



DESIGNING RECREATIONAL INFRASTRUCTURE FACILITIES FOR THE NADIAD CITY: A REVIEW STUDY

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Abstract- India is initiating various development projects. The projects like smart city, e-governance, smart village, special investment regions, freight corridors, sagarmala and others. Any stake holder of any city/place/area need infrastructure facilities but at the same time in this monotonous working life they will need something for their recreation. Recreational infrastructure facilities also given same importance such as other infrastructure facilities. There are number of options in recreation facilities such as parks, play grounds, entertainment zones, swimming pools, community hall. In this study main focus was considered on lake development as in India number of cities have water bodies but without any development.

INTRODUCTION

In India, open space is one of the major issues nowadays as population is increases day by day. So, because of unavailability of open space recreational facilities are lacking behind in urban and rural areas but major issue is with urban areas because of more population and less land availability in municipal boundaries. Recreational facilities are necessary for all age of group of people for their different use like play area for children's, walk area for exercise area for young and old age group, sports activity area, swimming pools and area for entertainment or refreshment. As discussed here need of recreational infrastructure facilities, availability, and design view of recreational infrastructure facilities is focused.

1.1 Recreational Infrastructure Facilities:

Recreational infrastructures have been created to uplift citizen's quality lifestyle. A recreational infrastructure is provided citizens to use their free time in several creative activities and improve their health. Recreational infrastructure includes parks, fitness clubs, yoga classes, zumba classes, spiritual session, picnic spot and food festivals for the health and entertainment of citizens.

1.2 Lake development:

Entertainment events along the town lakefronts if stimulated can function as a revenue generating property. The lakes can form a part of urban aesthetics and visual links can be established by avoiding obstacles like walls and high bunds along the lake.

I. NEED OF STUDY

With the urbanization open space in urban areas are covered with concrete jungles and no space or very less space is available for refreshment or entertainment. Different age group people need recreational facilities for different purpose that is not available at study area.

II. OBJECTIVES

- To analyses different lake development projects and its importance in context to recreational infrastructure facilities.
- To study issues pertaining to recreational infrastructure facilities in selected study area.

III. LITERATURE REVIEW

- **CHIEN-HUA CHEN (2015)^[1]** has presented the phenomenon and remarkable background of the waterfront development. It gives emphasis to the requirement for system indoctrination and sustainable management consideration chasing the development of estuarine or coastal land. This paper also discuss that the achievement or letdown of a waterfront development should be estimated through a set of multi-aspect catalogs. According to various types of waterfronts, their spatial requirements are also definite. In development approach phase, this paper analyses the innovative significance and content of waterfront development. Keelung port city is then taken as an example of to explain the waterfront land use development while examining the problems of its current strategies.

- **Dr. REYHAN YILDIZ, Prof. Dr. NIHAL SENLIER, RES. ASST. BURCU IMREN GUZEL (2015)**^[2] have analysed that urban coastal areas, is gradually attracting more interest from academics and urban organizations and becoming the leading subject of the development. In this paper Waterfront design guidelines arranged in order to implement the development principles design tools that are effectively applied by many countries.
- **SOCIAL SECTOR SERVICE DELIVERY (REPORT 2015)**^[3] discussed case study of The Kaikondrahalli Lake in Bengaluru, Karnataka, and the Mansagar Lake in Jaipur, Rajasthan, have been discussed which are effectively renovated using two very unique methods. The restoration of Mansagar was developed under a PPP model while Kaikondrahalli was re-established with the help of a multi-stakeholder socially comprehensive model. Both approaches have effectively revitalised the lakes and the ecologies reliant on them. They have also developed local communities with aesthetic and recreational facilities that are also sources of revenue.

Impact

- **Development of recreational urban spots:** The renovation drives, both Mansagar and Kaikondrahalli have gone from being eyesores and sources of pollution to attractive recreational urban spaces. In the case of Kaikondrahalli, the local community is enjoying the new facilities, apparent from the approximately 1,200 visitors the lake site receives daily. Even Nobel Laureate Elinor Ostrom visited the lake and planted a plantlet in gratitude of the effort.
- **Revival of local ecosystems:** A prominent and successful strategy in the restoration of Mansagar Lake was the use of treated storm water as a primary water source for lake revival. The sedimentation basin in the lake is an low-cost treatment system that costs far less than treating sewage. Both the lakes have also revived the local ecology and attract a large variety of birds including pelicans, ducks, black cormorants, shikhrājuvs, rufoustreepie and many others.

