



## *Editorial*



This issue of the journal contains eight papers dealing with a variety of subjects ranging from tourism through to historical development, slums, sustainability, and sustained growth of a central business district.

Rukmini Mukherjee and Sanjib Nag has written the first paper titled 'Mass Rapid Transit System and Urban Development in the Periphery of a City: A Case Study of New Garia Metro Rail Station Area at Kolkata'. This paper argues that technological advancement and greater connectivity has brought the peripheral areas closer to the core urban area. High speed transit systems like highways, light railways and Rapid Transit Systems originating from the urban areas are constructed to connect the peripheral population to their workplaces and centre of the city, resulting in the transformation of the original character of these areas. Speculation of such development usually leads to indiscriminate construction of buildings close to the transit corridors. Accordingly this paper studies the impact of such high speed transit systems on peripheral development and provides models for future study and implementation of control mechanisms for such areas.

The second paper titled 'How to Revive Chennai's Central Business District - A Case study of the Kasi Chetty Street' is written by D. Karthigeyan. Central Business District forms the heart of any city for its growth and survival. As the city grows, the CBD also grows. However, how long this growth can happen and withstand with limited infrastructure and shortage of funds to develop sub-urban areas. In Chennai, the Wholesale Vegetable Market, which was situated in CBD (Kothawalchaavadi) is shifted to Koyambedu which is located on the western corner of the city. This study attempts to analyses Chennai's CBD, and ways in which it can be improved for the better movement of goods and people with minimal disturbance in its form and structure, so that it can survive and retain its character and function as the CBD.

Faisal Ali Khan has penned the third paper titled 'Sustainable Development: Environmental Law with Reference to Town and Country Planning'. He starts by saying that sustainability is about meeting the basic human needs and wants. People value their health and that of their children, economic security and happiness. These are primary elements in our quality of life. The focus upon sustainability requires that decision making policy recognizes actions and effects on the environment, economy and society. Sustainability is very much about what kind of legacy we want to leave for our children and grandchildren. The environmental challenges confronting us today are greater than ever before. But we have potential to meet these challenges by command and regulation, and public participation. We must concentrate on economic growth but with full protection of physical environment and nature.

The fourth paper titled 'The Genesis and Growth of Slums in India' is written by S. Kumar Swami. As a partial fulfillment of the requirements of the mammoth planning process there are needs for appropriate diagnosis of problems of people in the contextual societal framework. We do not have adequate knowledge on certain vital aspects of socio - economic concerns and for that matter paths of development do not become realistic and need based. Planning for urban development remains incomplete if the slum situation is not ameliorated. Although slum dwellers account for 27 percent of the




population, they occupy only 5 percent of the urban land area. Unimproved slums are characterized by overcrowding, dilapidated structures, unhygienic conditions, grossly inadequate basic amenities, unplanned layouts and poor accessibility. Many colonies have existed in this condition for twenty years or more, becoming progressively more overcrowded as time goes by.

Shehana Rasheed and Saritha G Parambath have written the fifth paper titled 'Green to Planned Development Zone : Development Concept and Strategies'. Green to planned development zoning is an innovative zoning introduced in the proposed land use for the Thiruvananthapuram city as per draft the Master Plan 2012. Land has always been the prime resource for planning and development of any area. Land is such a resource, which is constant and cannot be created. Therefore, the importance of optimum usage of land in a developing city is obvious. The concept behind this zoning is positive control over land with democratic participation of people without alienating people from their land. Literature studies have been done to identify the planning elements. The implementation procedure of the zoning on a land parcel is demonstrated in this paper.

Parag Govardhan Narkhede has written the sixth paper and is titled 'District Regional Development Planning and the Need for Comprehensive Planning for Tourism Development of Lake fronts in Pune District'. This paper deals with the study of lakes in Pune Region for the feasibility and potential to develop them as a Lake District. In the Regional Plan of Pune District 1981 emphasis is placed on developing Western part of the district as a 'Lake District'; but implementation is not satisfactory. The paper discusses the issues, constraints and potential of tourism in the study area for the future development. The paper also suggests a methodology and guidelines for planning and development of lake fronts considering eco - tourism to promote the tourism activity. Since all these sites are in the vicinity of two great metropolitan cities Mumbai and Pune, attraction for these tourist places is increasing day by day and demand for tourist facilities in these potentially scenic belts is also increasing. This paper argues for considerable enhancement in tourism related infrastructure in the light of increasing tourist demand.

The last paper on 'Planning Policies and Strategies for Shahjahanabad: A Critical Appraisal' is written by Bikram Kumar Dutta and Sanhita Bandyopadhyay. They show that immensely rich in cultural heritage, Shahjahanabad with its palaces, mosques, bazaars, gilded domes, *havelis*, *katras* and a maze of lanes and bye lanes remains one of the most beautiful cities of India. The image varies from the ancient forts and settlements of Mughal emperors of Delhi to the distinctive retail and wholesale markets of the modern variety. The original layout of the city was changed by the British regime. Half a century ago planning practice deviated from old without considering its natural gamut and sustainable pathway for revival of its glory. There is an urgent need to reframe the strategy for revitalizing its glory in focusing on heritage conservation and decentralization of activities.

  
Prof. Ashok Kumar, Ph.D.  
Editor



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# **MRTS and Urban Development in the Periphery of a City: Case Study of NewGaria Metro Rail Station Area at Kolkata**

**Rukmini Mukherjee and Dr. Sanjib Nag**

## **Abstract**

*Technological advancement and greater connectivity has brought the peripheral areas closer to the core urban area. High speed transit systems like highways, light railways and Rapid Transit Systems originating from the urban areas are constructed to connect the peripheral population to their workplaces and centre of the city, resulting in the transformation of the original character of these areas. The speculation of such development usually leads to indiscriminate construction of buildings close to the transit corridors. Due to the lack of planning regulations and guidelines, this uncontrolled growth can be detrimental. This paper studies the impact of such high speed transit systems on peripheral development and provides models for future study and implementation of control mechanisms for such areas.*

## **1. INTRODUCTION**

Mass Rapid Transit System (MRTS) is a high speed electric transportation system, with high capacity, high frequency and grade separation from other traffic. It is generally known as metro or metropolitan railway. Structurally conceived in three types: it can be either located in underground tunnels or on grade separated ground level tracks or on elevated rails above street level. MRTS is preferred due to its ability to transport large amounts of people quickly over short distances with little use of land. Its variations include people movers, light rails and commuter rail hybrids. It is popularly known by its local names, such as subway, underground, tube, etc.

## **2. URBAN RENEWAL**

Urban development is the process of growth of an area, situated in a city or a town or having characteristics of the same. It has spatial and physical attributes as well as environmental, economic, social, cultural and political manifestations. The spatial and physical form of urban development can either be a new development on a virgin land or a renewal of an existing urban fabric (Nag, 2012). An urban renewal can be of 3 types, namely redevelopment, rehabilitation and conservation. The periphery of a city refers to a transition or interaction zone, where urban and rural activities are juxtaposed and landscape features are subjected to rapid modifications, induced by human activities (Douglas, 2006). Such an area has the following defining characteristics:

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- Environmentally unstable compared to other urban or rural settings (McGranahan G., 2004);
- Physical factors interrelated with socio - economic forces (Fang S., 2005);
- Direct impact felt from market forces and urbanization catalysts (Simone A., 2007); and
- Mainly residential in character, with mixed uses, leading to work trips to urban areas (Simone D., 2007).

### 3. NEW GARIA METRO RAIL STATION AREA

New Garia Metro Rail Station Area is one of the upcoming places in the periphery of Kolkata. Originally a part of Garia, one of the oldest settlements of South Kolkata, it has changed drastically after the expansion of Kolkata and connection with Kolkata Metro Rail. Its inherent character as a residential neighborhood is rapidly changing in order to accommodate its changing land uses required for urbanization.

As a city gets congested due to rapid urbanization and spreads towards its periphery, a MRTS developed integrally with the surrounding areas and offering a greater choice for commuters, becomes extremely significant. Populations and businesses may move toward this periphery in search of more advantageous living conditions, such as, less congestion, cheaper land, lower tax rates, great social homogeneity, etc.

Similar effects have been identified in the case of Kolkata, where elevated corridors of MRTS have been extended to its periphery, from Tollygunge to New Garia. It has impacted the physical environment of this peripheral area, with massive increase in transport, trade and commerce, resulting in high density of unchecked developments, leading to a chaotic social and demographic profile. The increasing demand for land has led to encroachment of green zones and filling up of unprotected water bodies, disturbing the fragile ecosystem of the area. As a result, in this area, immediate intervention is necessary to rectify these problems, as well as, to arrest any further deterioration of its physical environment. In this context, a research work has been carried out in order to, investigate the impact of MRTS on urban development in the periphery of a city through secondary case studies, establish the extent of that impact through primary case studies and identify the relevant issues with suggestions for corresponding proposals.

Accordingly, in this paper an attempt has been made, to synthesize the outcome of this research work in a structured and sequential manner. However, the study of this research has been limited only to the physical impacts of the elevated corridors of MRTS, as mentioned above.



#### 4. DISCUSSION

As stated earlier, the first part of the paper synthesizes the outcome of the investigation, of the impact of MRTS on urban development in the periphery of a city, through examples from secondary case studies. For this purpose, both quantitative and qualitative data have been considered and analyzed from these examples, in order to arrive at legitimate conclusions.

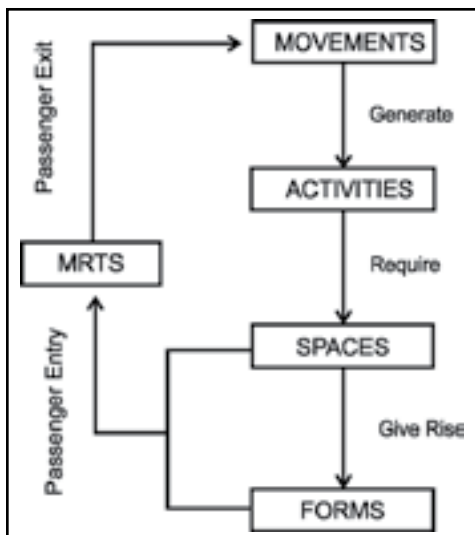
The criteria of selection of these case examples were to choose elevated and multi-modal terminal station areas located in the urban periphery, as well as, to have some kind of continental variations. Accordingly, the 4 case examples studied are as follows:

- American - Transbay Terminal Area, San Francisco;
- European - Orestad North Area, Copenhagen;
- Asian - Jurong East Station Area, Singapore; and
- Indian - Dwarka Station Area and Shahdara Station Area, Delhi.

With reference to literature study, it has already been established that MRTS has an impact on urban development, which can be studied in terms of quantitative and qualitative parameters and sub-parameters. But this impact varies with respect to a city's central (or core) area to peripheral area.

4 major parameters (Fig. 1) have been identified that reflect the impact of MRTS on spatial and physical developments, viz. Movements, Activities, Spaces and Forms.

Fig. 1: Four Major Parameters Viz. Movements, Activities, Spaces and Forms.



Source: Nag S., 2012

Fig. 2: Four Different Sub-parameters and Made Qualitative in Terms of 4 other Sub-parameters.

Parameters	Sub-Parameters								
	Quantitative		Qualitative						
Movements	Volume	Trips Diverted towards MRTS		Directions	Vehicular				
		Traffic Dispersed from MRTS				Pedestrian			
Activities	Landuse	Residential		Locations	Residential				
		Commercial	Formal			Higher Order	Commercial	Formal	Higher Order
			Lower Order			Informal			
		Institutional					Institutional		
		Industrial				Industrial			
		Recreational					Recreational		
Spaces	Intensity	Land Value		Characteristics	Patterns				
		Floor Area				Orientations			
		Building Height							
Forms	Skyline	Ground Coverage		Architectural Images	Sectional Relationships				
		Building Height				Elevation Features			

Source: Nag S., 2012

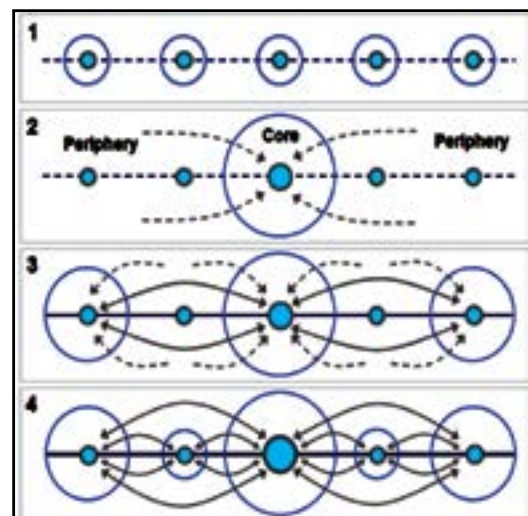
and Forms. Following conventional urban planning paradigm, these parameters have been made quantitative in terms of 4 different sub-parameters and made qualitative in terms of 4 (Fig. 2) other sub-parameters (Nag, 2012). Within any city, there is always an inherent relationship between population density and spatial distribution of land use activities, between transport network and activity hierarchy and consequently, between human demands for transport networks and spatial activity distributions. This gives it a unique form and structure (Goel, 2000).

According to the World Bank, urban population is increasing at more than 6 percent annually in most developing countries. Much of this growth will be in the peri-urban settlements, outside the range of existing urban facilities and authorities. It is likely to consist of urban sprawl, which struggles against adequate public transport supply, encourages auto dependence and hence reduces accessibility to employment and to urban facilities for the poor (World Bank, 2002). As a result of the decentralization process, flows between peripheral areas have increased dramatically, largely channeled through rapid transit systems, which provide the only high capacity traffic routes in many major cities. And the rapid transit lines, in turn, improve the accessibility of peri-urban municipalities, thus increasing the value of their location and making them more attractive to investors, which brings about even further decentralization (Martin *et al*, 2010). The provision of an MRTS corridor through a peripheral area affects its existing structure and leads to urbanization through 4 stages (Fig. 3): Pre-industrial, Transitional, Industrial and Post-industrial (Friedmann, 1966).

At the MRTS Stations and within their areas of influence, the impact of high level of accessibility can be felt. These areas of influence can be delineated into 3 zones, (Fig. 4) based on their decreasing rates of impact from the core, with increasing distances from the MRTS access points.

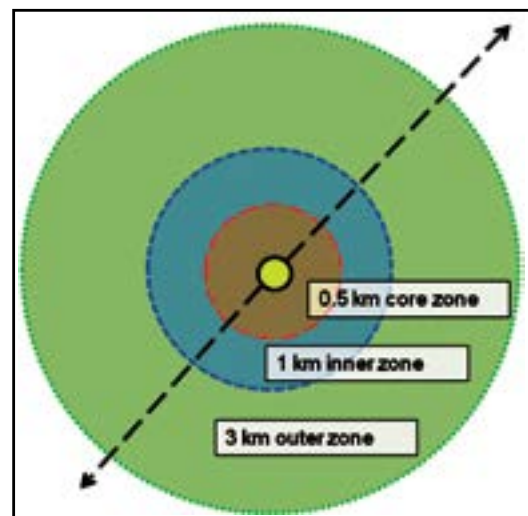
- **Core Zone of Influence:** It is based on the Zone of Influence of a Bus Stop. An area under 10

Fig. 3: 3.0 MRTS Corridor through a Peripheral Area



Source: Friedmann, J. 1966

Fig. 4: Delineation of 3 Zones







minutes of comfortable walk (0.5 km) is taken, which is the mode of access and dispersal from a Bus Stop.

- **Inner Zone of Influence:** Average Trip length of Metro gives a Dispersal Length of 1.0 Km, which delineates the inner influence zone.
- **Outer Zone of Influence:** It is based on the Zone of Influence of a Suburban Rail Transit Station. At least 60 percent of passengers disperse within 3.0 km of a suburban station (Dwivedi, M. 2004). Walk being the predominant mode of access or dispersal, density along the corridor or the node is important for transit usage.

At these points of high level interaction, demands and needs are generated, and potentials are created. The parameters achieved from the literature study provides an urban design tool to study the impact of mass rapid transit systems on the urban development of the secondary case examples, within the stipulated influence zones demarcated above. Based on the secondary studies of 4 selected case examples, with reference to the identified parameters, the outcome of the said investigation have been structured sequentially, as follows:

#### 4.1 Movements

- MRTS is the preferred mode of transport, between peripheral and other areas of a city, whenever the distance is greater than 3.0 km.
- A Bus Rapid Transit System corridor runs parallel to an MRTS corridor and accessible within 500 m of the terminal station.
- Secondary movement corridors for feeder systems run perpendicular to MRTS alignment, connecting nearby residential and business / commercial areas, within 3.0 km of the station point.
- Pedestrian movements occur in forms of smaller loops along feeder corridors, away from the station point, having related infrastructure facilities.
- Due to gradual urbanization of the area, incoming trips from MRTS change from residential to business, education and leisure, with upcoming proposals for supporting activities.

#### 4.2 Activities

- Social infrastructure is located along feeder routes, to encourage people's activities and pedestrian comfort.
- Residential areas get pushed beyond the core impact area, as existing residential uses are transformed into business and recreational uses, due to increasing land value.



- Higher order retail is developed, along primary vehicular corridors, close to station point, especially within the core impact area.
- Lower order retail is developed, along feeder vehicular corridors, away from station point, especially within the inner impact area.
- Institutional activities get located, within 0.5 km of station area and along feeder routes.
- Recreational activities connect public spaces along station areas, with internal spaces along pedestrian loops.

## 5. SPACES

Higher order retail and informal commercial activities develop in concentric pattern, extrovert in nature, and close to station point. Lower order retail develops in linear pattern, along feeder routes, and away from station point. Parking is usually on-street, in linear pattern close to station point and then radiating towards different feeder routes.

### 5.1 Forms

Increase in ground coverage and building height take place, within 0.5 km radius of the station area. High rise structures are concentrated, within this area. Medium rise structures are found along MRTS corridor. Elevation features become important along internal pedestrian loops. The station building acts as landmark for the area. As stated earlier, the second part of the paper establishes the outcome of this investigation, as well as, the extent of the impact of MRTS on urban development in the periphery of a city, through examples from primary case studies. The criteria of selection of these case examples were to choose elevated and multi-modal terminal station areas located in the urban periphery, but to be limited with developing countries.

Accordingly, the 1 case example studied is Indian - New Garia Station Area, Kolkata. The first MRTS in India was introduced in Kolkata in 1971, when the population of the city was 3.14 millions, within an area of 370 sq km. With the increasing accessibility, the city of Kolkata has witnessed rapid expansion in terms of its urban boundaries, as well as, increase in population. At present, Kolkata Metropolitan Area (KMA) has an area of 1875 sq km with a population of 16.7 million, at a density of 7,978 persons per sq km (Comprehensive Mobility Plan, KMA, 2008).

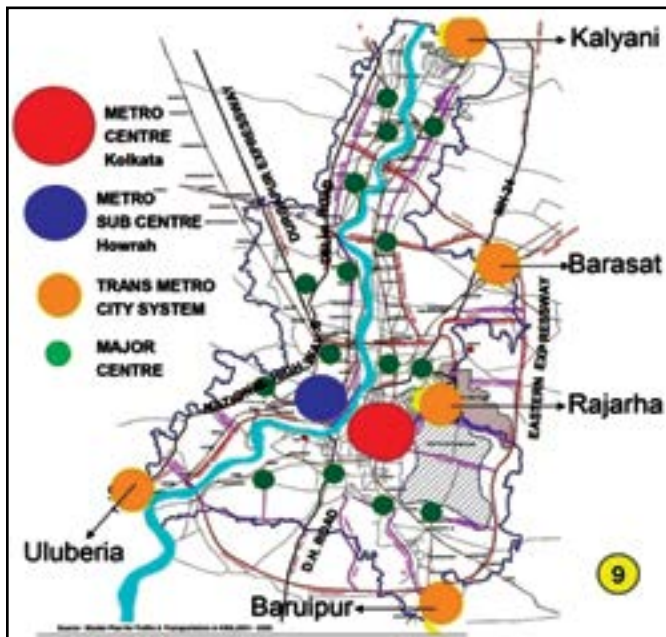
In 2010, the Railway Ministry proposed 4 additional and new metro link projects for the expansion of Kolkata Metro Rail, with the first line already operational (Line 1:North-South Metro) and the second line under construction (Line 2:East-West Metro). The existing Line 1 has 3 MRTS stations (viz. Garia Bazaar, Dhalai



Bridge and New Garia), which satisfy the conditions of being peripheral stations on elevated corridors. Of these, the New Garia is the terminal station, which is also an interchange point, with suburban railway and with 3 different bus termini. The proposed Line 6, to Kolkata International Airport, passing through the newly developed areas of Salt Lake and Rajarhat would also originate from this station. In this perspective, the area in and around New Garia metro rail station has been witnessing considerable impact on its urban development. However, for convenience, the detailed study of impact has been limited to the inner influence zone of this area.

