activity both by authorizied/unauthorized agencies.
- The city once had 141 lakes of which 7 cannot be traced, 7 are reduced to small pools of water, 18 have been unauthorisedly encroached by slums and private parties, 14 have dried up and are leased out by the Government. 28 lakes have been used by the Bangalore Development Authority to distribute sites and build extensions for residential areas. The remaining 67 lakes are in fairly advanced state of deterioration. Valley zones of most of these lakes are degenerated resulting in floods during heavy rains

Source: http://en.wikipedia.org/wiki/Lakes_in_Bangalore

Restoration & Conservation of dying lakes

Following strategies recommended :

- Check the process of eutrophication.
- De silting of lakes; further silting be checked by suitable afforestation of catchment areas.
- Clearly demarcate the lake margin & stabilize by suitable vegetal cover.
- Regulate the use of insecticides/pesticides in the catchment areas to check lake pollution from agriculture run off.
- Ban any agricultural practice in the lake basin.
- Sewage must be diverted away from the lakes.

- Allotment of land around the lakes particularly in the valley zones and storm water drains for any kind of development must be totally banned.
- Flora in the catchment area should be preserved & additional afforestation programmes undertaken.
- Check the overgrowth of aquatic weeds like *Eichhornia, Azolla, Alternanthera* etc. through manual operations.
- Washing & bathing in the lake must be prohibited.
- Undertake in depth study of lake hydrology (flow of water, through inlets, outflow pattern, evapo-transpiration) for maintaining optimum physico- chemical characteristics & water levels.
- Undertake regular monitoring to assess the biological status of lakes

- Socio-economic studies & land use planning in & around the lakes can help in providing ecological basis for improving the quality of lakes.
- Encroachment of lake beds by unauthorized /authorized agencies must be immediately stopped.
- Evict all unauthorized occupation in the lake beds as well as valley zones.
- Aquatic plants greatly aid in retarding the eutrophication of aquatic bodies; they are the sinks for nutrients & thereby play a significant role in absorption & release of heavy metals. Therefore, knowledge of the ecological role of aquatic species is necessary for lake preservation.
- Lastly environmental awareness programmes can greatly help in the protection of the water bodies.

Some problems noticed by SEAC members with regard to constructions near lakes

- Some construction activities in the lake bed come up for environmental clearances after obtaining statuatory clearances from BBMP, BDA, Forest department etc.
- Most of the construction activities near lakes are actually the reclaimed lake beds.
- In my opinion we should not generalize the minimum 30 m distance from lake bed as “no development zone”. This should be determined on a case to case basis by an expert committee who can look into the lake contour, drainage system, inflow & outflow pattern etc.
- It is also not clear as to which authority maintains the past records of actual lake boundaries.

Lake Development Authority

Main mandate

"Working solely for the regeneration and conservation of lakes in and around Bangalore city within BMRDA jurisdiction in the first instance, would be extended to other parts of Karnataka subsequently".

I feel that the nomenclature should have been

"Lake Protection Authority".

Concluding remarks

In the name of development of infrastructure coupled with human greed, most of the urban lake beds are in various stages of encroachment. As in Bangalore alone we have already sacrifised as many as 94 good lakes. Existing lakes are seriously threatened. Therefore, **serious and strictest conservation measures** are urgently needed to save the remaining dying lakes. Otherwise, the so called civilized societies will have to repent for their actions, which may be too late for reversal.


THANKS