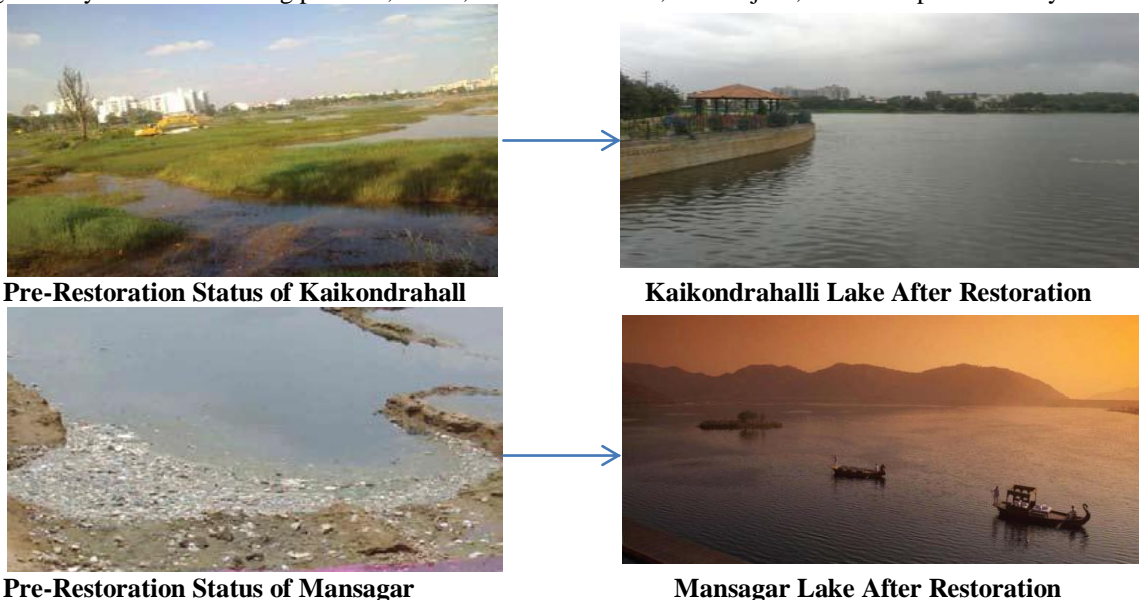


Figure 1: Transformation of lakes

- **SARIKA BAHADURE, PULLURI SANGEETHA (2014)**^[4] have analysed that Lakes are the ecology which plays significant role in sustaining micro climate balance, satisfying different straight and secondary uses like agriculture, fishing, ground water recharge. Thus it is vital to preserve and protect the lakes. Lakes are under different anthropogenic stresses of unplanned urbanization and industrialization. This paper estimates uniqueness between lakes managed by public private partnership and government with community contribution in terms of uses of lake before and after restoration. This study says the likely negative effects of privatization over other which affects the diversity of traditional ecology services in urban areas. At the end it tries to put forth the approaches which can be implemented for better restoration are the ecology which plays significant role in maintaining micro climate balance, fulfilling different straight and secondary uses like agriculture, fishing, and ground water recharge. Thus it is vital to conserve and safeguard the lakes.
- **HARINI NAGENDRA, ELINOR OSTROM (2014)**^[5] have chosen Bangalore as case study the city was once prominent for its abundant large water bodies, which have witnessed marvellous encroachment and pollution in recent years. The public's opinions of lakes has also changed with urbanization, transitioning from community spaces valued for water and cultural services to urban recreational spaces used largely by joggers and walkers. They use a social-ecological system (SES) structure to examine why some locations have been effective in negotiating changes in authority from community-based systems to state management following urbanization, whereas other lakes have weakened. Conclusions of the study says demonstrate the need for polycentric preparations in urban areas, whereby local citizens are able to establish in diverse ways that replicate their own issues and capabilities, but can also work co-operatively with larger-scale governments to solve technical difficulties requiring changes in major engineering mechanism as well as obtaining good scientific information.
- **NTITISH KUMAR (2012)**^[6] has taken Vijaywada (Andhra Pradesh) as case study. For the study, measurement survey on the land available along the canal berms has been carried out and different analysis like Landuse analysis,

accessibility analysis and area analysis have been done. After that land allocation on the basis of different activities has been done. Along the Ryves canal common issues and problems were found like canal berms are converted in to a dump yard, berms encroached upon by poor people, stagnated water in canal becoming breeding grounds of mosquitoes, flies and other insects. This polluted canal water goes to agricultural land for irrigation purpose. Over all one can say that instead of giving benefit to the city people, canals are the cause for the degrading city environment. It is also the cause of health issues occurring among the city people. After this study total available land for the development along the canal was increased which includes reclaimed land and rest land includes vacant land, developed parks and encroachments. Recreational area will increase by two times. Which affect the proposed recreational space there will be 5% of increment. Other than this city would not have hazardous settlements along the Ryves canal, recreational spaces and some economic generating activities would be increased. This canal can be the medium for the social integration (i.e. integration of people coming from different region, religion, cast etc.). This development will also promote pedestrian movement by reducing the use of motorized vehicle.