The proposed Metropolitan Structure (Fig. 5) and Spatial Distribution of Centres - 2025, based on Comprehensive Mobility Plan of KMA, 2008, recognizes 4 types of urban developments, for Kolkata. These are in the form of metro centres, metro sub - centres, trans - metro centres and major centres, around the city. These centres are to act as regional nuclei for urban development, since a single such centre is not sustainable, in a large agglomeration like Kolkata. Accordingly, Baruipur containing New Garia, has been proposed as a trans-metro centre (Fig. 6). The collaboration of the developing urban fabric with the transportation network will rise as a major challenge for this area. Based on the primary studies of this selected case example, with reference to the identified parameters, again the outcome of the said investigation have been structured sequentially, as follows:

**Fig. 5: The Proposed Metropolitan Structure and Spatial Distribution of Centres - 2025**



Source: *Comprehensive Mobility Plan, KMA, 2008*

## 5.2 Movements

- The provision of MRTS has led to better connectivity, within inner impact zone, as compared to other areas. Work trips and educational trips have preferred MRTS over other modes of transport, for covering distances of more than 3.0 km. As a result, almost 77 percent of all trips in this area have been found to be these 2 trips. This has given rise to a demand for adequate public spaces near MRTS station points. Again, lack of sufficient formal retail opportunities has increased the number of shopping trips to these points, where a considerable growth of informal sector has already taken place. All these related developments

have also called for an increase in institutional and commercial land uses.

### 5.3 Activities

- It has been found that residential, institutional and commercial land uses of this area have changed drastically, from the year 2002 to 2012.
- The maximum change has taken place in residential activities, which increased from 49 percent to 64 percent during this time.
- Residential area has increased at the cost of green spaces and water bodies, which decreased from 44 percent to 17 percent.
- The increase in commercial activities has been in the form of informal sectors (Fig. 7) and mixed use developments, along the MRTS corridor.

Fig. 6: New Garia - a Trans - Metro Centre



### 5.4 Spaces

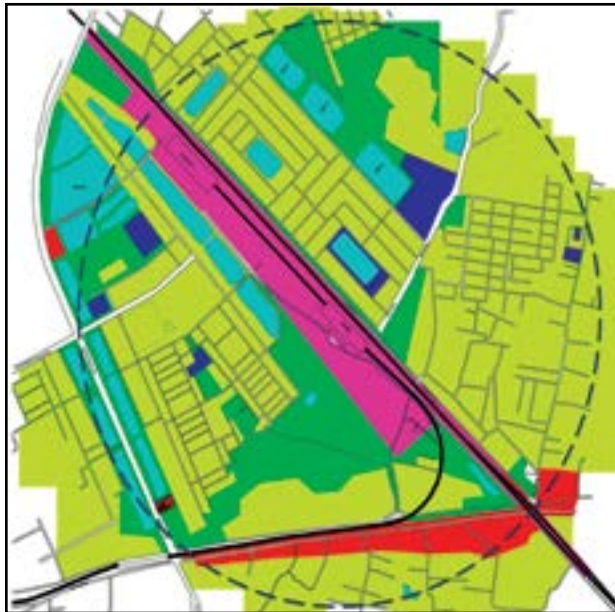
- There has been 133 percent increase in commercial values and 73 percent increase in residential values, in this area and along MRTS corridor.
- The FAR has increased by 200 percent.
- The spaces for informal sector and parking around intersections have been concentric, while the spaces for lower order retail have been linear along pedestrian paths.
- The parking and retail activities have been oriented towards MRTS station points, while the informal sector activities have been oriented towards nodes during peak hours and away from nodes during non-peak hours.

### 5.5 Forms

- The increase of ground coverage has been 47.8 percent, from 2002 to 2012.
- Predominant building height before 2002 was G+1 and after 2012 has increased to G+4.
- The maximum building height has already reached to G+16.

- The previously existing, low rise low density urban form (Fig. 8) has given way to high rise high density urban form, in the inner impact zone of 1.0 km radius and to medium rise high density urban form in the inner impact zone of 0.5 km radius.

**Fig. 7: Increase in Commercial Activities Along MRTS Corridor.**



**Fig. 8: The Low Rise Low Density Urban Changed to High Rise High Density Urban Form**



- Although the MRTS Station has been considered as a functional landmark, it has not been perceived in the same way from an architectural viewpoint and hence has failed to serve as a physical landmark.
- However, as an alternative, a considerable amount of local imagery, in the form (Fig. 9) of treatments of facade elements like balconies and rooftops, of buildings along inner pedestrian loops have developed.
- Based on all these discussions, the relevant issues with suggestions for corresponding proposals have been identified and stated, as follows :
- The new urban centre should be developed, in accordance with the proposed Metropolitan Structure and Spatial Distribution of Centres - 2025 for KMA, to help address the region's housing needs and support regional transit use.
- The MRTS terminal station area should be developed as a gateway, to the urban part of the city.
- A mixture of housing types and sizes should be planned, to attract a diverse residential population, including families and people of all income levels.
- A liveable and dense urban environment should be created, to connect private open spaces, with shared and public open spaces.
- A pedestrian oriented urban environment should be created, to encourage walking as a primary mode of movement within the area.

- All modes of transport should be integrated with the terminal station, along with provisions for easy accessibility and pedestrian connections to nearby public buildings.
- Residential development should be encouraged along MRTS corridor, with abutting streets to be designed for mixed-use activities.
- Offices and hotels should be located close to the new terminal, being supported by all the adjoining retail commercial activities.
- Existing ecological spaces like green areas and water bodies should be integrated with the neighborhood structure, to create recreational spaces, with provision for complementary urban activities.
- Retail and office developments should have facade treatments that are scaled to match on street human activities. Lower levels of the buildings should be treated with compatible materials, cornice lines and fenestrations, to create comfortable pedestrian oriented urban environment.
- Public amenities such as street furniture, trees, and artworks should be installed, to create pleasant pedestrian experiences.
- Multiple buildings should be clustered, to share common off-street loading facilities and services.
- Street curbs should be designed, to maximize parking and to minimize sidewalk interruptions and breaks in retail frontages.
- Boulevards should be created along the station, to ensure pedestrian safety, as well as, to maintain uninterrupted vehicular movements.
- The new terminal building should have a highly permeable ground floor design, with outward facing street level retail, to support all the pedestrian activities on adjacent streets.

#### 4. CONCLUSIONS

The MRTS related urban development is a much studied phenomenon throughout the world especially

**Fig. 9: Buildings Along Inner Pedestrian Loops**





after the relationship between transportation and urban design has been realized. Many such studies have already found various reasons for success and failure of these developments. However, the effects of these reasons on similar urban development of areas in the periphery of a city are felt even widely since successive levels of transit are not easily available. In a bid to consciously develop and propagate successful MRTS effects in these areas, it is not only essential to study global phenomena but also the local context.

Accordingly, the concerned research work was taken up to make some meaningful contributions with provisions for future applications in similar context. Firstly, the study methodology can be utilized to understand local impacts of MRTS on such peripheral areas and to identify the issues that need to be immediately addressed. Secondly, the application of urban design as an analytical tool can be used to make qualitative analysis of such impacts especially with respect to a developing nation like India where quantitative analysis is the only other alternative. Lastly, the development proposals can be used and improved upon to create an idea of a proper relationship between people and their movement patterns, their requirement of activities in designated spaces and their physical correlation with their urban forms.

It is crucial to study and compare existing and developing scenarios of MRTS all over the world, but design for local context, instead of a global scale. With constantly changing demographic profile of peripheral areas, the paradigms and policies for development should evolve with time. The future provisions for growth should not be limited to transportation models as is the practice in many such new developments. A user-centric, three-dimensional urban design analytical process should be incorporated in the planning process, which is the key to many successful MRTS terminals around the world. In the long run, these analysis and proposals along with appropriate design for implementation would provide smart growth along MRTS corridors as well as in and around MRTS station areas and in the periphery of cities.

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***The main point in building a city should be to keep the social aspect always in view. This is usually completely forgotten and people think in [terms of] putting up a number of imposing official buildings. Another point to be borne in mind is that as far as possible the material to be used for construction should be locally available.***

***Jawaharlal Nehru***





# How to Revive Chennai's CBD - Case Study of Kasi Chetty Street

**D. Karthigeyan**

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## Abstract

*CBD (Central Business District) forms the heart of any city for its growth and survival. As the city grows CBD also grows, but how long this growth can happen and withstand with limited infrastructure and shortage of funds from the government, to develop the sub-urban areas which literally forces the CBD to stop some of its activities, and ultimately forces the activities and businesses to move out from the CBD. In Chennai, the Whole Sale Vegetable Market which was situated in CBD (Kothawalchaavadi) is shifted to Koyambedu which is at the western corner of the city. This study attempts to analyse Chennai's CBD, and the ways in which it can be improved for the better movement of goods and people with minimal disturbance in its form and structure, so that it can survive and retain its character and function as CBD.*

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## 1. INTRODUCTION

A historical neighborhood of Chennai, the area that became the base for development of commercial activities, the core from where the city grew thereby meeting the needs of people for their livelihoods and it also gave the rulers an administrative edge in the form of the George Town (present CBD), and also used to be known as the 'Black Town' during the colonial period.

This settlement was formed soon after the British constructed the Fort St. George, which now acts as the Secretariat for the Government of Tamil Nadu, state. Name of this area 'Black Town' was renamed as George Town in 1911 in honor of King George V, when he was crowned as the Emperor of India. East India Company was started in the year 1600 A.D, in India. To access the resources of Southeast Asia they needed a base on the east coast, especially on the Coromandel Coast, where a thriving textile industry flourished under the patronage of the Nizam of Golconda, which was also famous for its diamonds, especially the *kohi-i-noor* diamond, which sat on the crown of the British Emperor.

One of India's major ports, was constructed at Chennai. Madras High Court buildings and the first light house tower with architectural beauty came up in the area where an old Hindu temple existed. This temple of Sri Chennakesava Perumal and Chennamalleswara Swamy was demolished and later shifted to the present location near Mint Street on Nethaji Subhash Chandra Bose Road, which

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is very popular amongst Hindus as the Pattanam Koil. Residents of George Town in earlier days were mainly the Telugu community with a sizeable population of the Tamils. In George Town many streets are named after Telugu people like Govindappa Naick, Angappa Naick, Adiyappa Naick, Narayana Mudali, Kasi Chetty, Rasappa Chetty, Varada Muthiappan, Thatha Muthiappan, Kondi Chetty, Linghi Chetty, Thambu Chetty, etc.

Men who were doing business in corals lived together in coral Merchant Street and people from Armenia doing business with the English were living in Armenian Street, which still exists. A church called Armenian Church was also constructed in the same area. As the town was developing manifold, people from all over India settled in large numbers doing business in all fields, especially from northern India around 1970s, today this area is recognized as Sowcarpet.

## 2. PLANNING OF GEORGE TOWN

Road map of Chennai city shows clearly that all the major arterial roads are emerging from George Town, which makes it clear that this place has a good connectivity to other parts of the city (Fig. 1). George Town also has Chennai Port at the southeastern end, through which import and export activities are happening in the entire world. Southern Railway's South Zone Headquarters and a major railway station (Chennai Central Station) is in the western end of the George Town through which all goods travel to other parts of the country. There is also a suburban train line called Beach Station, which is in the eastern end, connecting the whole of Chennai city. This place also serves as regional headquarters for many banks like IOB, HDFC, and SBI exhibiting its commercial dominance over the city. These were some of the major reasons why George Town has emerged as the CBD in the beginning.

The entire George Town covers approximately 4.0 sq km of area. Town was fortified during British rule. The layout is planned in checkboard style or grid iron. The same pattern is

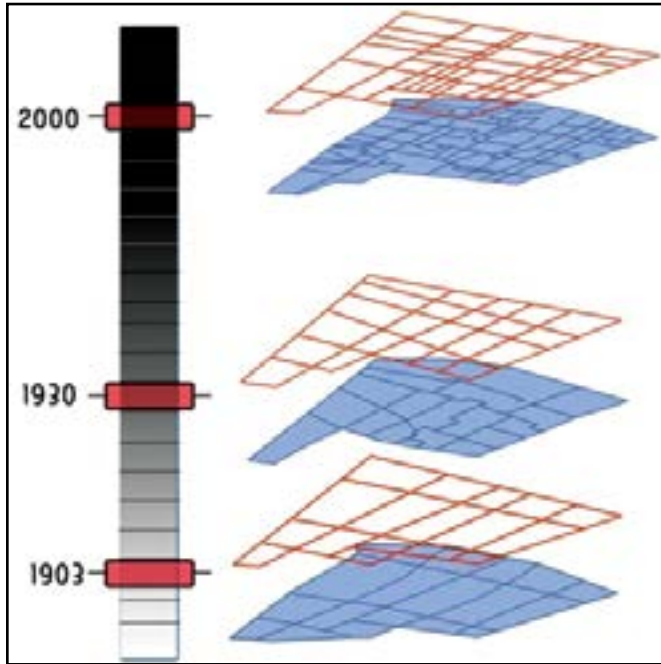
Fig. 1: Major Roads of Chennai





being adopted for further development of the entire area. New streets are being laid out as intersections between two roads running either parallel or perpendicular to the neighboring streets. This strong layout gives access to any interior street without much difficulty. One can enter any street through the other streets and rarely end up with a cul-de-sac, whose street almost looks like corridors. Evolution of the street pattern through the years is shown in Fig. 2.

Fig. 2: Evolution of road network in George Town



NSC Bose road being a transit artery acts as a spine for business hub. This road forms the entry to the George Town from the southern part of the city. George Town not only stands for business but also has buildings with iconic recognition for its great structural and heritage value. These are legendary buildings like Madras High Court Complex which has many noteworthy structures, like YMCA Building, PARRYS Building, etc. Apart from these, the Chennai Port within the reach plays a vital role in the development of the city. The Port being one of the largest in the country serves efficient trade purposes and gives a great scope of attracting businesses within its province. This is one of the major reasons for the beginning of wholesale markets in various categories in George Town.

Fig. 3: Plan of George Town

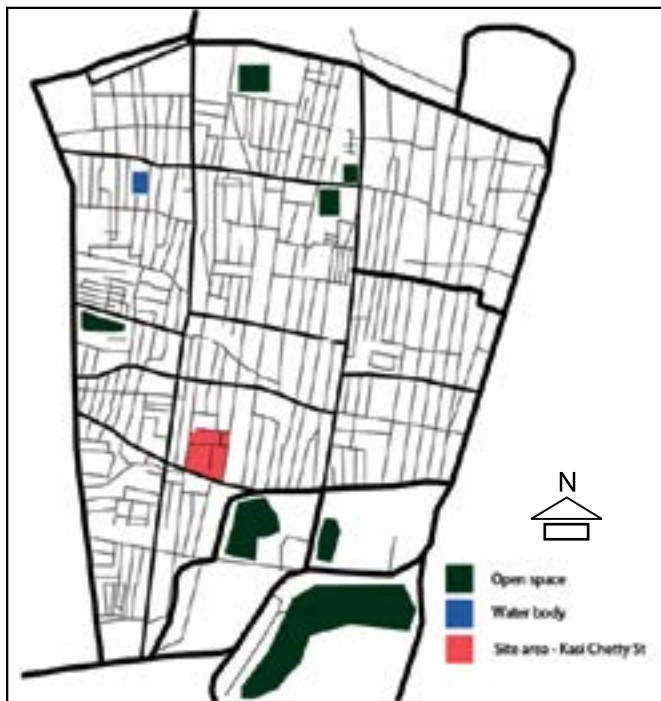


Fig. 3 and 4 shows the area is spread with few institutional buildings, but the main concentration falls on the heritage of the town. As mentioned above, not only the legendary structure but the town also possesses great number of historically important units that cannot be seen in any other part of the country. That is why the entire George Town has been recognized

as one of the world's heritage site by UNESCO.

### 3. GEORGE TOWN

George Town is also famous for its crowded and densely packed structures, where a lot of activities happen throughout the day. Fig. 5, also shows clearly that this area lacks open spaces and green spaces and how dangerous the location becomes when any fire accidents or disaster happen. There is no scope for the people to move out to any safer locations even in the case of natural calamities.

Fig. 6 shows land use given as part the Second Master Plan (2006), prepared by the Chennai Metropolitan Development Authority (CMDA) which is the nodal agency to regulate the development in the

Fig. 4: Plan of George Town



Fig. 5: Density Pattern of George Town



**Fig. 6: Land Use Map of George Town (CMDA)**



city. It can also be observed that almost all the areas are under mixed residential development zone. So, a land use map is done freshly (Fig. 7) in a detailed manner to near accuracy to expose the real character of the town. In the preparation of this land use map, for the purpose of this study the criteria's adopted are:

**Fig. 7: Generated Land Use Map of George Town for Study Purpose**



**Unit:** Unit is an individual building whose boundaries are defined with a clear plot boundary.

**Commercial (Blue):** The unit that incorporates shops. If there is small extent of residential use within the building (around 10 percent of total floor area), the building will still be considered as commercial as its major character (more than 60 percent) is commercial. Units which are used as warehouses also come under this category.

**Mixed residential (Orange):** A unit would be considered as mixed residential if more than 40 percent of the area has residential activities and remaining as commercial.

**Residential (Yellow):** A unit which is used only for residential purposes is regarded as residential.

**Others:** Buildings where no shopping and residential activities exist, and these are used for other purposes like religion related activities or unused spaces; service buildings such as association offices, etc.; and commercial spaces which are not used for trade related activities like hospitals, and hotels come under this category.

**Fig. 8: George Town : Number of Stories**





Fig. 8, shows, great variations in heights but the range is not vast. Though the building height varies from one storey to 8 storeys, the average height is only between 3 to 5 stories. More than 80 percent of the buildings fall under this category.

Findings from the analysis of the documented and visual information are given below:

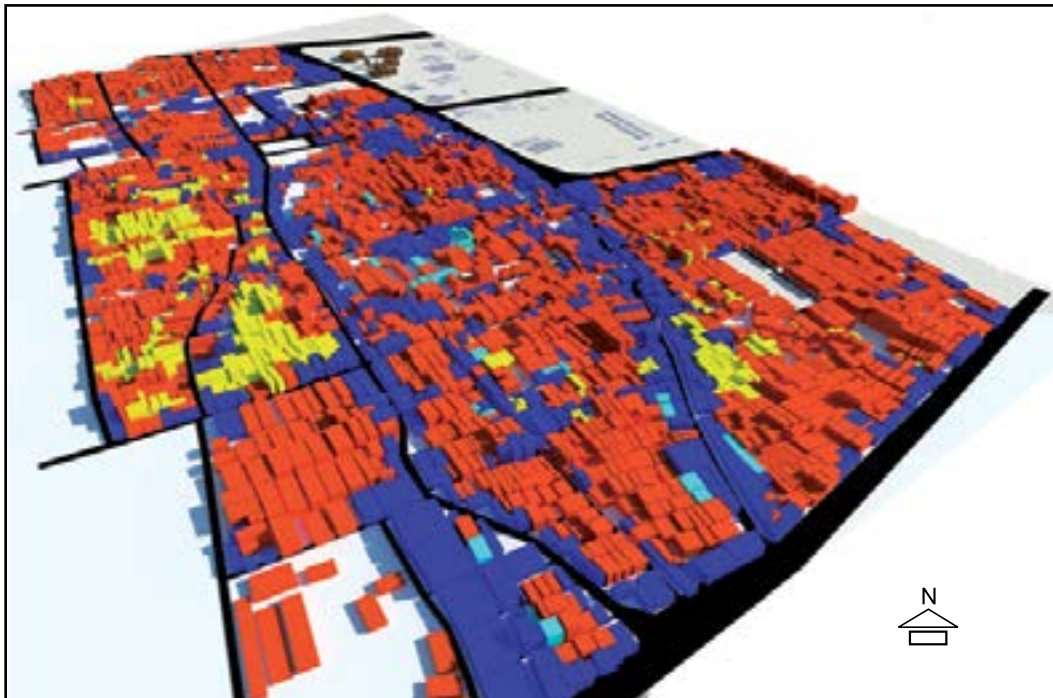
- NSC Bose road acts as a spine running from east to west and serves as southern boundary to the entire George Town.
- There are several roads emerging from NSC Bose road towards northern parts of the town. In fact the character and life of the area lies in these streets. Each of these streets is specialized in particular business or sale. For example, one street for crockery, another for jewelry, others for stationary, flowers, cereals, plastics, grocery products, electrical, textiles, banks, etc.
- In each street products or specialization may vary but they all show unity in their character and also share similar problems. The major problems faced by the streets are overcrowding, high density, lack of business focus, and insufficient infrastructure.
- These streets show a change in land use in their stretch, at the point of emerging; from the southern side they are completely commercial. As they move towards north, they are transformed into complete residential streets. In this transformation, majority of the streets in central part has become mixed residential.

