

Development of lake conservation. Desarrollo de la conservación lacustre

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ABSTRACT

The city of Bengaluru, once known as the Garden City of India and the City of Lakes, has now transformed into the Silicon Valley of India. This transformation has happened over the last few decades and has caused major changes to the City's landscape. One of the important issues the city faces today is the scarcity of water. Researchers owe this issue to the depletion of lakes due to high pollution levels, encroachment and dumping of solid waste in the lakes. The neighborhood Bannerghutta is located in the Southern part of Bangalore Metropolitan Region, which is in developing stages and handful of lakes are found and comes under Minor Irrigation Department. The project focusses on Safeguarding the lake and transforming buffers into public recreational areas with functional strips of riparian vegetation. Safeguarding of lake ensures the habited of that area is preserved and protected. The transformation of lake buffer zones into public recreational spaces ensures the area to be free of any buildings that might otherwise be built on this land. Also, bringing in the public into the space would allow increased public involvement in the lakes campaign and would ensure better maintenance of the functional parts of the lake. A recreational space is perceived as a destination and would add value to the place.

Keywords: Safeguarding the lake, developing stages and handful of lakes.

RESUMEN

La ciudad de Bengaluru, una vez conocida como la Ciudad Jardín de la India y la Ciudad de los Lagos, ahora se ha transformado en Silicon Valley de la India. Esta transformación ha ocurrido durante las últimas décadas y ha provocado cambios importantes en el paisaje de la ciudad. Uno de los problemas importantes que enfrenta la ciudad hoy es la escasez de agua. Los investigadores deben este problema al agotamiento de los lagos debido a los altos niveles de contaminación, la invasión y el vertido de desechos sólidos en los lagos. El vecindario Bannerghutta está ubicado en la parte sur de la Región Metropolitana de Bangalore, que se

encuentra en etapas de desarrollo y se encuentran un puñado de lagos y está bajo el Departamento de Irrigación Menor. El proyecto se enfoca en Salvaguardar el lago y transformar amortiguadores en áreas públicas recreativas con franjas funcionales de vegetación ribereña. La salvaguardia del lago asegura que los habitantes de esa zona se conserven y protejan. La transformación de las zonas de amortiguamiento del lago en espacios públicos de recreación asegura que el área esté libre de cualquier edificio que de otro modo se podría construir en este terreno. Además, atraer al público al espacio permitiría una mayor participación pública en la campaña de los lagos y garantizaría un mejor mantenimiento de las partes funcionales del lago. Un espacio recreativo se percibe como un destino y agregaría valor al lugar.

Palabras clave: Salvaguarda del lago, etapas de desarrollo y puñado de lagos.

INTRODUCTION

Today one of the problems which Indian cities are facing is water crisis, in terms of quantity and quality. This is due to the decrease in fresh water availability. When we observe the global distribution of water 3% of total water on the earth is fresh water, of which surface water constitutes 0.3%, ground water is 30.1%, icecaps and glaciers are 68.7% and others are 0.9%. Lakes, rivers and swamps constitute 87%, 2% and 11% of surface water respectively (The Corbett Foundation, 2010).

Lakes are either natural or manmade. Lakes are important part of the ecosystem and play important role in microclimatic control, perform various environmental, social, economic functions. Some of the direct and indirect uses of lakes are supply of water for households, recharging ground water, providing biodiversity, recreational spaces of the societies. Rapid urbanization around may lakes, together with degradation of their catchments due to various anthropogenic pressure, has resulted in their gradual deterioration. The lakes end up becoming dumping yard to various waste due to which the ground water recharge reduces. This further results in foul smell, mosquito breeding as well as degrading water quality. Such loss of lakes in urban areas results in reduced groundwater recharge, more frequent flood, water logging, etc., creating hazards. Lake conservation requires management as well as actual lake water. At catchment levels, presentation of pollution of storm water drainage as well sewerage is necessary. This project is an attempt to create a balance between all the levels of Ecosystem. The project is not only about cleaning of the lake, it is a step for creating lake as the hub of economic activity, thereby providing an indirect source of live hood for many people and a recreational place.

A paper titled "Restoration and conservation of urban lakes" state that (Mallika et al. 2015) pollution and rapid urbanization is the major threat to the life of the lake. To overcome this threat, it requires for the construction of physical conditions, chemical adjustments of both the soil and water biological manipulation and reintroduction of the native flora and fauna. Authors recommend that each lake is unique and each management process is complex as the concerns it addresses and all the lakes can be assessed for their chemical and physical properties.