IV. MAJOR FINDINGS

- Day by day due urbanization open space available in urban areas are getting occupied by concrete structures, and that tends to decrease the area of open spaces in urban areas.
- Population is increasing but recreational infrastructure are as it is or decreasing in percentage and area.
- Different age group people need recreation infrastructure for different use that is not available.
- Because of shortage of open space in urban area we can develop existing natural recreational sources to fulfil need of users like lake development, river front development, heritage development, renovation of existing recreation infrastructures.

V. CASE STUDY



Figure 2: Kankaria Lake

Kankaria Lake, Ahmedabad: ^[7] Kankaria Lake is one of the biggest lake developed as a recreational infrastructure as shown in figure 2, it was previously constructed in the 14th century as reservoir to preserve water and then in the year 2006 the Kankaria Lake was closed for citizen for major renovation which takes two years and opened again for public in 2008. Currently it is major attraction as recreational infrastructure.

- Location: Ahmedabad, Gujarat
- Shore length of lake: 3.15 kms
- Lake type: artificial lake
- Catchment area: 640,000 m² (6,900,000 sq ft)
- Surface area: 76 acres (31 ha)
- Average depth: 6 m (20 ft.)

Now Kankaria lake as recreational infrastructure has several public attractions such as a zoo, toy train, kid's city, tethered balloon ride, water rides, Water Park, food stalls, and entertainment facilities. In addition to, The social gatherings, this place acts as source of daily bread for many, activities like vending, hawking, etc. And benefit from those visiting the lake precinct at a daily basis for various recreational related to food, lake, swimming pool, temple, zoo, garden, Naginawadi, kids city etc.

Conceptualization: The conceptualization of this project can be broadly categorized under three major stages.

Stage 1 – Enhancing existing conditions

As we can see in figure 3. In the first stage of conceptualization, the main aim was focused on to develop the lake edge. This included providing parking facilities, congregating existing amenities and de-congesting the peripheral road.

The key issues addressed were:

- Utilizing the complete right of way
- Organizing the informal sector activities
- Improving pedestrian / bicyclist safety
- Providing organized parking
- Providing important public amenities

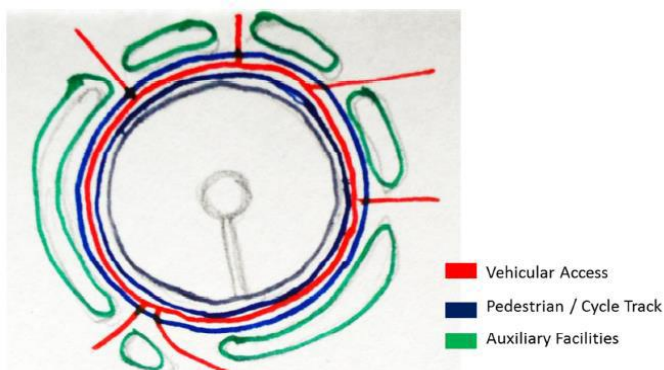


Figure 3: Stage 1- Enhancing existing conditions

Stage 2 - Potential to treat both sides differently

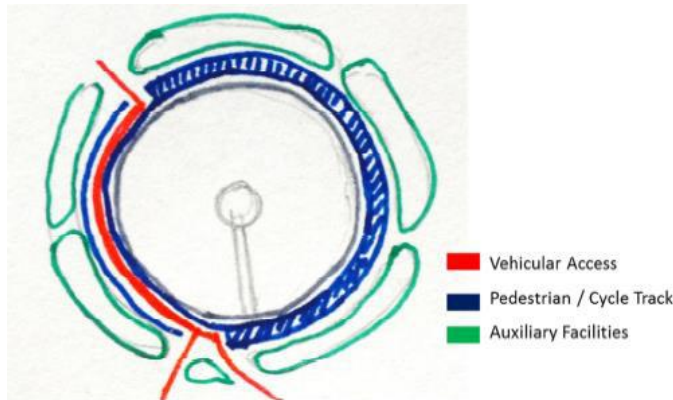


Figure 4: Stage 2 - Potential to treat both sides differently

promoting public transport provoked the designers not to provide parking spaces along the vehicular movement area, also pedestrianizing the entire lakefront. The design though, still incorporated tarred road in the area previously envisioned for vehicular movement. The addition of Entrance gates by AMC, marked the end of this stage. In addition to the issues recognized in the above stages, following new issues were addressed:

- Developing a comprehensive strategy to develop the ring road,
- Acquisition of land
- Clearance & rehabilitation of slum
- Road widening
- Lakefront as a connector of various existing facilities.