Fig. 9: George Town: Variations in Land Use



- This is due to the influence of NSC Bose road, which makes transportation easy for the markets. Interestingly these trade and commerce activity roads are emerging from the NSC Bose road only towards the northern end and not to the southern side as the place in the southern side contains many old institutional buildings like the Madras High Court, Bus Terminus, etc.
- A small portion of the George Town (southern part) is being studied to understand the character and functioning of the town.

Fig. 10: View of George Town



#### 4. DETAILED STUDY AREA OF THE KASI CHETTY STREET

Kasi Chetty Street and its area of influence (Fig. 11) are taken for the detailed study, as it is a one of the important business streets of the region. The area of the site taken for the detailed study measures less than 0.5 sq km.

This particular business street is not emerging from NSC Bose road and it is accessed through streets which emerge from NSC Bose Road. To enter Kasi Chetty Street, one has to come from west (through Govindappa Street) or from East (Narayan Mudali Street). As the burden of Kasi Chetty's traffic is shared by these two roads, the entry to these roads is very much crowded.

The basic visual and statistical data is collected for better understanding of the detailed study area. The site consists of around 120 individual units. This street



Fig. 11: Kasi Chetty Street - Location



Fig. 12: Kasi Chetty Street, Individual Site Units

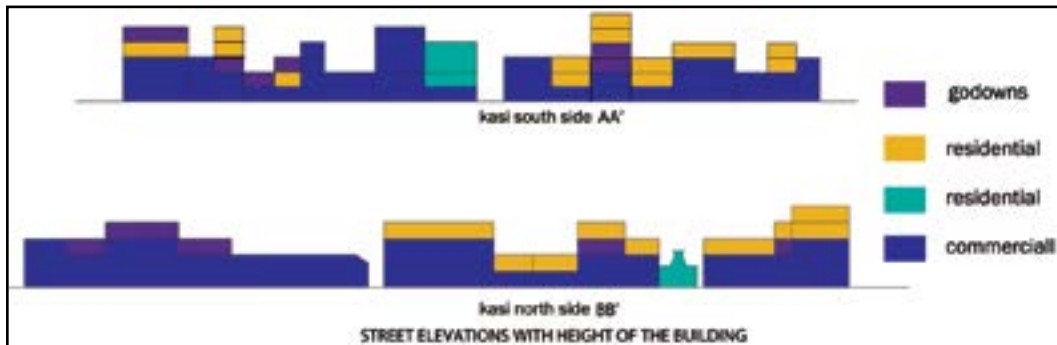


can differ from other streets in its orientation. While other business streets start from NSC Bose road and it influences the linear stretch of buildings, this particular street is configured in T Shape with almost same name. Flange part of the street is called Kasi Chetty Street and web part named as Kasi Chetty Lane. The street is well known for its plastic products especially domestic items. Furthermore, it is also the business nuclei for imported perfumes and cosmetics.

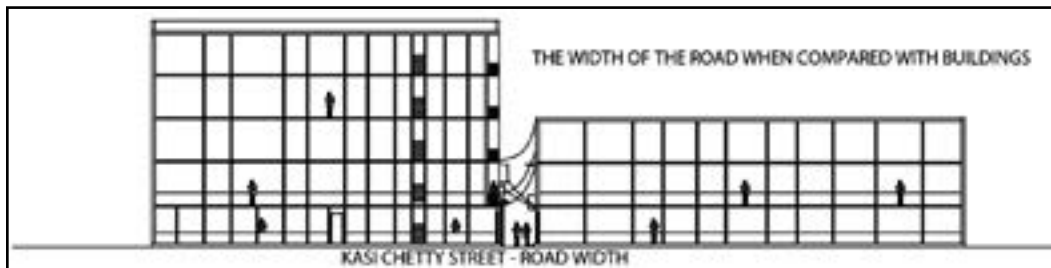
Commercial and mixed residential uses occupy the entire site giving a small room for miscellaneous typologies among which dilapidated and heritage buildings are widely seen. We observe the building heights as 3-5 storey units spreading throughout the site (Fig. 13 and 14). The street width is too small when compared with the heights of the buildings, which clearly shows that many of the buildings here are in violation with the Second Master Plan of Chennai city. This denotes the site is a fractal part of the whole George Town.

This street is vibrant not only for its shops and its items, but also has hawkers (road side flower sellers) who sell flowers during the morning hours before the opening of the shops on

**Fig. 13: Street Elevations Showing the Height Variations**



**Fig. 14: Comparison of Width of Road and Buildings Height**



both sides of the road every day. While most of the people who purchase here is retail shop holders getting goods to their shops, which are located all over the city. Interviewing them revealed that the wholesale shops located in Kasi Chetty Street have good circle of contacts and networks in the city which gets them permanent buyers.

However, retail customers claim that there is a lack of facilities and discomfort distracts people away from this area. The upcoming shopping districts located in other parts of the city like T. Nagar, Adyar, etc.; have taken away retail market business from this area. T. Nagar stands as an example as people get carried away for the glossy malls and facilities without prioritizing high prices. Prices in Kasi Chetty Street are

**Fig. 15: Daily Activities and there Timings**

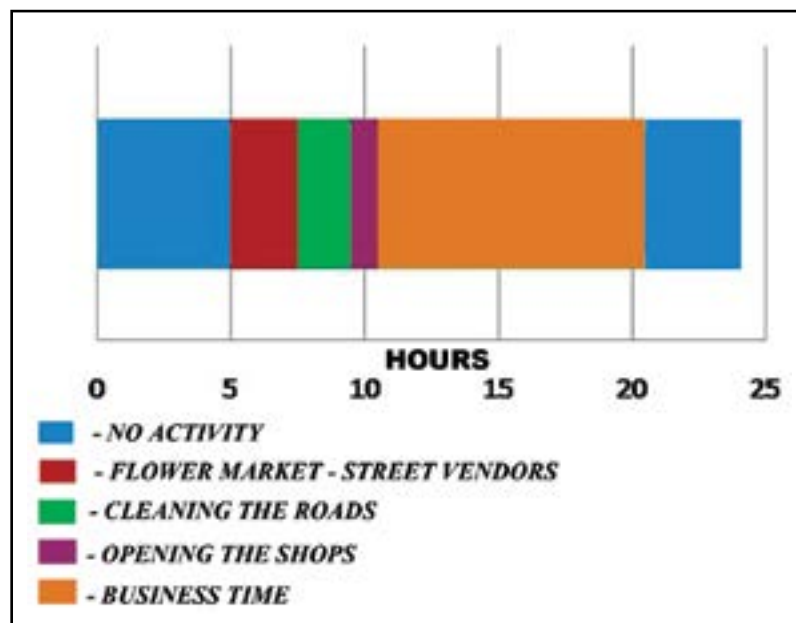




Fig. 16: Shop Typology

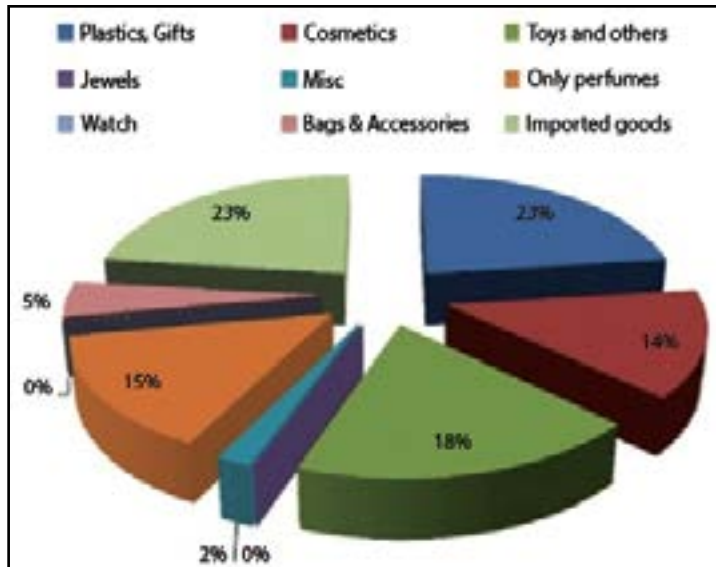


Fig. 17: Growth of the Shops

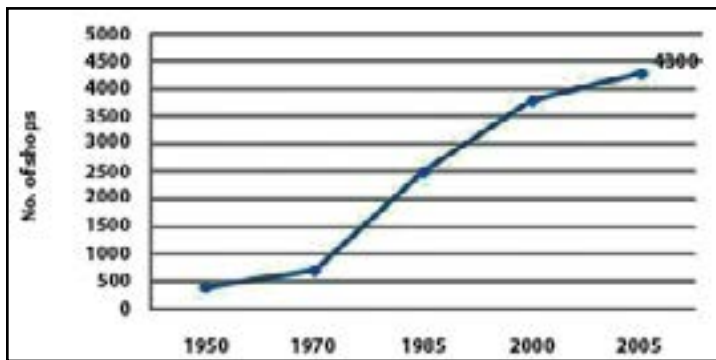
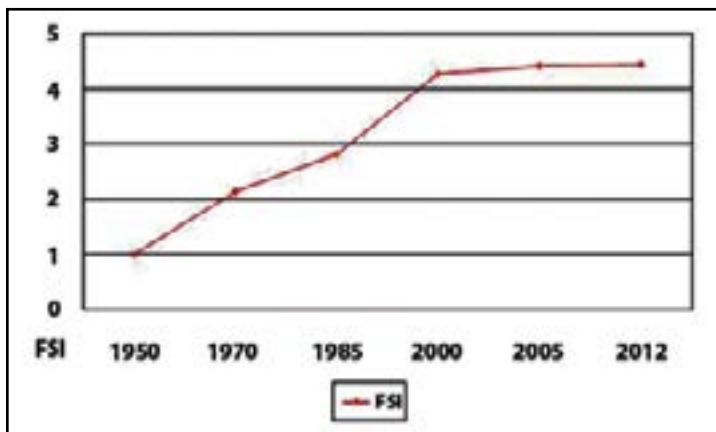


Fig. 18: Growth in FSI



comparatively less. According to the whole sale customers, Kasi Chetty Street has more typology of shops (Fig. 16) and has all what they need and that brings them here. But they are very much unsatisfied with the problems of overcrowding, lack of parking facilities, etc. which they face during shopping.

Shop distribution is further categorized for better understanding. The streets of this area are planned to see particular products and there happens to be street wise business. But a little of other typologies are also seen throughout the region in negligible numbers. Here in Kasi Chetty Street, the majority products are cosmetics, toys, perfumes and imported goods. All the shops follow similar timings and there is no dynamic change in area's functionality.

Influence of North Indians (Marwadis) can be seen clearly in this region since only in 1970s Marwadis started to settle here with few shops and slowly they progressed in their business exhibiting their dominance by 1990s. During that period we could see an increase in the number of shops (Fig. 17) from 500 to around 3,500. This drastic increase in the number of shops and the settlement of the shopkeepers in the same area required lot of space. This accelerated the growth of multi-storied and unauthorized construction in this locality. As once

the buildings are erected, giving room to nothing but more problems. Fig. 18 shows the growth of Floor Space Index in this locality. As per Chennai Master Plan, the permissible FSI is 1.5 and the existing FSI in this region is almost equal to 4 on average.

Small streets width and closely packed buildings with higher floor areas next to next as continuous buildings has led to more business, more money, growth in economy, etc. But at the same time more traffic, more crowding and a lot of other problems like safety of the public and goods, etc. The characteristics of the buildings here are such that shops are located on both sides with a central corridor. This makes the corridors as important as street. These corridors are nearly 1.0 meter wide. These corridors give a clear path for pedestrians to linger in the area. We find more shops exposed to corridors than the streets. This can be observed well in (Fig. 20).

We can also see from Fig. 20 that corridors which give access to the shops are interconnected in some places, thus the movement across streets can also happen within them. It could also be noted that the percentage of space occupied by the corridors with respect to their length is 3 times lesser than the length of roads, which clearly establishes that the corridors are the lifeline of this region with respect to the transportation of goods and people. The corridors are too small in width and they run all over the region, and it will definitely confuse any person who enters this region for first time.

## 5. SOLUTIONS FOR THE KASI CHETTY STREET

Solutions are worked out by taking the following into account as any urban renewal proposal has its own legal, logical and psychological problems.

Fig. 19: Comparison of Pathways and Roads

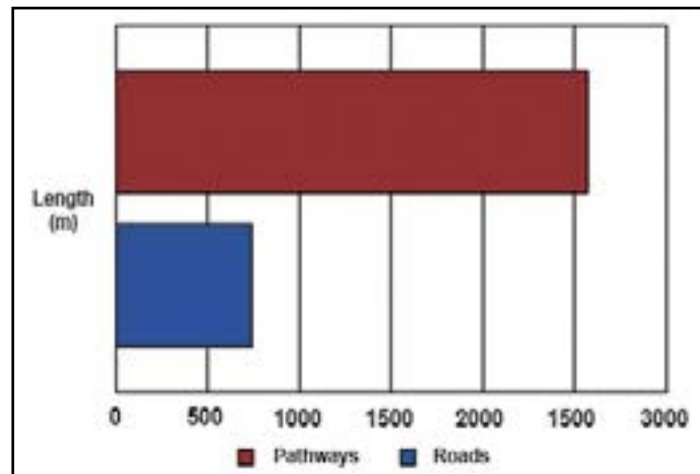
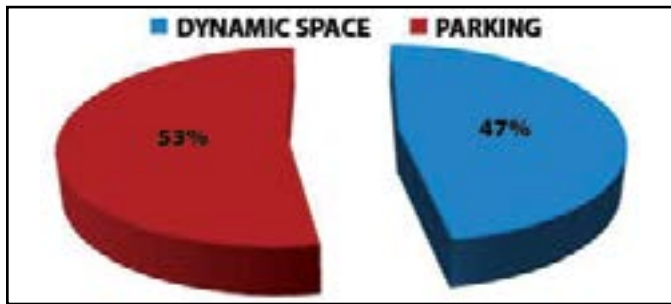


Fig. 20: Comparison of Roads and Pathways





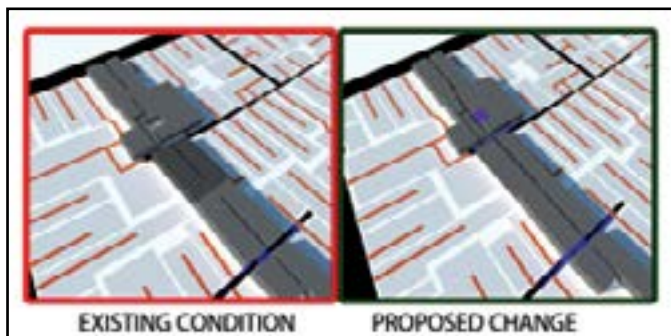
**Fig. 21: Percentage of Road Space Utilized for Different Purposes**



**Fig. 22: Kasi Chetty Street - Solutions**



**Fig. 23: Zone - A; Proposed Changes**



- During regeneration, there should be minimal structural damage and disturbance to fabric and character of the space;
- There are no bigger open spaces available to provide new designs;
- Existing structures should not be disturbed, and the disturbance has to be minimal as this place is the lifeline for the wholesale market and provides bread and butter for many people who are working here;
- Heritage of this area has to be retained as it is one of the listed heritage sites of UNESCO; and
- While analyzing the above issues, and based on the study, the design solutions has to focus towards better shopping experience like providing ample parking spaces, considering the safety aspects, etc.

People are parking on the roads and to change this feature we require a separate parking space, which is not available. On the roads, one could find that 53 percent of road space (Fig. 21) is being used only for parking and only the remaining 47 percent of space is used for people and vehicles movement. So, the trend on parking in the streets will continue and it will be easy to provide separate pedestrian corridors for the movement of people. As per the collected statistics, people are using more pedestrian corridors than the roads for their movement.

Grid iron pattern of the town, narrow streets used for parking, and corridors' being used as passageways are the common features of this area. So, the

Fig. 24: Zone - B, Proposed Changes

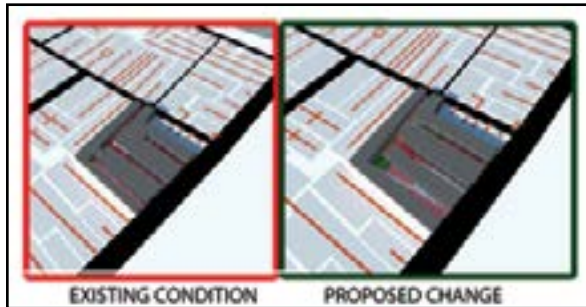


Fig. 25: Zone - C, Proposed Changes

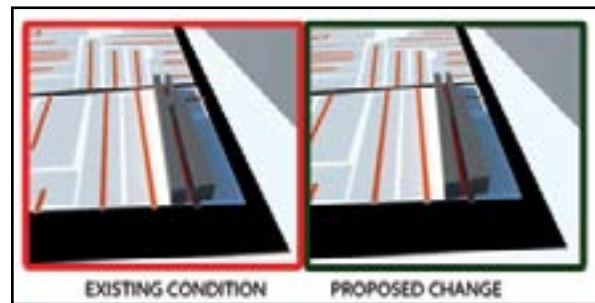


Fig. 26: Zone - D, Proposed Changes

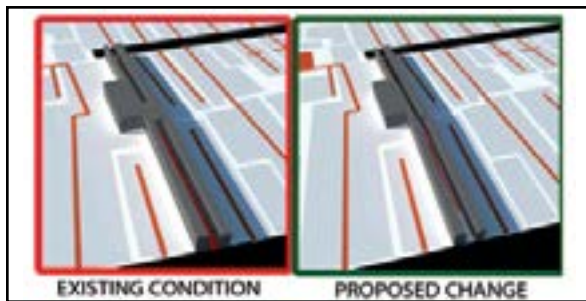


Fig. 27: Zone - E, Proposed Changes

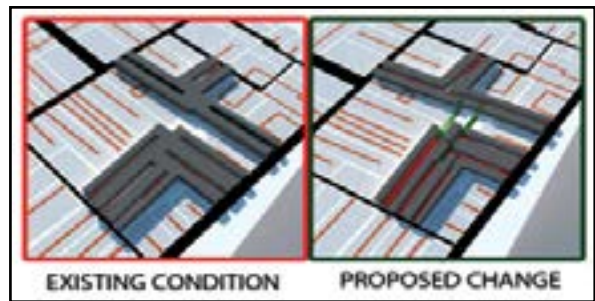


Fig. 28: Zone - F, Proposed Changes

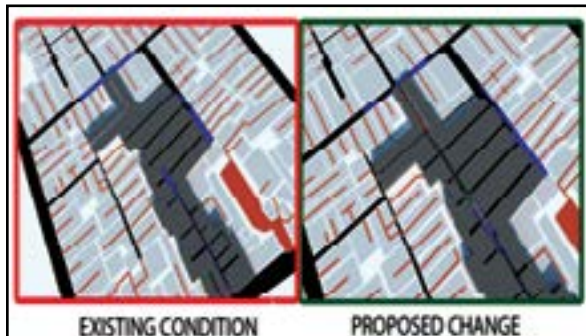
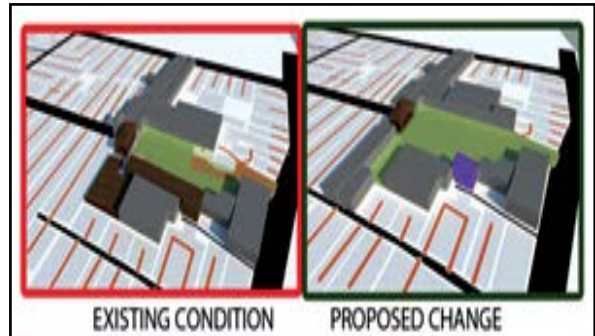


Fig. 29: Zone - G, Proposed Changes



solution is worked out (Fig. 22) with less intervention to the lifestyle of the people working here. Solutions focus on creating better pedestrian movement by connecting the corridors and emphasizing them in the same grid iron pattern of the town as this space is also part of the whole George Town. Advantage with the grid iron pattern is that it can reach the new users also without any confusion in direction of movement.