A paper titled Conservation urban lakes for tourism and recreation in developing countries: a case from Chandigarh, India examined (Pradeep & Sharma 2013) the water quality parameters of Sukhna lake in Chandigarh city. Their relevance is promoting tourism and habitat of water birds. Identification of water quality and using it for suitable causes was their one if the aim. The maximum portion of the catchment area of the lake was covered by hills and Sukhna wildlife sanctuary which assessed annual tourism recreational value of Chandigarh City. They conclude by telling that lake conservation can be done by improving the catchment area in the form of vegetation and engineering measures for soil and water conservation. A paper titled Bangalore Lake story: reflection on the spirit of a place (Sarika and Pulluri 2014) unpacks the relationship between socio-political processes and modification of landscape during the implementation of Public-private partnership lake development project of Hebbel lake with everyday uses. Author visited the lake for six times during different seasons and made sure through occasional interaction that the story had a "past, now in the future" to understand the various changes were being experienced by the people and cross checked the facts with other historical sources and the study gave a rich description of the social, economic, political and cultural issues around the lake. it as becomes clearer that functional values of lake which involve direct usage of resources such as water or fish or of lesser importance than the lake serveries as a visual and aesthetic backdrop for recreation.

A paper titled Lakes of Bengaluru: The once living, but now endangered peri-urban Commons (Seema and Manjunatha 2018) examines the transformation of lakes in the peri-urban interface of Bengaluru city in the south Indian state of Karnataka. They chose Bengaluru east taluk as the study area. In this study area using Arc GIS a geographic information system software used for working with maps. Developed the study plan, preparing of maps, filing RTI and receiving the responses, translation of RTI document. During the field visits author recorded the GPS points and status of Commons and documented the land use and stated that the lakes have taken different trajectories. The clear dichotomy between the rural and urban that once directed planning, no longer holds good in the context of PUI's especially in the Global South where the PUI landscape is often a contested space. But the state needs to itself see

these lakes as Commons, thereby supporting and enabling their use as a shared resource. A paper on Sustainable approach for conservation and managing for urban water bodies (Sarika and Pulluri 2014) evaluates the difference between the lakes managed by Public-Private Partnership and Government with community participation in terms of use of lakes before and after restoration. According to them proper implementation and achievement of conservation activities should be with community involvement. People should be made aware of the ecological, hydrological, environment and socio-cultural importance of the lake. Role and responsibilities ties of all stakeholders should be clear for developing the working relationship and smooth functioning of the work assigned.

MATERIAL AND METHODS

- The goals for conservation of lakes have to be tailored to individual regions, specific to the problems of degradation and based on the level of dependence. This requires reconstruction of the physical conditions; chemical adjustment of both the soil and water; biological manipulation, reintroduction of native flora and fauna, etc.
- The interpretation of existing trends and scenarios in the process of conservation of lakes as presented in this report is based on interactions with limited key players namely government stakeholders, developers involved in similar projects and personnel involved in the field work.
- It is carried out in 4 following steps.
 1. Formulation of research and Literature review.
 2. Data Collection
 3. Analyzing and Modelling
 4. Conclusion and recommendation
 - 5.

RESULTS AND DISCUSSIONS

Based on the data collected from the catchment area analysis, total cumulative discharge into the lake is 0.37 cumecs. While the capacity of the lake is approximately 6817794.5948 gallons Existing Layout On site, the reservoir part of the lake not properly developed. The existing layout of the lake is as per the following sections.