Figure 4 shows 2nd stage of development, the second stage of conceptualization moved a step ahead and en-vision a complete pedestrian zone which would house & formalize the informal sector as well as provide a traffic free zone for various other activities. The portion of the road left open for vehicular movement was to be provided with better parking provisions. This further developed in development of the ring road and provision of parking facilities along the road.

Stage 3 –Complete transformation into a Pedestrian friendly zone and ring road development

As shown in figure 5, the conceptualization of the ring road and incorporation & promotion of BRTS saw the development of the third stage. This vision of

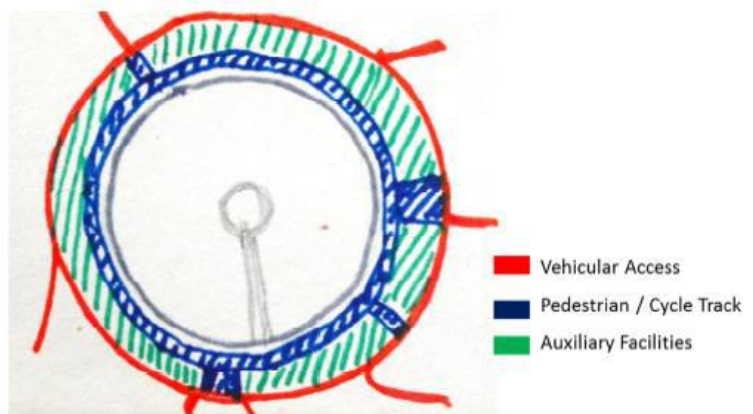


Figure 5: Stage 3 –Complete transformation into a Pedestrian friendly zone and ring road development

VI. STUDY AREA PROFILE



Figure 6: Geographic Location of Nadiad in Map

Country:	India
State:	Gujarat
District:	kheda
Coordinates:	22.69°N 72.86°E
Government type:	Municipality
Governing body:	Nadiad municipality
Total area:	
Total population:	2,25,071 (census 2011)
Density:	2200 km ²
Elevation:	35m
Existing gardens:	03
Walkway:	01
Total lakes:	09
Developed lakes:	01
River:	00
Canal:	01
Developed canal:	00

6.1 Issues & Challenges

As city don't have enough recreational facilities citizen use to visit some places for entertainment and refreshment purpose such as Canal, railway station, temple etc. but that is risky for citizens as there are no such safety facilities available at this places. There is a canal passing from Nadiad city where citizen use to go for

their refreshment purpose but no special safety is provided and all age group people use this place as refreshment place nearby city. Citizen use to go to railway station for their refreshment or entertainment purpose and kids are playing around the railway track and there are no such safety provided for that which may lead to an accident. There are some religious places are there but they are mostly over crowded as they have some basic facilities which can attract people to visit that place but due to overcrowd those facilities are not enough to fulfil need of total visitor's during pick hours or pick days.

6.2 SWOT Analysis



Figure 7: SWOT Analysis

From figure 7, it is found that from survey of site and from other measures it concluded that Nadiad has good number of lake which is its strength, mostly lakes are situated inside city lakes have good connectivity with roads, but the weakness is that the city has not maintained its lakes in good condition or developed as a recreational infrastructure, so we have opportunity to develop those lakes as recreational infrastructure, from city one main canal is passing it can be develop, and other heritage can be develop, but as mostly lakes are suited in city it's in haphazard areas so it can affect development and government approvals can be difficult to get for this development.

VII. CONCLUSION

India is developing in all the domains of infrastructure but still there are some cities and villages are there which are not developed in all or in any particular domain. As such there are many cities are developed in all domain but lacking in one or few domain, recreational infrastructures are one of them , many cities are developed but not have sufficient recreational infrastructure Nadiad is one of them city which don't have sufficient infrastructure facilities which needs improvement. To fulfill that need and provide good and sufficient recreational infrastructure this study is performed, in which we have identified some places that can be develop as a recreational infrastructure. For that literature study has been performed that is described here, now as per criteria and site selection designing will be done to uplift infrastructure facilities for Nadiad city.

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