Connecting the corridors is worked out as a major solution, and minor changes have also been made to support the design in better way such as adding toilets and firefighting equipment within the site accessible to public. These connections are worked out by keeping the restriction of minimalistic damage



to the character of the site, and as it is a continuous building area, damaging one structure might affect the others. So the connections are done only on the ground floor level, and building on other floors will remain the same. Open space that is existing in one part of the site shown in Zone - G is designed as a public node that incorporates the character of small size square, which will be provided with public toilets.

## 6. CONCLUSIONS

All the streets in George Town can be redesigned in such a way that at least safety of the people is better taken care of, and exclusive spaces for the movement of people and goods can be provided. It is also proposed that designated parking spaces can be created, and a little positive change can be brought to the shopping experience of people with minimal interventions to the character of the Town.

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- Muthiah, S. (1995) *Madras, its past and present*, East West Books, Madras.

*Here we stand in Delhi city, symbol of old India and the new. It is not the narrow lanes and houses of old Delhi or the wide spaces and rather pretentious buildings of New Delhi that count, but the spirit of this ancient city. For Delhi has been an epitome of India's history with its succession of glory and disaster, and with its great capacity to absorb many cultures and yet remain itself. It is a gem with many facets, some bright and some darkened by age, presenting the course of India's life and thought during the ages. Even the stones here whisper to our ears of the ages of long ago and the air we breathe is full of the dust and fragrance of the past as also of the fresh and piercing winds of the present. We face the good and bad of India in Delhi city which has been the grave of many empires and the nursery of a republic. What a tremendous story is here the tradition of millenia of our history surrounds us at every step, and the procession of innumerable generations passes by before our eyes.....*

*Jawaharlal Nehru*



# **Sustainable Development : Environmental Law with Reference to Town and Country Planning**

**Faisal Ali Khan**

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## **Abstract**

*The Sustainability is about meeting the basic human needs and wants. People values their health and that of their children, economic security and happiness. These are primary elements in our quality of life. The focus upon the sustainability requires the decision making policy that recognize in connection with actions and effects in the environment, economy and society. Sustainability is very much about what kind of legacy we want to leave for our children and grandchildren. The environmental challenges confronting us today are greater than ever before. But we have potential to meet these challenges by command and regulation, and public participation. We needs to concentrate on economic growth but with full protection of physical environment and nature.*

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## **1. INTRODUCTION**

Sustainable development views human activities as part of and dependent upon the natural world. In scientific terms the human ecosystem including the communities we build a subset of the larger ecosystem of the earth. Sustainability is about meeting the basic human needs and wants, e.g., peoples' health and that of their children, economic security and happiness. These are primary elements of the quality of life. A focus upon sustainability requires decision making policy that recognizes connection with actions and effects in the environment, economy and society. Sustainability is very much about what kind of legacy we want to leave for our children and grandchildren. Sustainable development involves simultaneous pursuit of economic prosperity, environmental quality and social equity.

Sustainable development has emerged from the series of meeting and reports during the 1970s and 1980s, such as UN Stockholm Conference on the Human Environment in 1972, the World Conservation Strategy prepared by International Union for Conservation of Nature along with the UN Environment Program and the World Wildlife Fund promoted the idea of environmental protection with self interest of the human species in 1980, UN sponsored Brundtland Commission released 'Our Common Future report' in 1987, UN Conference on Environment and Development, in Rio de Janeiro in 1992 labeled the Earth Summit.

Sustainable development is an objective which we are constantly striving for. This calls for an urgent need to bring about necessary changes in the industrial and agricultural production patterns utility services, consumer behavior and lifestyle of the people keeping in view our social and development priorities for

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*Faisal Ali Khan, Research Scholar, Department of Law, A. M. U., Aligarh*





conservation and sustainable use of natural resources. Facing the environmental challenges of the 21st Century will be a matter of food policy, effective leadership, creative agencies, concerned and involved citizens good information and rational decision making.

The concept of sustainable development defined as development that meets the needs of present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987) has always been a part of the indigenous ethos. Ignorance though not blissful in this context is largely responsible for generating erroneous conceptions, projecting the natives of the mother earth as the enemies of the procreator. One often comes across administrators and forest officers telling stories about how tribals have destroyed the virgin forests. Intellectuals and the so called friends of the supposedly down trodden, underprivileged, and ignominious are not far behind. They plan strategies which are supposedly eco-friendly but have remained hitherto unavailable to the tiller of the land. To them, paramount importance remains the paradigm that suggest development and ecological concerns are conflicting goals for the natives; and with this vision they pose questions about awareness and attitudes of the people at grass roots level towards environment and sustainability specifically with regard to inter-generational equity (Reddy, 1995). Probes such as above tantamount to exploring the essence of existentialism, and construction of categories which supposedly fall outside the purview of the world view of the indigenous dweller.

Nature is important to the native and inter-generational equity inherent to their mind set. Delinking one from the other in their day to day existence is an unknown experience. Extraneous efforts aimed at such precocious interpolation are likely to be unrewarding in any empirical exploration. Construction of categories for unknown cultures has always been the cause of intellectual annihilation. In conformance with the prevailing attitude of the development planner, academic wisdom believes that concept of sustainable development that became fad in the 1980s is antithetical to the normative tradition of indigenous conception of development. This stance follows a logical sequel to the conviction that the so-called primitive cultures or under-privileged societies are static and development per-se is alien to them. Even sensitive anthropological mind sets are often indifferent to the on-going reality.

Sustainable development to whom and how long and where? What would be the scenario beyond sustainable development? These questions need serious debate to arrive at some consensus for sustainable development of the developing nations. Sustainable development has a time dimension. At least, it should continue till the next generation of people assume the responsibility. Further, sustainable development could be at global, national or local level. Sustainable development



came into limelight mainly because the other paradigms of development such as capitalist growth model and socialist political economy model, failed to provide a good society to the developing nations. A good society should be without strains or disruptions. These paradigms too had their ideals of a good society. According to first paradigm, a good society is one in which people have the most possible goods and services with the least cost, the least effort, and the least use of resources while according to the other paradigm, a good society is one that enables people to meet their basic needs and carry out their preferred social activities (Weaver, 1975). Both these paradigms have been criticized as these provide privileged role to the national elites and brought in strains and disruption in the developing as well as in the developed societies. Another group of theorists are pinning their hope on the ethno development strategy based on grass roots socio - political movements and popular culture. Further, a group of scholars are seized with a model of communication policy that shall promote political economic and socio - cultural negotiation and integration to form a common national culture for development.

In the above backdrop and keeping in view the contemporary changing Indian society, sustainable development may not be an impossible proposition but a difficult one, crises, strife, conflicts and tensions are part of the development process but we have to manage them towards the larger welfare of the society, on a well informed basis. The given platitude of sustainable development in the Indian context is not encouraging and that may give us mixed results, some may gain while a large number may get pains. Our efforts should be to reduce pains and enlarge gains for many through bloodless surgical operations and painless therapy. This would warrant delicate handling of the ill society through the skills of an efficient managerial surgeon, be it a politician, bureaucrat, intellectual or a leader of the NGO.

Beyond sustainable development if the operation of the Indian society could be successfully performed, then one could visualize certain elements of a civil society based on a concern for a larger conglomeration, using common code of language, observing legal system supported by the constitutional framework in toto and evolving institutions which cut across the parochial ties such as caste, class, race, language, region and ethnic identities, to promote communitarianism among people. Only then, the sustainable development beyond it, can hope for society as a community. It is an ideal which is difficult to achieve but we can today make efforts to move towards, that end for a better India tomorrow. This may be possible if developmental politics take over the electoral politics and we evolve a development paradigm based on our values and keeping in view our own limited resources rather than largely influenced by Euro-American models. This would require a thorough analysis of Indian society for a synthesis



or interrelatedness of factors that may be managed for the development of the society. Let the social scientists take it as a challenge and rise to the occasion instead of politicking in scholarship. An analysis of paradigm shift from socialistic pattern to development based on market economic forces will not suffice. A new paradigm relevant to our emerging scenario is what the social scientists should strive for, through an interdisciplinary approach.

## 2. GLOBAL INITIATIVES ON SUSTAINABILITY

Concept of sustainable development is the only way by which mother nature can be saved. First time, the term sustainable development was coined by the International Union for the Conservation of Nature (IUCN) in the year 1980 in its World Conservation Strategy, although the term was at the time of Cocoyam Declaration on Environment and Development in the early 1970. Since then it is constantly used. At that time it was insignificant as it had nothing to do with the development and environmental protection. The concept of sustainable development is evolved in numerous environmental movement. It can be seen by different summits such as Earth Summit in Rio, Brazil 1992. In the Earth summits the main point of discussion was to bring about sustainable development. Though, the records on moving towards sustainability so appears to have been quite poor. Sustainable development is defined by the Brundtland Commission as development that meets the need of present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- The concept of needs in particular the essential need of world's poor, to which overriding priority should be given; and
- The idea of limitation is imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

Thus, the goal of economic and social development must be defined in terms of sustainability in all countries such as developed or developing, market oriented or centrally planned. Interpretation will vary, but must share certain general features and must flow from a consensus on the basic concept of sustainable and on a broad strategic framework for achieving it.

### 2.1 Principle of Agenda 21 of the Earth Summit

The Rio Declaration on Environmental Development provides series of principles which define the rights and liability of states regarding following issues:

- Human beings are at the centre of concerns for sustainable development. They are entitled to healthy and productive life in harmony with nature.



- That scientific uncertainty should not delay measures to prevent environmental degradation where there are threats of serious or irreversible damages.
- That States have a sovereign right to exploit their own resources but not to cause damage to the environment of other states.
- That minimizing poverty and deducting the disparities in the world wide standards of living are indispensable for sustainable developments.
- That the major participation of women is essential for achieving sustainable development; and
- That the developed countries acknowledge the responsibilities that they bear in the international pursuit of sustainable development in view of the pressures of their societies place on the global environment and of the technologies and financial resources they demand.

The Statement of Forest Principles is the non-legally binding statement of principles for the sustainable management of forests. The first global consensus which provides the principle of sustainable management of forests. Among them few provisions are as follows:

- That all countries, notably developed countries, should make an effort to "green the world" through reforestation and forest conservation;
- That States have a right to develop forests according to their socio-economic needs, in keeping with national sustainable development policies; and
- That specific financial resources should be provided to develop programs that encourage economic and social substitution policies.

At the Earth Summit, the UN was also called on to negotiate an international legal agreement on desertification, to hold talks on preventing the depletion of certain fish stocks. to devise a program of action for the sustainable development of small island developing States and to establish mechanisms for ensuring the implementation of the Rio accords.

## **2.2 UN Initiatives on Earth Summit's Agenda 21**

The Earth Summit succeeded in presenting new perspectives on economic progress. It was lauded as the beginning of a new era and its success would be measured by the implementation of its agreements at locally, nationally and internationally level. Attending participant of the Summit understood that making the necessary changes would not be easy: it would be a multi-phased process; it would take place at different rates in different parts of the world; and it would require the expenditure of funds now in order to prevent much larger financial and environmental costs in the future. In Rio, the UN was given a key role in the implementation of Agenda 21. Since then, the Organization has



taken steps to integrate concepts of sustainable development into all relevant policies and program. Income-generating projects increasingly take into account environmental consequences.

Two central tenets of Indian culture and philosophy namely, the unitive basis of material world and non-violence, lead logically to solicitousness for all forms of life, both animal and plant for preservation of environment and ecology as the key to existence. Accordingly, In the Indian philosophy, the bounties of nature are to be nurtured and used for benefit of all. The protection and regeneration are inherently more desirable in Indian ethos than destruction and exploitation the pressure of population can severely jeopardize the future generation by the way of degradation of land quality, depletion of natural resources and pollution which lead to global warming and pose health hazards for all.

The quality of life for Citizens, particularly those residing in the urban slums, is becoming increasingly unacceptable. The most challenging environmental problems India is facing stem from the rapid growth of the polluting industries in the urban areas. For years industrial development came without either planning or environmental control. The industrial sector has mushroomed in urban agglomeration. Unplanned growth has caused an overall decline in environmental conditions.

### 3. SUSTAINABILITY IN INDIA

#### 3.1 Protection of Environment through Constitutional Safeguards

Indian Constitution is amongst the few in the world that contains specific provisions on environmental protection. The Directive Principles of State Policy and the Fundamental Duties chapters explicitly enunciate the national commitment to protect and improve the environment. Judicial interpretation has strengthened this constitutional mandate. Recently, the courts have recognized the right to a wholesome environment as being implicit in the fundamental right to life.

**Forty Second Amendment Act, 1976:** Environmental protection and improvement were explicitly incorporated into the Constitution by the Constitution (Forty - Second Amendment) Act of 1976. introduced Article 48A in Part IV which provides that "the State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country." the provision though not enforceable in a court, directs the State to enact legislation and frame policies towards attaining these goals. The Constitution Act, 1976 also introduced Article 51A in Part IV A of the Constitution Article 51 A (g) which provides: "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures." Thus, the State now is under a moral duty to take measures to prevent



ecological imbalances resulting from modern industrialization. The Constitution has also cast a duty on the citizen to take steps for maintaining ecological balance. Although the language of Article 48 A and Article 51 A (g) differs to each other, the differences appear to relate to form rather than to substance. Together, the provisions highlight the national consensus on the importance of environmental protection and improvement. The incorporation of protection of environment as an obligation of the state and as a mandate to the citizens of India as part of the fundamental duties is notable indication to the importance of the protection of environment.

**The Directive Principles of State Policy:** The directive principles are policy prescriptions that guide the Government. Although unenforceable by a court, the directive principles are increasingly being cited by judges as complementary to the fundamental rights. In several environmental cases the courts have been guided by the language of Article 48A. Indeed, the Supreme Court has held: "Whenever a problem of ecology is brought before the Court, the Court is bound to bear in mind Article 48A of the Constitution and Article 51A (g) of the Constitution. When the Court is called upon to give effect to the Directive Principle and the Fundamental Duty, the Court is not to shrug its shoulders and say that priorities are a matter of policy and so it is a matter for the policy-making authority. The least that the Court may do is to examine whether appropriate considerations are borne in mind and irrelevancies excluded. In appropriate cases, the court may go further, but how much further will depend on the circumstances of the case. The Court may always give necessary directions. Similarly, the High Court of A.P. in *T. Dainodar Rao Versus Municipal Corporation of Hyderabad* has interpreted Article 48A as imposing "an obligation" on the government, including Courts, to protect the environment. The phrase "protect and improve" of Article 48A and Article 51A (g), appears to contemplate affirmative governmental action to improve the quality of the environment and not just to preserve the environment in its degraded form.

**Article 253 and the Environmental Legislation:** The Forty - Second Amendment Act, 1976, also expanded the list of concurrent powers in the Constitution. The Amendment - introduced a new entry. "Population Control and Family Planning", while "Forest" and "Protection of Wild Animals and Birds" were moved from the State List to the Concurrent List. Article 253 of the Constitution empowers Parliament to make laws implementing India's international obligations as well as any decision made at an international conference, association or other body. Article 253 states: "Notwithstanding anything in the foregoing provisions of this Chapter, Parliament has power to make any law for the whole or any part of the territory of India for implementing any treaty, agreement or convention with any other country or countries or any decision made at any international conference, association or other body".



In view of the broad range of issues addressed by international conventions, Conferences, treaties and agreements, Article 253 apparently gives Parliament the power to enact laws on virtually any entry contained in the State List. Parliament has used its power under Article 253 to enact the Air (Prevention and Control of Pollution) Act of 1981 and the Environment (Protection) Act of 1986. The preambles to both laws state that these Acts were enacted to implement the decisions reached at the United Nations Conference on the Human Environment held at Stockholm in 1972. At the conference, members of the United Nations agreed to work to preserve the world's natural resources, and called on each country to carry out this goal.

The broad language of Article 253 suggests that in the wake of the Stockholm conference in 1972, parliament has the power to legislate on all matters linked to the preservation of natural resources. Parliament use of Article 253 to enact the Air Act and Environment Act confirms this view. The subjects "Forests" and "Preservation of Wild Animals and Birds" relate to natural resources. It appears, therefore, that the expansion of concurrent powers by the Forty - Second Amendment in 1976 only made explicit, powers that Parliament already possessed under Article 253.

**Environmental Protection and Fundamental Rights:** The Supreme Court has entered one of its most creative periods, specifically, the Court fortified and expanded the fundamental rights enshrined in Part III of the Constitution. In the process the boundaries of the fundamental right to life and personal liberty guaranteed in Article 21 were expanded to include environmental protection.

### 3.2 Indian Courts and Environment Sustainability

The Indian courts have embraced judicial activism in developing environmental jurisprudence. The right to pollution free environment is treated as a fundamental right.

**Municipal Council, Ratlam Versus Vardhichand:** In this case the Supreme Court has recognized the importance of pollution free environment and gave it the status of a human right.

**Chhetriya Pardush Mukti Sangharsh Samiti Versus State of C.P. 14:** In this case the Supreme Court held that every citizen has a fundamental right to have the enjoyment of quality of life and living as contemplated by Article 21 of the Constitution of India. Anything which endangers or impairs, by conduct of anybody either in violation or in derogation of laws, that quality of life and living is entitled to be taken recourse of Article 32 of the Constitution.



**Rural Litigation and Entitlement Kendra Versus State of U.P.:** The Supreme Court held that it is the fundamental right of the people to live in healthy environment with minimal disturbances of ecological balance. The threat to ecological balance resulting in the deterioration of the quality of environment was thus apparently treated as involving a threat to right to life. The Supreme Court again held that right to life contained in Article 21 is so wide and takes within its contours the right to clean and healthy environment. The Supreme Court issued the direction in this case under Article 32 to protect, 'the lives of the people', their 'health' and the 'ecology'. This judicial behavior of interference and the anxiety to save the life and health of the people and to safeguard the fundamental rights through directions issued under Article 32 for ensuring environmental protection despite the presence of specific laws dealing with the matter.

**M.C. Mehta Versus Union of India:** The Supreme Court has held that an enterprise carrying on hazardous or inherently dangerous activity must be held strict or absolute liable for causing harm to the people around it, and this rule of absolute liability will not be subject to any of the exception which operate vis -vis the tortious principle of strict liability under the English Rule in Rylands Versus Fletcher.

**M.C. Mehta Versus Union of India:** The financial capacity of the tanneries should be considered as irrelevant while requiring them to establish primary treatment plants. The effluent discharged from a tannery is ten times noxious when compared with the domestic sewage water which flows into the river from any urban area on its banks (Ganga). The Supreme Court on petition under Article 32 of the Constitution ordered the tanneries at Jajmau, Kanpur cannot be allowed to continue to carry on the industrial activity unless they take steps to establish primary treatment plants.