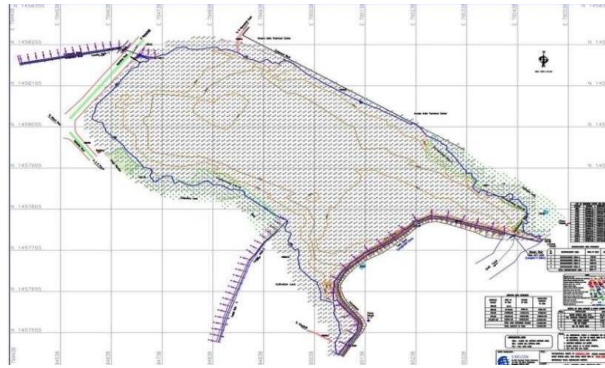


Figure 1: Existing Lake map

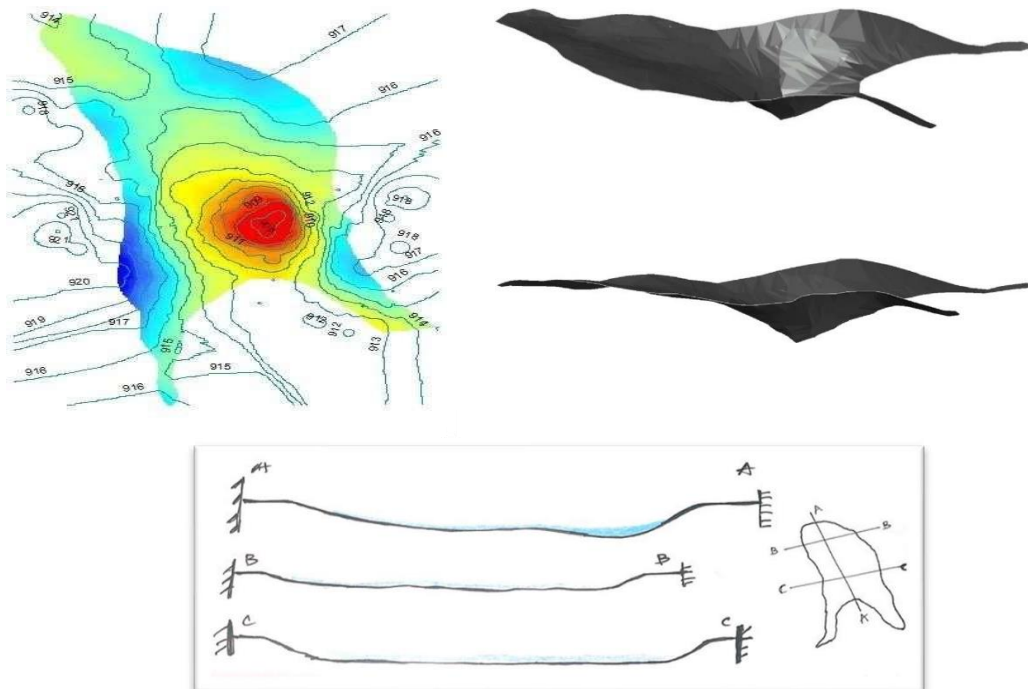


Figure 2: Existing Lake Layout

Design Components for Layout Plan

The major components of the design incorporated in the layout plan may be summarized as follows:

- Urban Landscaped plaza: A space created for public interaction.
- Supporting utilities: In the form of open gym, play area, toilets etc.
- Walking and Jogging track: To reduce vehicular movement around the lake. Parking: Limited number of parking spaces designed.

Master Plan

The main focus of the masterplan will be on the following:

Improving the condition of the vehicular & pedestrian approach roads. Introduction of an urban

landscaped plaza with defined green and spaces for sitting towards the northern side of the lake. Integration of the existing green in to the proposed urban design. Creation of a defined space around the existing temple, which becomes a part of the cultural zone within the vicinity of the lake. Generating socially viable spaces in the form of open gym etc. Continuous pedestrian track along the perimeter of the lake for walking. Improving the conditions with better access & finishes. Soft cape with grass, Combination of hardscape and soft cape Existing Trees, Benches for sitting, Space for open gym. Continuous walking track, Space for Lake Edge development, Cultural space, Space for Parking, Toilet Block. With the introduction of various landscaping and urban design options, the aim is to create an outdoor area for cultural and social interaction among the nearby residents, so as to improve the conditions of living.



Figure 3: Plan of Lake.

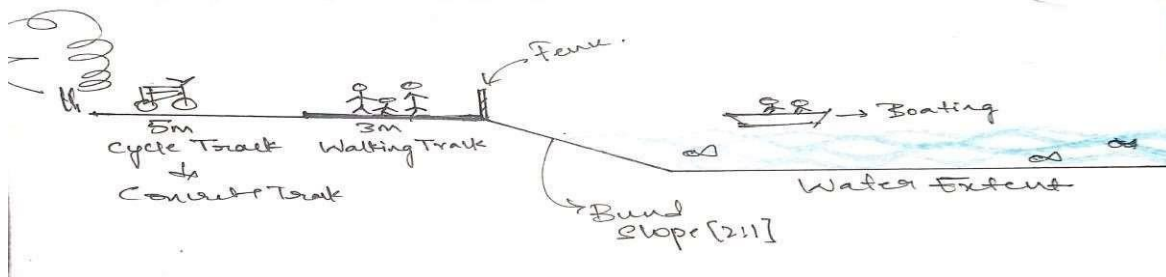


Figure 4: Proposed Lake Plan.

CONCLUSION

We know that once Bangalore called as the city of lakes, is now called as silicon city. Depletion of lake and encroachment of that area as become common in the present day in Bangalore due its faster growth rate. Due to this scarcity of water is raised.

Safeguarding and protection of lake is once's right. Protecting the lake with all the measures mentioned above will help in preserving the naturally existing lakes and also helps in enhancing the micro climate in and around the lake region.

Protection of Flora and Fauna in and around the lake also helps in enhancing the environmental condition. Beautification of the lake by creating park around the lake will

enhance the socio-cultural interaction between the people. Provision for boating, Park entry fees, contract basis fishing all these activities brings revenue which can be utilized for maintenance of the lake.

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