### 3.3 Environmental Legislation

**The Indian Forest Act of 1927:** Although it embodies the colonial policies of the pre- independence era, the Forest Act of 1927 remains in force. This Act consolidates, with minor changes, the provisions of the Indian Forest Act of 1878 and its amending Acts. The Indian Forest Act of 1927 deals with four categories of forests, namely, reserved forests, village forests, protected forests, and non-government (private) forests. A state may declare forest lands or waste lands as reserved forests, and may sell the produce from these forests. Any unauthorized felling of trees, quarrying, grazing and hunting in reserved forests is punishable with a fine or imprisonment or both. Reserved forests assigned to a village community are called village forests. The State Governments are empowered to designate protected forests and may prohibit the felling of trees, quarrying and the removal of forest produce from these forests. The preservation of protected





forests is enforced through rules, licensees and criminal prosecutions. The Forest Act is administered by forest officers who are authorised to compel the attendance of witnesses and the production of documents, to issue search warrants and to take evidence in an inquiry into forest offences. Such evidence is admissible in a magistrate's court. The Indian Forest Act of 1927 has a limited territorial application; extends only to specified areas. Even from the pre- Constitutional days, some princely State had forest legislation with provisions analogous to those contained in the Indian Forest Act, 1927.

The Forest (Conservation) Act of 1980: Alarmed at India's rapid deforestation and the resulting environmental degradation the Central Government enacted the Forest (Conservation) Act 1980. As amended in 1988, the Act requires the approval of the Central Government before a State "de reserves" a reserved forest, uses forestland for non-forest purposes, assigns forest land to a private person or corporation or clears forest land for the purpose of reforestation. An Advisory Committee constituted under the Act advises the Centre on these approvals. According to Section 3 of the Forest (Conservation) Act of 1980. The Central Government may constitute a Committee consisting of such number of persons as it may deem fit to advise that Government. Section 3-A of the Act provides penalty for contravention of the provisions of the Act. Section 2 of the Act deals with restriction on the preservation of forests or use of forest land for non-forest purpose.

Where any offence under this Act has been committed by any department of Government, the head of the department; or by any authority, every person, who at the time of offence was committed, was directly in charge of and was responsible to the authority for the conduct of the business of the authority as well as the authority; shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly. Section 4 of the Act provides the power for making of the rules to the Central Government for carrying out the provisions of this Act. The policy behind statutes relating to forest had been molded with a commercial orientation. Hence neither, the Indian Forest Act 1927 nor the State Forest Laws could effectively check over exploitation of forests. There was a felt need to shift the policy from revenue to conservation. Attempts were afoot in this direction. The Forest (Conservation) Act, 1980 is a notable milestone in this direction. The law provides that prior approval of the Central Government is necessary when any State Government or other authority proceeds to de-reserve a reserved forest or to use the forest for non-forest purposes.

**Yashwat versus the State of U.P.:** In this case the question was whether this law was applicable to reserved forests' only. It was argued that the expression forest



land's of Section 2 of the Act relates to lands in reserved forests and not to other forest land. The Court did not accept this contention and held that according to the provisions in the Act even for use of any forest land for non-forest purposes prior permission is necessary. The Court observed it appears to us to be clear that for applying the Forest (Conservation) Act, 1980, it is not necessary that there should have been a reserved forest". It applies to 'any forest land' which is used for non-forest purposes. 'Any' is a word of very wide meaning and *prima facie* the use of this word excludes limitation or qualification. If the word 'any' is also taken into account, there would be no difficulty, in finding the term 'forest" has not been confined to "reserved forest" only. Section 2 imposing restriction on the use of forest lands for non-forest purposes will apply to all the forests.

**Ambica Quarry Works Versus State of Gujarat:** The Supreme Court has held that after commencement of the Act, the renewal of pre-existing mining leases in forest can be made only after obtaining prior approval of the Central Government. The Court observed that what is to be remembered is that the Act is in recognition of the awareness that a forestation have become social menaces and further deforestation and ecological imbalances should be prevented.

**Wild Life (Protection) Act, 1972:** The most significant legislation for the protection of wild life in the country, the Wild Life (Protection) Act, 1972 was passed by Parliament under Article 252 (1) of the Constitution at the request of eleven States. The Act with the significant amendments made in 1986 and 1991 forms a comprehensive legislation for the protection and management of wild life in the country. The Wild Life Act provides for state wild life advisory boards, regulation, for hunting wild animals and birds, establishment of sanctuaries and national parks, regulations for trade in wild animals, animal products and trophies, and judicial imposed penalties for violating the Act. Harming endangered species listed in Schedule I of the Act is prohibited throughout India. Hunting other species, like those requiring special protection (Schedule II), big game (Schedule III), and small game (Schedule IV) is regulated through licensing. A few species classified as vermin (Schedule V) may be hunted without restrictions. The Act is administered by wild life wardens and their staff. The Wild Life (Protection) Act. 1972 imposed prohibitions and restrictions on hunting wild life. In cases where the animal has become dangerous to human life or is disabled or diseased beyond recovery, the Chief Wild Life Warden may permit hunting of such animal". Such permits can also be issued to hunt wild animals for purposes of education, scientific research and scientific management of wild life". Enumeration of endangered species of animals in schedules and imposition of restrictions and prohibition on hunting is a welcome measure to protect such species from extinction". Conservation of wild life in their natural surroundings technically called 'in



situ conservation” is better than caged conservation and captive breeding. Protection of wild life in their natural habitat will help to conserve them as also the forest”. Undoubtedly, wild life protection is to be seen as part of the comprehensive plan for total environmental protection”.

**Water (Prevention And Control of Pollution) Act. 1974:** The Water Act of 1974 represented one of India’s first attempts to deal comprehensively with an environmental issue. Parliament adopted minor amendments to the Act in 1978 and revised the Act in 1988 to move closely to conform the provisions of the Environment (Protection) Act of 1986. Water is a subject in the State List under the Constitution”. Consequently, the Water Act, a Central Law, was enacted under Article 252 (1) of the Constitution, which empowers the Union Government to legislate in a field reserved for the states, where two or more state legislatures consent to a central law. All the states have approved implementation of the Water Act as enacted in 1974. The Water Act establishes a Central and State Pollution Control Boards. The Central Board may advise the Central Government on water pollution issues, coordinate the activities of State pollution Control Boards, sponsor investigation and research relating to water pollution, and develop a comprehensive plan for the control and prevention of water pollution”. The Central Board also performs the functions of a State Board for the union territories. In conflicts between a State Board and the Central Board, the Central Board prevails. Since 1982; the Central Board has been attached to the Union Government’s Department of Environment Forests, and Wild Life. The Water Act is comprehensive in its coverage, applying to streams, inland waters, subterranean waters, and sea or tidal waters. Standards for the discharge of effluent of the quality of the receiving waters are not specified in the Act itself. Instead, the Act enables State Boards to prescribe these standards. The Act provides for a permit system or “consent” procedure to prevent and control water pollution. The Act generally prohibits disposal of polluting matter in streams, wells and sewers or on land in excess of the standards established by the State Boards’. A person must obtain consent from the State Board before taking steps to establish any industry, operation or process, any treatment and disposal system or any extension or addition to such a system which might result in the discharge of sewage or trade effluent into a stream, well or sewer or on land”. The State Board may condition its consent by orders that specify the location, construction and use of the outlet as well as the nature and composition of new discharges. The State Board must maintain and make public a register containing the particulars of the consent orders. The Act empowers a State Board, upon thirty days notice to a polluter, to execute any work required under a consent order which has not been executed. The Board may recover the expenses for such work from the polluter.



**Water Cess Act, 1977:** Parliament adopted the Water Cess (Prevention and Control of Pollution) Act of 1977 to provide funds for the Central and State Pollution Control Boards. The Act empowers the Central Government to impose a cess on water consumed by industries listed in Schedule I of the Act. Specified industries and local authorities are subject to the cess if they use water for purposes listed in Schedule II of the Act, which includes : (a) industrial cooling, spraying in mine pits, or boiler feed; (b) domestic purposes; (c) processing which results in water pollution by biodegradable water pollutants; (d) processing which results in water pollution by water pollutants which are not easily biodegradable or are toxic. A rebate of seventy per cent of the cess is given to industries and authorities which install water treatment plants. In Kerala State Board For Prevention And Control of Water Pollution Versus G.R.S.M. Company Ltd, the High Court of Kerala held that "the purpose of the Pollution Act is to control water pollution, but the purpose of the cess Act is to levy and collect a cess, i.e., a tax for a special administrative purpose.

Amidst great fanfare in 1985, the Government of India announced an ambitious new plan for cleaning up the Ganga River. A newly created Ganga Authority, headed by the Prime Minister, is ultimately responsible for the river's restoration. The eight member authority includes the Central Governments planning and environmental ministers and the chief ministers through which the River Ganga flows.

Central Pollution Control Board has produced an "Action Plan for the Prevention of Pollution of the Ganga" as a guide for steps in the cleaning up Ganga. The Government has established an inter-departmental Steering Committee to formulate detailed components of this Plan and to administer and monitor implementation of the Plan. A Ganga Project Directorate is included within the Department of Environment to appraise and clear projects prepared by field level agencies, release funds, and co-ordinate long-term activities under the Action Plan. The Ganga Action Plan is based on a comprehensive survey of the Ganga Basin carried out by the Central Boards. About 80 per cent of the pollution in the river is caused by raw sewage discharged directly into the river. The first phase of the Ganga Action Plan focuses on construction of an extensive network of self-sustaining sewage treatment plants in the cities along the Ganga River as the first measure to reduce pollution.

Ganga Pollution cases are the most significant water pollution cases to date. In 1985, M. C. Mehta, an activist advocate and social worker filed a writ petition under Article 32 of the Constitution. Among other things the petition was directed at the Kanpur Municipality's failure to prevent waste water from polluting the Ganga River. Mehta asked the Court to order government authorities and



tanneries at Jajmau near Kanpur to stop polluting the Ganga River with sewage and trade effluents. The ensuing litigation involved 89 named respondents and the Supreme Court noticed the action as a representative action under Order 1 Rule 8 of the Code of Civil Procedure. The Court bifurcated the litigation, dealing separately with pollution caused by tanneries and municipalities. The Court issued two major opinions in the case. In *M.C. Mehta I*, the Court ruled in the action against the tanneries and in *M.C. Mehta II*, the Court ruled in the action against municipalities and other government entities.

**M.C. Mehta Versus Union of India ( M.C. Mehta I - Tanneries):** Where in a public interest litigation owners of some of the tanneries discharging effluents from their factories in Ganga and not setting up a primary treatment plant in spite of being asked to do so for several years did not care in spite of notice to them even to enter appearance in the Supreme Court to express their willingness to take appropriate steps to establish the pre-treatment plants it was held that so far as they were concerned an order directing them to stop working their tanneries should be passed. It was observed that the effluent discharged from a tannery is ten times noxious when compared with the domestic sewage water which flows into the river from any urban area on its bank. It was further observed that the financial capacity of the tanneries should be considered as irrelevant while requiring them to establish primary treatment plants. Just like an industry which cannot pay minimum wages to its workers cannot be allowed to exist, a tannery which cannot set up a primary treatment plant cannot be permitted to continue to be in existence for the adverse effect on the public at large.

**M.C. Mehta Versus Union of India (M.C. Mehta II - Municipalities):** The petitioner had filed writ petition for prevention of nuisance caused by the pollution of the River Ganga. No doubt, the petitioner is not a riparian owner. He is a person interested in protecting the lives of the people who make the use of the water flowing in the River Ganga and his right to maintain the petition cannot be disputed. The nuisance caused by the pollution of the River Ganga is a public nuisance, which is wide spread in range and indiscriminate in its effects and it would not be reasonable to expect any particular person to take proceedings to stop it as distinct from the community at large. The petition was, therefore, entertained as a Public Interest Litigation. On the facts in the circumstances of the case the view of the Supreme Court the petitioner is entitled to move this court in order to enforce the statutory provisions which impose duties on the Municipal Authorities and the Boards constituted under the Water Act. On account of their failure to obey the statutory duties for several years the water in the River Ganga at Kanpur has become so much polluted that it can no longer be used by the people either for drinking or for bathing. The Nagar Mahapalika of Kanpur has to bear the major responsibility for the pollution of the river near Kanpur City.



**Air (Prevention And Control of Pollution) Act. 1981:** To implement the decisions taken at the United Nations Conference on the Human Environment held at Stockholm in June, 1972, Parliament enacted the nationwide Air Act under Article 253 of the Constitution. The preamble of the Air Act states that the Act represents an implementation of the decisions made at the United Nation Conference on the Human Environment held at Stockholm in 1972, to take appropriate steps for the preservation of the natural resources of the earth which, among other things, include the preservation of the quality of air and control of air pollution. The Act's statement of objects and reasons contains the government's explanation of the contents and the scope of the law, and its concern for the "detrimental effect (of air pollution) on the health of the people as also on animal life, vegetation and property." The Air Act's framework is similar to the one created by its predecessor, the Water Act of 1974. To enable an integrated approach to environmental problems, the Air Act expanded authority of the central and state boards established under the Water Act, to include air pollution control. States not having Water Pollution Boards were required to set up Air Pollution Boards. Under the Air Act, all industries operating within designated air pollution control areas must obtain a "consent" from the State Boards. The states are required to prescribe emission standards for industry and automobiles after consulting the Central Board and noting its ambient air quality standards.

Prior to its amendment in 1987, the Air Act was enforced through court administered penalties on violators. The 1987 Amendment strengthened the enforcement machinery and introduced stiffer penalties. Now, the Boards may close down a defaulting industrial plant or may stop its supply of electricity or water. A board may also apply to a court to restrain emissions that exceed prescribed standards. Notably, the 1987 Amendment introduced a citizens suit provision into the Air Act and extended the Act to include noise pollution. Procedurally, the Air Act follows the basic structure of the Water Act with a Central Board and State Boards administering a system of consent orders, monitoring activities, and enforcement through fines and criminal prosecutions.

According to Section 3 of the Air (Prevention And Control of Pollution) Act 1981, the Central Pollution Control Board constituted under Section 3 of the Water (Prevention and Control of Pollution) Act, 1974, shall without prejudice to the exercise and performance of its powers and functions under that Act exercise the powers and perform the functions of the Central Pollution Control Board for the prevention and control of air pollution under this Act. Section 4 of the Air Act, 1981 says that in any state in which the Water (Prevention and Control of Pollution) Act, 1974, is in force and the State Government has constituted for that State a State Pollution Control Board under Section 4 of that Act such State Board shall be deemed to be the State Board for the Prevention and Control of



Air Pollution, and accordingly that State Pollution Control Board shall, without prejudice to the exercise and performance of its powers and functions under that Act, exercise the powers and performs the functions of the State Board for the prevention and control of air pollution under this Act.

**M.C. Mehta Versus Union of India:** There was escape of oleum gas from one of the units of Shriram Foods and Fertilizers Industries on 4th and 6th December 1985 in a city of Delhi, belonging to Delhi Cloth Mills Ltd. As a consequence of this leakage, it was alleged that one advocate living in the locality died and several others were affected by the same. The Supreme Court held that where an enterprise is engaged in a hazardous or inherently dangerous activity and harm results to anyone on account of an accident in the operation of such hazardous or inherently dangerous activity resulting for example, in the escape of toxic gas the enterprise is strictly and absolutely liable to compensate all those who are affected by the accident and such liability is not subject to any of the exceptions which operate vis-a-vis the tortious principle of strict liability under the rule in *Rylands Versus Fletcher*.

**Union Carbide Corporation Versus Union of India:** The Bhopal Gas Leak Disaster that occurred at midnight on 2nd December 1984 by the escape of deadly chemical fumes Methyl Iso-cyanate from the appellant's pesticide factory was a horrendous industrial mass disaster, unparalleled in its magnitude and devastation and remains a ghastly monument to the dehumanizing influence of inherently dangerous technologies. The disaster took an immediate toll of 2,660 innocent human lives and left tens of thousands of innocent citizens of Bhopal physically impaired or affected in various degrees. What added grim poignancy to the tragedy was that the industrial enterprise was using Methyl Isocyanides a lethal toxic poison, whose potentiality for destruction of life and biotic - communities was, apparently, matched only by the lack of a prepackage of relief procedures for management of any accident based on adequate scientific knowledge as to the ameliorative medical procedures for immediate neutralization of its effects. The matter concerns the interests of a large number of victims of a mass disaster. The Court directed the settlement with the earnest hope that it would do them good and bring them immediate relief.

**M.C. Mehta versus Union of India:** Taj Mahal degradation is due to pollution, emission generated by coke and coal using industries in Taj trapezium found to be main polluters. The Supreme Court issued direction to 292 industries located and operating in Agra to changeover within fixed time schedule to natural gas as industrial fuel or stop functioning with coal and coke and get relocated. Industries not applying for gas or relocation to stop functioning with coal and coke from 30 April 1997. The Environment (Protection) Act, 1986: In the wake of the



Bhopal tragedy, the Government of India enacted the Environment (Protection) Act of 1986, under Article 253 of the Constitution. The purpose of the Act is to implement the decisions of the United Nations Conference on the Human Environment of 1972, in so far as they relate to the protection and improvement of the human environment and the prevention of hazards to human beings, other living creatures, plants and property. The Act is an "umbrella" legislation designed to provide a framework for Central Government co-ordination of the activities of various central and state authorities established under previous laws, such as the Water Act and Air Act.

The potential scope of the Act is broad, with 'environment' defined to include water, air, and land and the inter-relationships which exist among water, air and land, and human beings and other living creatures, plants, micro-organisms and property". "Environmental pollution" is the presence of any environmental pollutant, defined as any solid, liquid or gaseous substance present in such concentration as may be, or may tend to be injurious to the environment. 'Hazardous substances' include any substance or preparation which may cause harm to human beings, other living creatures, plants, micro-organisms, property or the environment. Section 3 (1) of the Act empowers the Centre "to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution." Specifically, the Central Government is authorized to set new national standards for the quality life environment (ambient standards), as well as standards for controlling emissions and effluent discharges: to regulate industrial locations; to prescribe procedures for managing hazardous substances; to establish safeguards for preventing accidents; and to collect and disseminate information regarding environmental pollution.

Violation and penalty under the Environment (Protection) Act, 1986, is the first environmental statute to give the Central Government authority to issue direct written orders, including orders to close, prohibit, or regulate any industry, operation or process or to stop or regulate the supply of electricity, water or any other service. Other powers granted to the Central Government to ensure compliance with the Act include the power of entry for examination, testing of equipment and other purposes and the power to take samples of air, water, soil or any other substance from any place for analysis. The Act explicitly prohibits discharges of environmental pollutants in excess of prescribed regulatory standards. There is also a specific prohibition against handling hazardous substances except in compliance with regulatory procedures and standards. Persons responsible for discharges of pollutants in excess of prescribed standards must prevent or mitigate the pollution and must report the discharge to governmental authorities.





The Act provides for severe penalties. Any person who fails to comply with or contravenes any of the provisions of the Act or the rules, orders, or directions issued under the Act shall be punished, for each failure or contravention, with a prison term of up to five years or a fine of up to Rs. 1.0 lakh, or both. The Act imposes an additional fine of up to Rs. 5,000 for every day of continuing violation. If a failure or contravention occurs for more than one year after the date of conviction, an offender may be punished with a prison term which may extend to seven years. Corporate officials directly in charge of a company's business are liable for offences under the Act, unless the official can establish that the offence was committed without his or her knowledge or that he or she exercised all due diligence to prevent the commission of the offence. In addition, if an offence is committed with the consent or connivance of, or is attributable to any neglect on the part of any director manager, secretary or other officer, that person shall also be liable for the offence. Similar provisions extend liability to the heads of departments of government and other department officers. The Environment (Protection) Act, 1986, contains significant innovations for its enforcement, not contained in any other pollution abatement legislation at the time of the Act's adoption. Section 19 provides that any person, in addition to authorized government officials, may file a complaint with a court alleging an offence under the Act. This "citizens suit" provision requires that the person give notice of not less than 60 days of the alleged offence and the intent to file a complaint with the government official authorized to make such complaints.

**Akhil Bharat Goseva Sangh V. State of A. P.:** The Supreme Court has held that State Pollution Control Boards are permitted to prescribe higher standards than those mentioned in the 1986 rules but are not permitted to lower standard.

**Taj Trapezium Pollution case - M. C. Mehta versus Union of India and other:** The Supreme Court has held that the all brick kilns should be closed down within 20 km radius distance of Taj Mahal with certain directions.

### **3.4 Town and Country Planning: A Tool for Sustainable Development**

Undoubtedly, main cause of environmental pollution is negative effects of the very process of development which is mindlessly caused by human beings. Poor planning in urban and rural areas are the chief factors to cause impact of environmental pollution. India is a country of complex and composite society. State has to shoulder enormous duties of taking care of education, health and living condition of millions of people. We have adopted the socialistic pattern of the Constitution. We live in a welfare state, not in a police state. Thus, welfare of the society at large is a paramount consideration of the state. To achieve healthy environment it is highly desirable that while making developmental planning



we should keep an eye on scientific and technological development methods. Town and country planning should be developed after examining the problems of unhealthy living environments and while exploring their impact on the society and environment. Town and country planning process should be carried out in a sustainable manner so as to ameliorate environmental hazards.

It is utmost necessary that while chalking out planning, available natural resources and their proper use for the benefit of the society should be taken into account. There are some conflicting situations between environment and conservation of natural resources which are to be addressed with greater attention, these are:

- Controlled utilization of available natural resources;
- Better consideration between natural and man made components;
- Scientific care of health and sanitation of the people living in urban and rural areas;
- Needs of the society and its impact on environment standards;
- Controlled and needful exploitation of natural resources by human beings; and
- Exploring the developmental needs of the people basing upon economic viability of planning.

Thus, no development and planning can yield a good impact if needs and environmental impacts have been overlooked. In other words, it is a need of time that town and country planning should be carved out while taking into consideration its environmental impacts. Unplanned rather unscientific planning is an environmental hazard.

However, in view of needs of the modern society, the main features of the town and country planning can be laid down as under :

- Planning is a pivot of all the economic activities;
- In modern planning the role of the state is instrumental indeed; and
- There should be proper and balanced distribution of resources in the society.

Regulation of developmental activities should be framed in such a manner so that these cause least disturbance to the existing environment. Thus, it can be said that there should be proper discussion while considering town and country planning besides effective appraisal, implementation, monitoring and evaluation of the planning. In the context of town and country planning, the relevant points for environmental policy are as under:

- The developmental plans to be made while ensuring environmental protection at all levels;



- The local authorities to act and ensure strict anticipatory control over developmental plans with adherence to environmental safeguard; and
- To impose conditions concerning the environmental protection on a sanction of developmental planning permission. In view of enormous, hectic developmental activities, also fast degrading environmental standard, there is no scope for negotiations between the developer and local authorities in respect of developmental plans. Thus, while making developmental plans and proposals, the State is under obligation to take into consideration the interest of society at large and also anticipated in pact on environment.

**Planning concerning use of urban land:** In view of 74th Constitutional Amendment Act, 1992, the urban local bodies received constitutional status and got the power of local governance by means of elected bodies. This constitutional amendment contemplated three types of urban bodies. These are:

- *Nagar Panchayats:* Which are meant for transitional areas (i.e., areas which are in transition from rural to urban areas);
- Municipal Councils: For smaller urban areas.
- Municipal Corporations: For larger urban areas.

In terms of the provisions these bodies have been declared as the bodies of self-government. These bodies are under statutory obligation to prepare and plan for economic developmental social justice, etc, which are provided in the 12th Schedule of the Constitution of India. The main functions of these bodies are as under:

- Town planning including urban planning;
- Planning regarding economic and social development;
- Regulation pertaining use of urban land and construction of building;
- Industrial and domestic supply of water;
- Sanitation conservancy and solid waste management;
- Arrangement for public health;
- Planning for urban forestry;
- Protection of the environment and promotion of ecological aspects;
- Planning for improvement slum;
- Programme for urban poverty alleviation;
- Urban facilities or amenities for denizens; and
- Scheme for promotion of cultural, educational and aesthetic aspects of urban life.



However, water supply, sanitation, solid waste management and slum improvement are the core activities of the urban local bodies. Notably, under Articles 243-ZD and 243-ZE of the Constitution, the Municipalities and *Panchayats* also have been assigned to perform these activities in their concerning areas.

**Water supply and sanitation:** Undoubtedly, water supply and sanitation are core sector in which local urban bodies have to discharge their responsibilities in a planned and systematic mechanism. Mishandling in these sectors would certainly cause environmental hazards. The Tenth Five Year Plan, 2002-2007 lays down guiding principle, which was adopted by the United Nations General Assembly in December, 1990. These principles are:

- Integrated management of water resources, liquid and solid wastes while safeguarding environment;
- Integrated approach while bringing organizational reforms including changes in procedures, attitudes and behavior and the full participation of women at every level; and
- Sustainable water and sanitation programmes while involving community management of services backed by local institutions.

Creation of funds to achieve and manage water supply and adequate sanitation measures. The Tenth Plan document further says that water needs to be managed as an economic asset rather than a free commodity in the same way as any other resource. The regeneration of sources shall be the responsibility of every user agency, whether they use water for drinking, irrigation or other purposes. Supply of water to consumers should normally be based on the principal of effective demand that should broadly correspond to the standard of service which the users as a community are willing to maintain, operate and finance. At the same time, special provisions should be made to meet the needs of the poor who have less capacity to pay. Thus, to maintain environmental health, water supply and sanitation should be upgraded to the level which do not cause threat to the environmental standard.

**Improving urban solid waste management:** According to the Tenth Five Year Plan, 2002-2007 (The Planning Commission, Government of India at p. 651), India produces about 42 million tons of urban solid waste annually. However, with the increase in urban population every year the collection of urban solid wastes also increases annually, as a result the urban local bodies are burdened to manage urban solid waste. The accumulation of urban waste is a major problem which finally affects the health of the people. This problem is more serious in the densely populated cities where the safe disposal of such waste is proving to be herculean task for the urban local bodies, specifically in the absence of proper



treatment facilities. In our country, the urban liquid and solid waste are disposed of to river because most of the major cities are situated on the bank of rivers which causes a severe pollution problem.

It is to be noted that we are yet to improve waste management. It has been witnessed that most of the urban local bodies are not well equipped with the arrangement of treatment plant to dispose of urban liquid and solid waste. Blockage in drains are another aspect of the public health hazards. Sanitary conditions in the most of the urban areas are so pathetic wherein epidemic is likely to break at any time and its magnitude will be beyond imagination. In fact, it is an alarming situation. We need urgent devise and measure to such environmental pollution and improve the sanitary condition of the cities in India. The Allahabad High Court in *Vinod Chandra Varma v. State of U.P.*, while dealing with poor civic amenities in the city of Allahabad, passed the direction to the Municipal Corporation to take strong disciplinary action against *Safai Karmacharies* who did not perform their work on account of negligence.

**Policy relating to land and housing:** It has been noticed that increased construction and housing activity if not dealt in a planned and systematic manner it would be a greater environmental pollution. The National Housing and Habitat Policy, 1998 incorporated the agenda laid down by the United Nations Conference on Human Settlement held at Turkey in the year 1996. This agenda lays down the obligation on the Government to set up legal frameworks to facilitate the development and rehabilitation of public plans and policies for sustainable urban developmental rehabilitation, urban land utilization, housing and improve the management of urban growth.

**In M.C. Mehta versus Union of India:** Where in a large number of unauthorized industrial activities were prevailing in non-conforming areas of Delhi, the Municipal authorities have expressed helplessness in taking action on the anticipating apprehension of breakdown of law and order in those areas. The Supreme Court has held that the Municipalities have constitutional responsibilities of town planning under Part IX-A and especially under Article 243-W of the Constitution. The Supreme Court observed that: "The Municipal Corporation has responsibility in respect of matters enumerated in the 12th Schedule of the Constitution of India, regulation of land use, public health, sanitation, conservancy, solid waste management being some of them". Hence, it is solemn obligation of the Municipal Corporation of Delhi to adhere to the Delhi Municipal Corporation Act, 1957 and Delhi Development Act, 1957 and its relevant Rules and Regulations there under.

**Zoning and Town Planning:** The expression zoning means division. Under the equity scheme a city is divided into districts within which construction work and use of land is regulated by legislation. However, duty to enforce such legislation



lies on the city administration including city development authorities. While in practice due to corruption at every level the operation and execution of legislation is confined to few areas of the city. There are instances when public spirited citizens were compelled to approach the court of law for the purpose of enforcement of existing laws.

**Slums Area Improvement Plan:** On account of growth of urban population, due to poverty, unemployment and social backwardness of the people living in the rival areas who migrated to the urban areas, caused environmental hazards in respect of the basic amenities such as drainage, roads, sewerage and water supply, etc. It has been witnessed that in India almost all major cities are surrounded by slums. In other words there is no city without slum. The improvement rather eradication of slum need a serious planning. But, the efforts made so far in this direction do not show a positive trend and to develop the slums into healthy habitat place, an integrated approach is needed.

In recent past for the improvement of the conditions of the slum dwellers various projects are undertaken by the Government and Urban Local Bodies, but no satisfactory achievement could be made. Now, the Central Government is likely to announce a National Slum Policy to improve the living conditions of the slum dwellers. However, in this context some suggestions can be extended like:

- Create awareness among slum dwellers by means of open school in the areas
- Convey the importance of family planning programs besides providing incentives and employment;
- Lay down the housing schemes for the urban poor;
- Sanitation and solid waste management services to be provided by involving slum dwellers;
- Monitoring Committee to be set up consisting of local authorities and educated slum residents; and
- Hopefully, such a policy can help in bringing attitudinal changes among slum dwellers.

#### 4. CONCLUSIONS

Theory of social engineering propounded by Roscoe Pound says: "The policy of law making or planning urban, industrial sectors in such a manner, it should be satisfying the maximum wants, or desires, or claims of the human beings with minimum waste, means a balance between the competing interests in the society". In this globalized time, we should use minimum natural resources with maximum satisfaction of our wants or desires, or claims without disturbing our ecology and environment. The environmental challenges confronting us today



are greater than ever before. But we have potential to meet these challenges by command and regulation, and public participation. We must concentrate on economic growth but with full protection of physical environment and nature.

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# Genesis and Growth of Slums in India

**S. Kumar Swami**

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## Abstract

*India has emphatically embraced the planned development for improving social and economic life of the people during the post independence period. Development has been achieved to a certain extent, but poverty, illiteracy, unemployment, malnutrition and such other human problems have not been eradicated and they have become major areas of concern for the policy makers, planners, leaders, administrators and, development practitioners, as the achievements have not been commensurate with the expectations. The author argues that although slum dwellers account for 27 percent of the population they occupy only 5 percent of the urban land area. Unimproved slums are characterized by overcrowding, dilapidated structures, unhygienic conditions, grossly inadequate basic amenities, unplanned layouts and poor accessibility. Many colonies have existed in this condition for twenty years or more, becoming progressively more overcrowded by passage of time, and needs immediate attention.*

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## 1. INTRODUCTION

The twenty first century is expected to witness not only sustained population growth but also more of urbanization. Economic vibrancy of large urban centers in offering diverse employment opportunities and means of livelihood, is the chief cause of migration to these areas. In India, migration has played an important role in accelerated urban growth, However, it concomitantly results in transfer of rural poverty to urban areas. Rural migrants are attracted to the urban areas for economic reasons regardless of the fact that physical infrastructure in terms of housing, drinking water supply, drainage, etc.; is not so adequate in the cities. Cities have been the hubs of economic growth. But planned urbanization has been marred to an extent by the excessive demand for basic amenities resulting in deterioration in the physical environment. The quality of life has thus suffered due to continuing influx of migrants and consequent widening of the gap between demand and supply of essential services and other infrastructure in these areas. Unchecked migration, particularly, aggravates housing problem resulting in increase in the land prices. This forces the poor to settle for informal solutions resulting in mushrooming of slums and squatter settlements. The problem of urban slums has been faced at some point of time by almost all the major cities throughout the developing world. Indian cities have not been an exception.

Sociologists, economists, environmentalists and town planners have perceived slum and problems of slum dwellers from their own point of view. But there is no

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denying the fact that the slums have become an integral part of the phenomenon of urbanization and are, in a way, manifestation of overall socio - economic policies and planning in the states and in the country. But this should not discount the fact that the slum dwellers have been contributing significantly to the economy of the city by being a source of affordable labour supply for production both in the formal and informal sectors of economy. Comprehensive information on the slums is essential for formulation of an effective and coordinated policy for their improvement and rehabilitation as they have not received due attention in urban planning and have remained an area of neglect. Piecemeal efforts in the past have brought about some improvement in the lives of the slum dwellers but this is not enough. A lot more is required to be done to improve the quality of life in slums.

## 2. SALIENT FEATURES OF SLUMS

### 2.1 Size and Distribution of the Slum Population

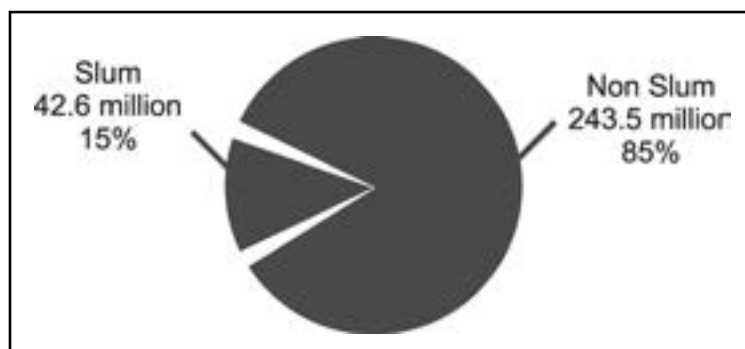
A total of 42.6 million people living in 8.2 million households have been enumerated in slums of 640 cities and towns spread across 26 states and union territories in 2001 Census. The slum population constitutes 4 per cent of the total population of the country. The slum dwellers in the country constitute nearly a seventh of the total urban population of the states and union territories reporting slum population and 23.1 per cent of the population of the 640 cities and towns reporting slums. Population profile of the country is given in Table - 1 and Fig. 1; for slum, non-slum population in urban India.

Among the states, Andhra Pradesh has the largest number of cities and towns (77) reporting slum population followed by Uttar Pradesh (69), Tamil Nadu (63), Maharashtra (61), West Bengal (59), Madhya Pradesh (43) and Gujarat (41). On the other hand in seven states and union territories, namely - Jammu and Kashmir, Chandigarh, Tripura, Meghalaya, Andaman and Nicobar Islands, Pondicherry and Goa, slums have been reported from less than six towns each. In the remaining states and union territories, the number ranges from 6 in Uttaranchal to 35 in Karnataka. Table - 2 shows distribution by

Table 1: Population Profile

India	1,028,610,328
Rural	742,490,639
Urban	286,119,689
State / US reporting slums	283,741,818
Towns reporting slums	184,352,421
Slum	42,578,150
Non slum (640 cities)	141,774,271

Fig. 1: Slum and Non - Slum Population of Urban India



**Table 2: Distribution by Population by Size of Cities / Towns and Share of Slum**

Population size of cities/ towns (in lacs)	Number of cities/ towns	Population of cities / towns (in lacs)	%	Slum population in cities / town (in lacs)	%
40+	5	350.8	19.0	110.6	26.0
20-40	8	212.4	11.5	37.6	8.8
10-20	14	170.3	9.2	28.8	6.8
5-10	42	310.5	16.9	58.1	13.7
1-5	309	605.1	32.8	139.4	32.7
Less than 1	262	194.4	10.6	51.3	12.0
Total	640	1843.5	100	425.8	100

population size of cities and towns reporting slum and percentage of slum population living therein at the aggregate level.

Slums in the 61 towns of Maharashtra account for 11.2 million people, which is more than one fourth of the total slum population in the country. This is followed by Andhra Pradesh (5.2 million), Uttar Pradesh (4.4 million), West Bengal (4.1 million) and Tamil Nadu (2.9 million). In fact, these 5 states account for about two thirds (65.3 per cent) of the total slum population of the country. Among other states and union territories, Punjab, Haryana, Delhi, Rajasthan, Gujarat, Karnataka and Madhya Pradesh have reported more than 1 million slum dwellers each in the cities and towns in 2001. Which provides total slum population enumerated by states and union territories. The table presents distribution of 78 towns spread across 16 states and union territories having more than 100,000 slum population in 2001.

As percentage of the total urban population, Maharashtra has the highest proportion of slum population (27.3 percent) followed by Andhra Pradesh (24.9 percent) and Haryana (23.2 percent). In thirteen states and union territories of Jammu and Kashmir, Punjab, Chandigarh, Delhi, Uttar Pradesh, Meghalaya, West Bengal, Odisha, Chhattisgarh, Madhya Pradesh, Tamil Nadu, Pondicherry and Andaman and Nicobar Islands 10-20 per cent of the urban population lives in slums. Kerala has the lowest percentage of slum population in the urban areas at 0.8 per cent while Goa (2.2 percent) and Assam (2.4 percent) have also a very low proportion of the slum population. Percentage distribution of the 42.6 million slum population among states and union territories is presented in Fig. 2.

In terms of percentage of slum population to the total population of cities/towns reporting slums, Meghalaya has the highest proportion (65.0 percent), followed by Maharashtra (33.3 percent), Haryana. (33.1 percent), Andhra Pradesh (32.2

percent) and Chhattisgarh (31.4 percent). In Punjab, Uttar Pradesh, West Bengal, Odisha and Madhya Pradesh, more than 20 per cent urban population lives in slums. Kerala (2.0 percent) has the lowest proportion of urban population living in slums, with Goa (8.3 percent) and Assam (6.0 percent) being the only other states with less than 10 per cent of the urban population living in slums.

## 2.2 Characteristic of Slums

The concept of slums and its definition vary from country to country depending upon the socio - economic conditions of each society. Irrespective of location, whether in the heart of the city in the form of old dilapidate structures or on the outskirts in the form of squatting, slums have often been characterized in the following manner:

- Physically, an area of the city with inadequate housing, deficient facilities, overcrowding and congestion; and
- Socially, slum is a way of life, a special character which has its own set of norms and values reflected in poor sanitation, health values, health practices, deviant behaviors and social isolation.

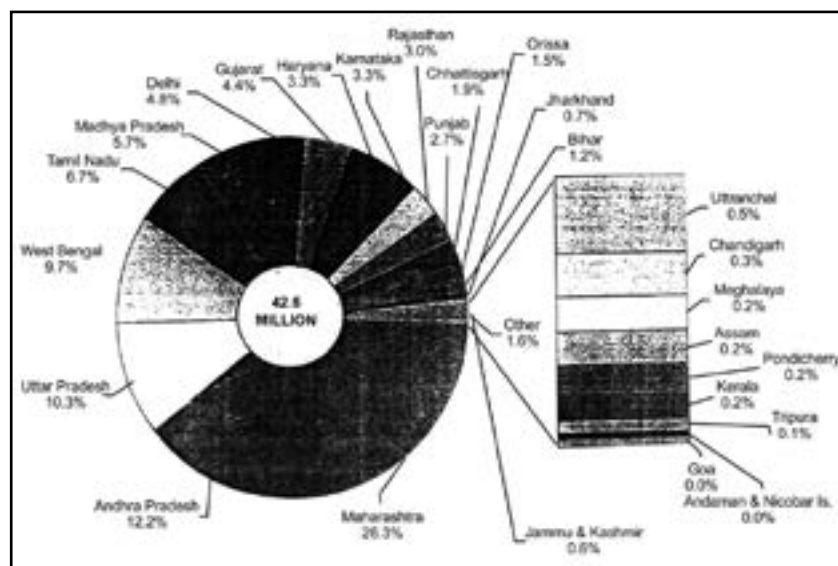
Legally speaking, Section 3 of the Slum Areas (Improvement and Clearance) Act 1856 defines slums as areas where buildings:

- are in any respect unfit for human habitation; and
- are by reason of dilapidation, over-crowding, faulty arrangement of streets, lack of ventilation, light or sanitation facilities or any combination of these factors which are detrimental to safety, health and morals.

## 3. INDIAN SCENARIO

The pattern of growth of cities and proliferation of slums bring out to the four aspects of concern. Firstly, movement of low income population into the city and its concentration and growth is an ever increasing phenomenon, estimates indicate that about one third of the population in large cities live in slum or slum like conditions and the proportion could be even higher in metros and mega

Fig. 2: Percentage Distribution of Slum Population in States / Union Territories 2001





cities. Further, whereas the population in urban settlements is growing at rates between 2 to 3 per cent per annum, the population in the slum and informal settlements in urban areas is estimated to be growing at the rate of 6 to 8 percent per annum.

Secondly, the proliferation of slums in cities is a result of the inefficiency and weakness of the urban system to respond adequately to meet the shelter requirements of the economically weaker sections, who migrate to the city primarily for economic reasons. In the absence of adequate access to shelter or land, the economically weak migrant population attempts to occupy the vacant lands. The abysmal environmental quality in the slum areas is compounded by the inability and awareness among the slum dwellers to take 'up self help initiatives for improvement.

Thirdly, there is a substantial ignorance and insensitiveness among the city population, in general, and civic administration, in particular, on the significant contribution of the slum dwellers for the overall growth of the urban economy and their self-help initiatives are treated 'insignificant' in the overall growth of the urban economy. Rather than citizens, the slum dwellers are considered as a civic problem.

Fourthly, the marginalization of the slum dwellers in the city fabric is total. A shelter in the "formal settlement" remaining unaffordable, geographic marginalization of the "occupied" areas, which are often unsuited for human habitation, is absolute. The cumulative neglect and marginalization of this crucial segment of population encompasses social, economic and political terms too.

Promotion of cities without slums offers a challenge that needs many initiatives of larger magnitude from the civic administration, the citizens and the slum dwellers. The imperatives cover wide ranging reforms like planning, administration and legal initiatives that would encourage assimilation of the slum population in the city fabric. The need is an effort to engineer an integration that encompasses social, economic, geographic and political aspects so that city develops as an inclusive entity, the slum dwellers feel part of the citizenry, and the general public perceives them as fellow citizens than as a civic problem.

#### **4. URBAN POVERTY IN INDIA**

India's Tenth Five Year Plan noted that the urban slum population is growing despite the sharp reduction in poverty and rising incomes. It is difficult to conduct a systematic assessment of the slum situation at the national or state level over time, due to serious data deficiencies. Urban development being state subject, state governments has the responsibilities of notifying an area as a slum. Notified slums are recognized slums. There are non-notified slums which are not enumerated in the Census of 2001.



An area can be designated as a 'slum' under the State Slum Clearance and Improvement Act when the competent authority is convinced that the area is a source of danger to health safety and convenience, or when buildings are found to be unfit for human habitation due to dilapidation, overcrowding, or lack of ventilation, light, or sanitation facilities. The definition of 'slum' under the Act is quite loose and a liberal application of the law may cover substantial parts of cities as 'slums'. On the other hand, 'declared slums' may not include newer squatter settlements and settlements outside the municipal boundary and therefore may result in underestimation of the slum population. It is for this reason that no firm estimates exist for the slum population in the country (Census of India 2001). The first (although restricted) estimate of slum population of Class I cities (cities with population over 1,00,000 in the 1971 Census) was obtained through a nationwide sample survey of slums conducted by NSSO in 1976-77.

The Census of India 2001 has collected detailed data about slum areas of the country particularly in cities/towns having 50,000 persons or more based on the 1991 Census. 'All the inhabitants of the areas, which have been notified as slums by the State Governments under any legal provisions or even recognized by them, have been accordingly considered as slum population for this purpose'.

According to the 2001 Census, the slum population of India in cities and towns with a population of 50,000 and above was 42.6 million. This constitutes 22.6 per cent of the urban population of the states and union territories reporting slums. Only 12.7 per cent of total Indian towns have reported slums. The distribution of the slum population (estimates) in states varies considerably; 11.2 million of the total slum population of the country is in Maharashtra followed by Andhra Pradesh (5.2 million), Uttar Pradesh (4.4 million), and West Bengal (4.1 million).

Interestingly, although the slum population has increased, the number of slums recorded in the NSSO - 58th Round is lower than in the NSSO 49th Round, which indicates densification of slums (NSSO, 2002). This could be due to a number of different factors, including the resettlement process, the conversion of some of the non-notified slums into notified slums, measures relating to evacuation of the non-notified slums, consolidation of smaller clusters, and the exhaustion of capacity within the city for the formation of new slums.

Linking levels of urbanization and incidence of slums, Kumar *et al* (2007) noted that a high level of urbanization does not mean better well-being because it often leads to high incidence of slums (Table 3). A large number of states with a high percentage of slums to urban population also show a high level of urbanization (e.g., Punjab, Haryana, West Bengal, and Maharashtra), whereas the situation is not the same if both incidence of slum and level of urbanization are low (Bihar and Assam). Rajasthan emerged as the only state where both the number of slums



**Table 3: States Classified by Level of Urbanization and Incidence of Slums**

Percent of Slum population to Total Slum-reporting City/ Town Population 2001					
Percent Urban Population 2001	Below 13.1	13.0-19.7	16.7-20.4	20.4-24.1	Above 24.1
Below 13.1	Assam	Bihar			
13.1-20.6				Odisha	
20.6-28	Kerala		Rajasthan	Madhya Pradesh, Uttar Pradesh	Andhra Pradesh
28.0-35.4	Karnataka				Punjab, Haryana, west Bengal
Above 35.4		Gujurat			Maharashtra

and the level of urbanization are moderate. Gujarat, Kerala; and Karnataka, have a high level of urbanization but the incidence of slums is comparatively low. Brent Edelman and Arup Mitra (2006) found a positive correlation between the states' shares in aggregate slums and slum conditions implying that states with more slums have better slum conditions, perhaps because larger slum populations draw the attention of the more interested politicians.

Notification of a slum by municipalities, corporations, local bodies, or development authorities under the slum act is official recognition and bestows significant benefits. Only notified slums become eligible for improvement of services under the programs sponsored by the government. Non-notified slum dwellers, on the other hand, rely on various sources (besides the government) and appeal on humanitarian grounds for access to basic services like water. Slum leaders and local politicians also spend from their election funds or constituency development fund to provide minimal and basic water connections or tube wells. The percentage of notified slums has increased from 36 per cent in 1993 to 51 percent in 2002 (and housed 65 percent of the population).

Generally speaking, the slum notification process itself presents ample opportunities for politicians to abuse their relationship with slum dwellers; it is both inconsistently applied from state to state and largely dependent upon the local authorities in its application. Correlations between the proportion of notified slums in a state and the lack of amenities in the slums reveal a consistently negative relationship. In other words, as a state's proportion of notified slums increases, the percentage of slums without essential amenities decreases and vice versa. So it seems that at the state level notification does reward slum dwellers, in terms of basic living conditions (Edelman and Mitra 2006). Whereas a few states like Andhra Pradesh, Maharashtra, Tamil Nadu, and West Bengal have shown an increase in the percentage of notified slums, in several other states like Delhi, Gujarat, Karnataka, Odisha, Punjab, Uttar



Pradesh, and Rajasthan, the percentage of notified slums has shown a decline (Table 3). The slum notification process at present is arbitrary and inconsistent and its application is dependent upon the local authorities. Rationalizing the slum notification process is, therefore, an important step which can help to provide access to basic services for slum dwellers.

The slum population tends to concentrate, in large cities. According to the 2001 Census, 17.7 million people live in slums in the 27 cities with a population of more than 1 million. The Greater Mumbai Municipal Corporation with 6.5 million slum dwellers has the highest number of slum dwellers (54.7 per cent of total population of Mumbai among all the cities followed by Delhi Municipal Corporation (1.9 million), Kolkata (1.5 million), and Chennai (0.8 million).

#### 4.1 Incidence of Slum in India

Although slums exist in various parts of the world in the contextual frame work of analysis, it is necessary to go through significant studies on slums in India.

- In Ahmedabad, which is now a major industrial centre, 15 out of 29 municipal wards have slums. Over 54 percent of slug dwellers share a single room with number of persons ranging from 4 to 9 (Trivedi, 1961).
- In Madras, there were 189 slums in 1933, and in spite of three decades of efforts to solve the problem the number increased to 548 in 1961 consisting of 59,573 households (Nambiar, 1961).
- The Greater Bombay has at present nearly 350 slums, of which 218 are in the city proper. In the pre-war period it was only 44 (Municipal Corporation Survey, 1956: 58).
- In Calcutta, on the whole, 25 percent to 26 percent of the households, containing roughly a quarter of the total population of the city, live in *bustees*.
- This calculation takes account of both the criteria the nature of the structure of the house and the nature of the available essential amenities (Sen, 1958).

The rapid growth of population, especially within the period of over last twenty five years has turned old Delhi into an extremely congested city, A detailed screening of old Delhi has shown that there are as many as 300 slums scattered over its 20 wards (Bharat Sevak Samaj, 1958).

The survey conducted in 1962 by the Municipal Corporation of Poona states that 30,000 families live in slums of Poona (Gadgil, 1959). Thus, the growth of slum population in big cities is due to many reasons but basically it is closely associated with economic reason.





#### 4.2 Causes of Slum Growth in India

In India, the causes usually attributed for the origin and growth of slums, are:

**Industrialization and consequent migration of rural masses to urban areas:**

After the attainment of independence, the pace of industrialization has increased in our country and large as well as medium-sized industries have been established in several parts of the country. The industrial concerns have attracted the rural masses for employment. Subdivision of land owing to increase in rural population has resulted in uneconomic holdings and unprofitable agriculture. Periodic famines, floods, pestilences and other calamities have aggravated the problem. Further, conflicts and tensions on the basis of caste, class and tribes also have divide in to larger number ruralities out of their original habitats. When they came to the city, some find employment but many do not. Consequently it results in unemployment and poverty. There is also a tendency to bring kinsmen and friends for prospective employment. They worsen the problem further. The rural situation is further deteriorated when young and able persons migrate to industrial areas leaving the old and invalid at the rural base.

**Lack of employment opportunities and Livelihood resources in rural areas:**

People in rural areas primarily depend upon agriculture which only provides limited seasonal employment. The employment potentiality in rural areas is low and it promotes migration of population from rural to urban areas in search of employment opportunities. Therefore, lack of employment opportunities in rural areas accelerates the growth of slums in the periphery of the urban conglomerate.

**Absence of adequate housing facilities in the urban area:**

Most of our cities are congested and overcrowded with the lack of civil amenities when people throwt into the cities to work in industries, in construction work, in transport and trading corporations and they fail to find housing accommodation. There were /are thousands of industrial workers without residential facilities and they try to make some temporary arrangements near the place of their work, wherever they find vacant Government land. Thus, large number of unhygienic huts spring up near the factories or commercial concerns. These naturally turn into slums because the area is small, proper roads are not available, facilities like electricity; water and toilet do not exist.

**Low Wages:** Large number of our industrialized urban workers is unskilled laborers earning low wages. Many of them are employed on temporary basis. They cannot afford to have cement-mortar houses with proper facilities. So, they are forced to live in slums.



## 5. CONCLUSIONS

India has emphatically embraced the planned development for improving social and economic life of its people during the post independence period in the course of the implementation of Twelve Five Year Plans. Development has been achieved to a certain extent. However, poverty, illiteracy, unemployment, malnutrition and such other human problems have not been eradicated and they have become major areas concern for the policy makers, planners, leaders, administrators and, development practitioners, as the achievements have not been commensurate with the expectations. It requires consistent and persistent efforts to achieve long term plan objectives. As a partial fulfillment of the requirements of the mammoth planning process there are needs for appropriate diagnosis of problems of people in the contextual societal framework. We do not have adequate knowledge on certain vital aspects of socio - economic concerns and for that matter paths of development do not become realistic and need based. Planning for urban development remains incomplete if the slum situation is lost sight of.

Although slum dwellers account for 27 percent of the population they occupy only 5 percent of the urban land area. Unimproved slums are characterized by overcrowding, dilapidated structures, unhygienic conditions, grossly inadequate basic amenities, unplanned layouts and poor accessibility. Many colonies have existed in this condition for twenty years or more, becoming progressively more overcrowded as time goes by.

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# Green to Planned Development Zone : Development Concept and Strategies

**Shehana Rasheed and Saritha G Parambath**

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## Abstract

*The green to planned development zoning is an innovative zoning introduced in the proposed land use for the Thiruvananthapuram city as per the Master Plan 2012 (draft). Land has always been the prime resources for planning and development of any area. Land is such a resource, which is constant and cannot be created. Therefore, the importance of optimum usage of land in a developing city is obvious. The concept behind this zoning is positive control over land with democratic participation of people without alienating people from their land. Literature studies have been done to identify the planning elements. The implementation procedure of the zoning on a land parcel is demonstrated. Based on the literature studies and primary studies strategies are formulated for this zone.*

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## 1. INTRODUCTION

Green to planned development zoning is an innovative zoning introduced in the proposed land use for the Thiruvananthapuram city as per the draft Master Plan, 2012. During the preparation of the draft master plan for Thiruvananthapuram city the sensitive lands capable of future development were identified. The proposed land use for 2031 in the Thiruvananthapuram Master Plan (draft) in November 2012 earmarked the green land (defined) within the city area for planned development (Fig. 1). The vision behind this innovative zoning was sustainable urban development through sustainable land development. A closely packed urban form for the city can be attained through positive control over development rather than restricting development.

Causality to environment is the aftermath of urbanization. City developments can lead to the unscientific and unjust use of land. The concept behind this zoning is to bring about a positive control over land with democratic participation of people and without alienating people from their land. The identification of the green to planned development zone has been done to bring a positive control over developments coming up in drainage basin areas.

## 2. NEED FOR PLANNING INTERVENTION

Land is a scarce resource of immediate demand; and economic development activities will have a direct impact on land. The city will attract rapid developments

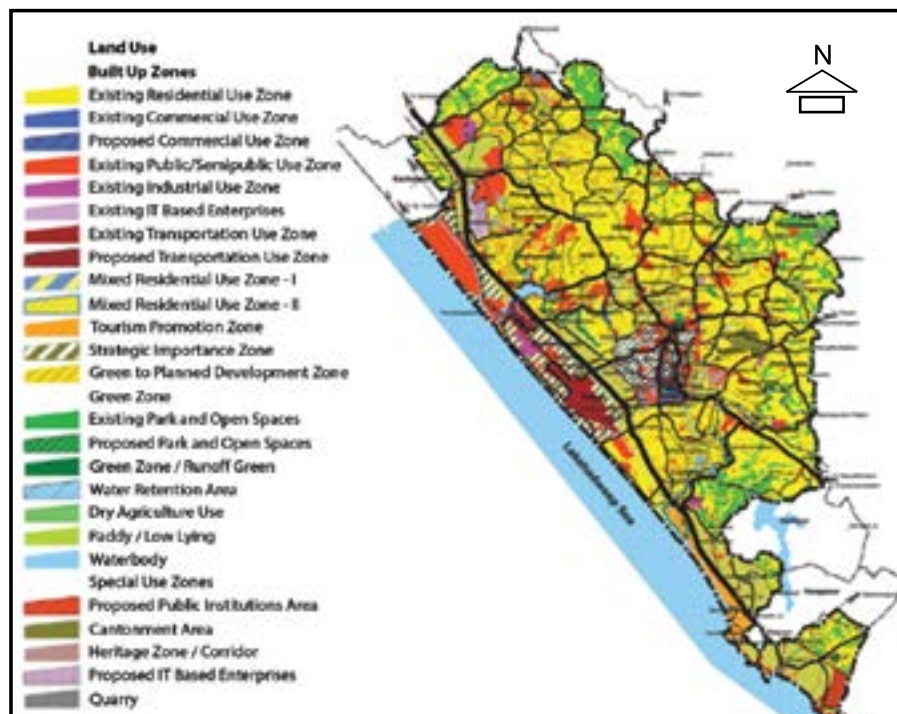
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in its north western and western zones due to the presence of Techno park, the largest IT hub in Asia. The upcoming development activities around Veli and Akkulam, Sports City, Science City and Techno City will also create a positive need for land. Reserving green area without allowing development in a dynamically growing city will cause public resentment and impede development. Considering all these points it's evident that an innovative zoning which caters to the land demand as well as

**Fig. 1: Proposed Draft Land Use Plan of Thiruvananthapuram, 2012**



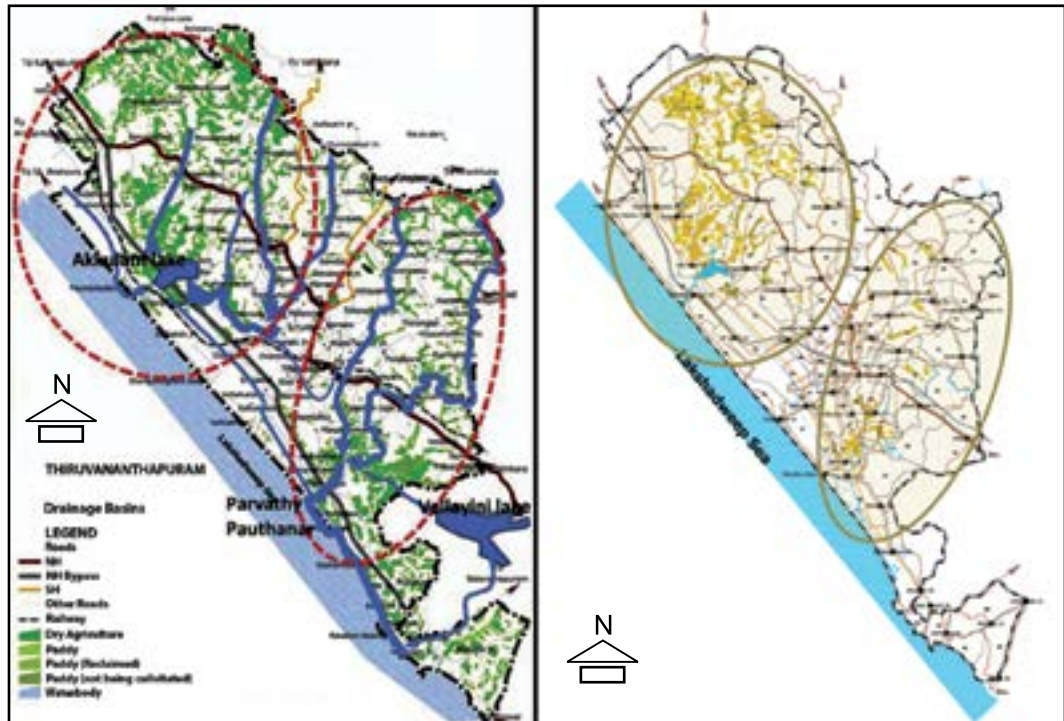
Source: Regional Town Planning Office, Thiruvananthapuram Department of Town and Country Planning, Kerala 2012

the environmental concern is a must. The total area of land parcels identified under green to planned development zone is 13 sq km i.e. 1,255 hectare. Thus, it is evident that an innovative zoning which caters to the land demand as well as the environmental concern is a must.

The low lying land parcels in the valleys within the city region act as drainage basins. There are two existing drainage basins in the city one is the Akkulam drainage basin and the other one is the Vellayini drainage basin (Fig. 2). The dual advantage of this system of drainage is the percolation of water into the soil is allowed recharging underground water and avoiding flooding of the developed areas in the city. Due to population pressure these low lying valleys have been subject to conversion for building purpose. All the land parcels identified under this green to planned development zoning are located within the two drainage basins. Planned development of the available land around these drainage basins is a must to prevent environmental problems.

As per the previous Master Plan - 1971 no developments were possible in the green areas which were located in the central part of the city. The city may attract rapid development in the north western and western zones due to the presence of Techno Park, upcoming developments around Veli and Akkulam

**Fig. 2: Existing Drainage Basins in Thiruvananthapuram**



Source: Generated using Proposed Land Use Map and Map Showing Existing Drainage Basins

(Transportation and Tourism hub), Sports City, Science City and Techno City by the side of northern corridor. Reserving green area without allowing development (previous master plan) in a dynamically growing city can cause public resentment and impede development. Economic development activities may have a direct impact on land which needs to be utilized in a proper and planned manner.

### 2.1 Concept of Green to Planned Development Zone

Instead of condemning any land as no development land a positive approach to conservation and development need to be taken without alienating people from their land. People are given a chance to develop their land in a sustainable manner without causing any damage to the environment. Urban local bodies and development authorities will act as catalyst for development.

As per the Master Plan the maximum coverage in the layout plan or DTP scheme after taking into account the area of roads, area of green zones and runoff green, water retention areas, mandatory open spaces should be limited to 30 percent. This, guideline can create a confusion regarding the buildable area within an identified land parcel. In each of the identified land parcels 35 percent of buildable land area should be clearly demarcated based on existing physical conditions and contour map. The entire plots within the parcel and infrastructure services should be compacted within

this 35 percent of buildable area. Five percent of the land is devoted for roads, streets and other infrastructure services within the parcel. The land owners will have the right to develop 35 percent of their land holdings within the parcel.

Residential development should be promoted in this zone. In the identified land parcels only 35 percent is developable land and 65 percent is to be left as green

or open space without any buildings. Natural land contours should be considered during any planning intervention. The development concept is clearly depicted in (Fig. 3). The areas identified are located around the two existing drainage basins Akkulam and Vellayini drainage basins. The developable dry agriculture land constituted the major share of area. The analysis of the dry agriculture land shows that these are either low lying lands or land adjacent to water bodies playing a vital role for the drainage of the surrounding area. Any haphazard development of these areas will cause flooding in the surrounding areas.

The contiguous land parcels are located in 25 wards (Fig. 4) constituting a total area of 1,221 hectare.

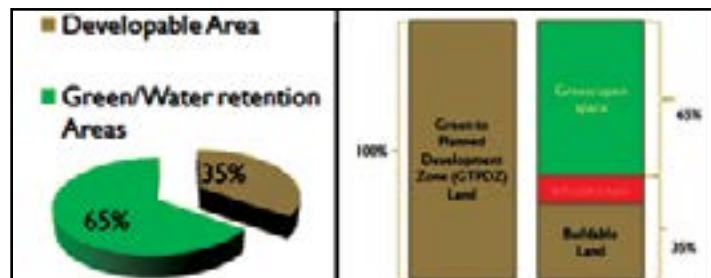
### 3. ELEMENTS OF PLANNING

Based on the conceptual studies and literature studies three critical elements of planning has been identified Low Impact Development, Land Management and Participatory Planning (Fig. 5).

#### 3.1 Low Impact Development (LID)

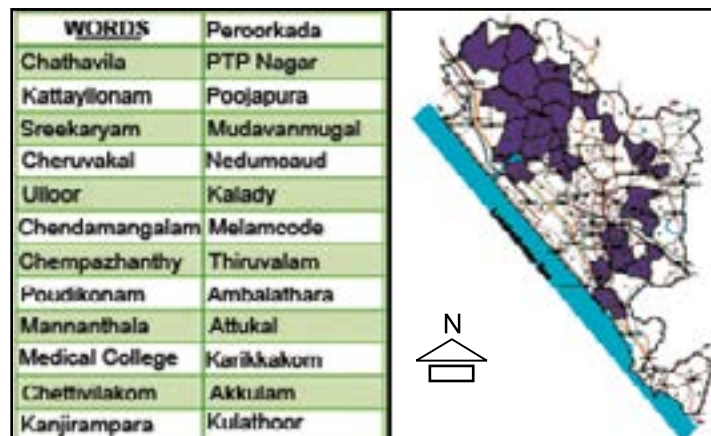
LID is an alternative method of land development that seeks to maintain the natural hydrologic character of

Fig. 3: Development Concept



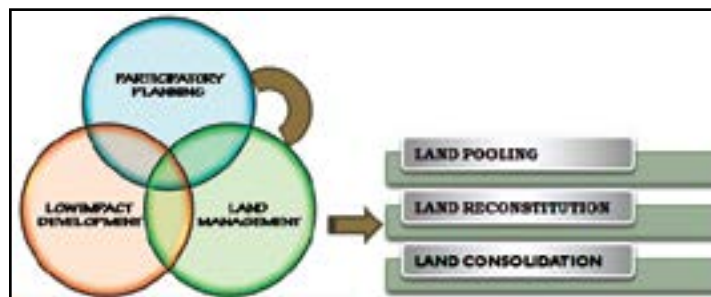
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Fig. 4: Wards Containing Green to Planned Development Land Parcels



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Fig. 5: Identified Elements of Planning



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the site or region. In simple terms the post development condition of the site will be equivalent to the pre-development condition of the site. Low Impact Development is a storm water and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, storage, evaporation and transpiration by emphasizing conservation and use of on site natural features, site planning, and distributed storm water management practices that are integrated into a project design. LID strategies can be applied to new development, urban retrofits, infrastructure improvements and revitalization projects to protect aquatic resources. LID concepts are scalable to various sized projects and land use types. The term LID is generally used in Canada and USA. LID is particularly suited for sites with permeable soils that are adjacent to or draining to wetlands, riparian areas or estuaries, upstream of communities at flood risk, land adjacent to open spaces.

The tools used in an LID project are known as Integrated Management Practices (IMPs). Based on the climate and topography of Thiruvananthapuram city 8 IMPs have been identified which could be adopted on any site. They are vegetated swales, downspout to pervious area, interceptor tree, rain gardens, rain barrels and cisterns, soil amendments, permeable alternatives, and green roofs. A typical homestead development within a plot is shown in Fig. 6, the location of the identified IMPs within the plot is shown in Fig. 7.

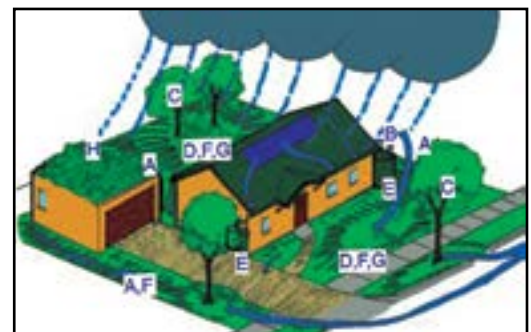
The LID tools which have been identified are those which could be easily implemented into site planning without any engineering skills. It should be made mandatory that during the submission of the site plan at least three LID techniques should be incorporated into the plan. Their locations and other details should be clearly shown. It will be apposite approach to maintain the drainage characteristics of the site and will help to avoid associated small scale as well as large scale problems like water shortage in wells, water logging and flooding.

**Fig. 6: Typical Property without LID**



Source: Generated by Author

**Fig. 7: Property after Implementing LID**



Source: Generated by Author



### 3.2 Land Management

Land management is defined as an activity on the ground, using appropriate technologies in the respective land use systems. It is known by different names in different parts of the world; basically all are land management tools. In India land management is based on the policies of Economic Liberalization (1991) and Democratic Decentralization (1993) together with ever increasing shortage of urban land.

Strong land owner opposition to forcible land acquisition, combined with extremely limited fiscal capacity has left the urban local bodies (ULBs) with very few options to develop well-planned and serviced urban land. Land Pooling and Reconstitution (LPR) is a tool that addresses both these issues by allowing the land owners to share the gain in the land value post provision of infrastructure and services. In lieu, the land owners pay betterment charges and contribute a part of their land to fund the infrastructure and services.

Simply put, in LPR, a number of small holdings are pooled together, a part of land is taken from each plot for provision of infrastructure and public facilities and the rest returned to the original land owners.

LPR can trace its roots to Holland and Germany in the 1890s. It quickly spread across the globe including Europe (e.g. Sweden, Finland, France and Belgium), Asia (e.g. Japan, South Korea, Thailand, Indonesia, India and Nepal), the Middle East (e.g. Israel, Lebanon and Palestine) and Australia. It is used primarily to control peri - urban expansion. It is known by different names in different parts of the world; basically all are land management tools. Table 1 shows the land planning techniques used in various countries around the world, under different names.

In India the strategies available for access to urban land could be through: Guided Land Development for large areas (called urbanizable blocks in Haryana); Land Pooling and Reconstitution (institutionalized as Town Planning Schemes in Gujarat and other States); Land Reconstitution and Redevelopment (for in situ upgrading in small parcels in core areas); Acquisition for public purpose under the Land Acquisition Act, 1894; Joint Sector Model of Land Assembly and Development (Greater Noida, CIDCO, New Mumbai, etc.); Transferable Development Rights (for built up areas); Saleable FAR and Mixed Use Concept (for regeneration of inner city); Land Pooling and Redistribution Scheme (Town Planning Scheme, Gujarat and Maharashtra).

To effectively manage the new growth implies that the land at the periphery of the cities as well as left out pockets and towns or smaller settlements that are not yet "urban" is transformed to be made suitable for urban or non-agricultural uses. This essentially means that the irregular landholdings and plots will have




**Table 1: An International Overview of LPR and other Associated Techniques**

Country	Legal Origins		
	Related Regulations	Period / Year(s)	Term / Technique applied
Japan	Introduced through the Agriculture Land Consolidation Act and then through the Former Land Readjustment Act	1899 and 1955	kukakuseiri
Germany	Former Lex Adickes, Land Consolidation Act LCA; Also referenced Baugesetzbuch BauGB and Law on Adjustment of Agriculture LAA	LCA 1902 BauGB 1986 LAA 1990	Baulandumlegung
India	Bombay Town Planning Act	1915	Plot Reconstitution
Australia (Western)	Western Australian Town Planning and Development Act	Framework from 1928, current TPA of 1984	Land Pooling
Turkey	Municipal Expropriation Law 2497 (1934); current 2942 (2005), Building Amnesty Law 2981; Reconstruction Law 3194 (1985)	1934 1983 1985 2005	Land Readjustment
South Korea	Introduced through the City Planning Act and recently through the Residential Land Development Promotion Act	1934 1980	Land Readjustment
Taiwan	Indirectly in the Republic's constitution and Agrarian Land Consolidation Program	1949 1958	Land Consolidation
Spain	Land Use Law	1956	Reparcelacion
Indonesia	Basic Agrarian Law No 5, Spatial Use Management Law, Law on Housing and Settlement	1960 1992	Land Consolidation
North Korea	Five lines of nature remodelling, Nature remarking policy and the Agricultural Law	1976 then Late 90s	Land Realligment
Canada	Local Government Act (chapter 323)	1983 and later updates	Replotting Schemes
Colombia	Urban Reform Law; Territorial Development Law	1989 1997	Readjust de Tierras
Nepal	Land Acquisition Act, Town Development Act	1976 and 1988	Land Plotting
Thailand	Land Readjustment Act BE-2547	2005	Experience with Land sharing before Land Readjustment

Source: Generated by Author

to be given regular shapes. They must be ordered; each plot must be given access; infrastructure services such as water supply and drainage. Land must be appropriated for providing roads, parks, social amenities, and low-income housing. Development Controls must be prescribed to result in a good quality-built form and levy development or betterment charges to offset the cost of developing the physical and social infrastructure. But most importantly, all of this must happen in a timely manner and such that it is acceptable to the “landowners” to avoid conflict in the growth management process. Land Pooling Reconstitution and other associated techniques are appropriate urban land management tools.

### 3.3 Participatory Planning

Participatory planning is a process by which a community works actively to fulfil a given socio - economic goal by consciously defining its problems and planning a course of action to resolve those problems. Usually, experts are needed but only as facilitators. Moreover, no one likes to participate in something that is not of his / her own creation. Plans prepared by outside experts, irrespective of their technical soundness, cannot inspire the people to participate in their implementation.

Participatory planning is a must to identify the needs of the people, bringing forth a consensus on those needs, empowering local disadvantaged groups, the integration of local knowledge systems into project design, two way learning process between the project and the local people, political commitment and support, accountability in local governance.

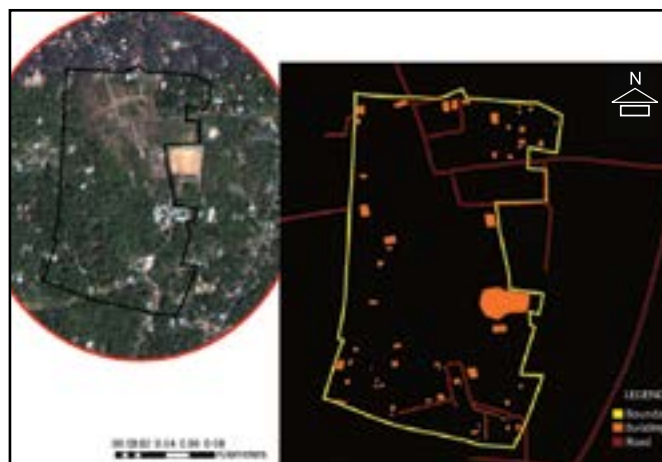
Participation of the affected persons or beneficiaries is a must for the success of any planning initiative. Parting with their land is a difficult task for any landowner, in order to compromise with this he should be made aware of the numerous

Fig. 8: Location of Land Parcel Selected for Primary Study



Source: Generated by Author

Fig. 9: Base Map of the Land Parcel

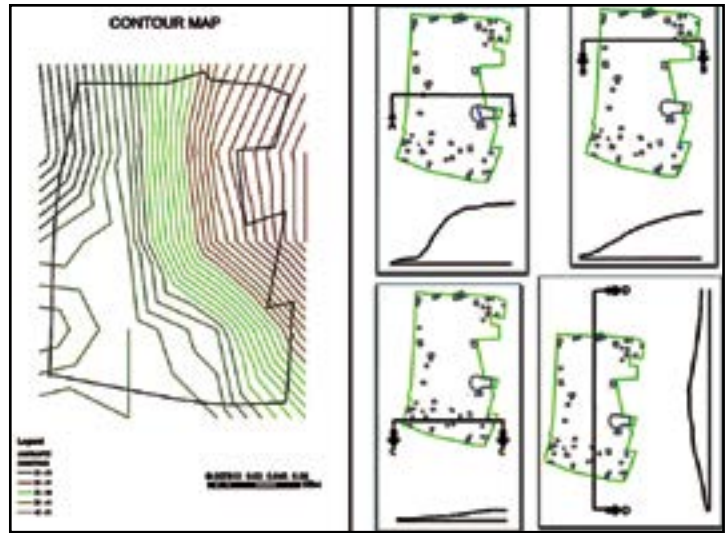


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**Fig. 10: Base Map Showing Plot Boundaries** **Fig. 11: Contour Map and Sectional Drawings of the Site**



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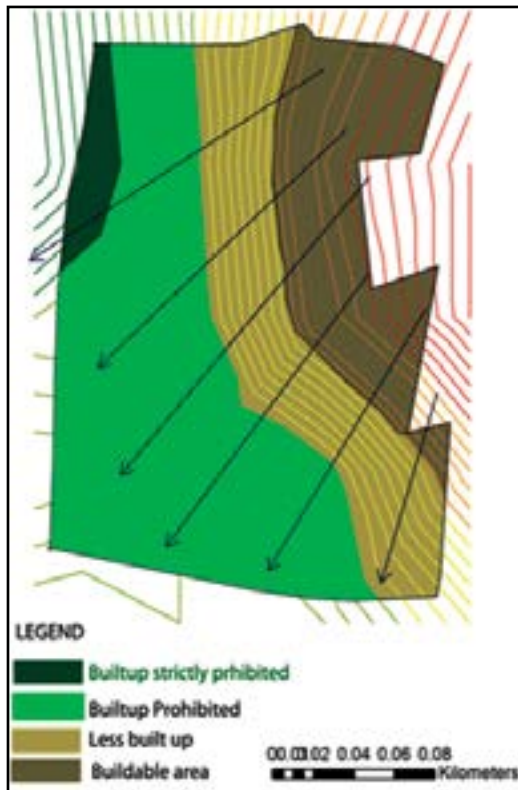
benefits that could be achieved through this process. This understanding can be achieved through their participation from the very first stages of planning, which is a prime objective of this new zoning. The people should have a feeling that they are planning for a better and sustainable built environment. Any external agencies should only be a catalyst in the process. Land Management and Participatory Planning should be interlinked, both should happen simultaneously. By incorporating these three elements into the zoning, democratic participating and positive control can be achieved.

#### 4. PRIMARY STUDY

In order to explain the working of the new zoning a land parcel was identified in the western corridor of the city behind the Infosys Campus. The total area of the parcel identified was 19.29 hectares. The location of the parcel is shown in Fig. 8 and 9.

The parcel boundary and built up density were identified using GIS (Fig. 10). Presently total built area within the parcel is one hectare. Land use of the identified parcel is completely residential. The plot boundaries within the parcel were plotted using GPS (Fig. 11). There are 88 plots within the parcel. The contour map of the land parcel with 1m contour interval was prepared using srtm1 toposheet in GIS (Fig. 12). Based on the contour map the drainage path within the parcel was identified. Based on contour map, sectional drawings and existing built and physical condition of the site the buildable area within the parcel was identified.

**Fig. 12: Map Showing the Buildable and Non Buildable Area**      **Fig. 13: Map Showing Plot Boundaries with Plot Numbers**



Source: Generated by Author



Source: Generated by Author

Map of the study area was prepared in which the buildable, non buildable and critical areas were identified based on contour, primary study and existing physical conditions (Fig. 13). The buildable area comes to around 7.58 hectares, 35 percent of the land parcel accounts to 6.77 hectares thus we get a buffer area of 0.81 hectares. Based on this critical lines are drawn within which the built up has to be contained. The plots should be compactly packed within the first critical line within which dense development could be sustained. Those which cannot be accommodated should be provided within the second line. Ultimately 35 percent of the entire plots should be accommodated into the buildable area.

Number of buildings presently existing in the built up prohibited area is 26 contributing to a built area of 0.298 hectares. 2 buildings are currently under construction. 2 buildings are in dilapidated condition and unoccupied, 5 buildings are currently occupied but in dilapidated condition 2 of which are in buildable area. Assumed plot numbers were assigned to the 88 plots (Fig. 14).

Number of plots within the buildable area are 49 there are 39 plots in the built up prohibited area which needs to be accommodated into the buildable area.

**Fig. 14: Maps Showing the Road Layout within the Parcel**      **Fig. 15: Maps Showing the Reconstituted Plots**



Source: Generated by Author



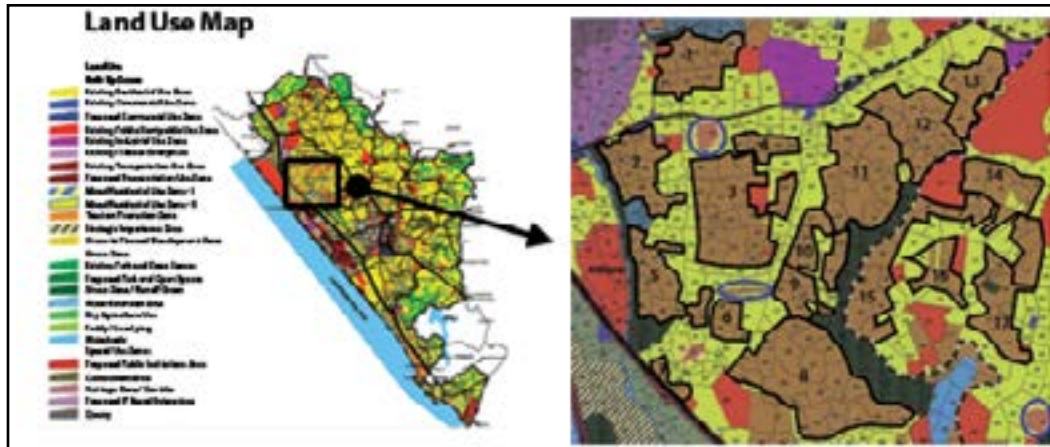
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There are 19 plots without proper road access. The original plot area of each plot was calculated (OP area), 35 percent of this value is the final plot area (FP area). There are 7 plots with area less than 70 sq mt after contribution. The contributed areas of the seven plots were calculated and a single plot was provided for that area. For these plots multi - storied development could be provided. In these plots two multi - storied buildings 4 units and 3 units each could be provided. Roads were designed within the parcel by maintaining existing roads; access to all the plots was ensured (Fig. 15). All the 88 plots were accommodated within the buildable 35 percent of land.

## 5. STRATEGIES

- The identified green to planned development zone should be divided into planning units. The boundary of each planning unit should be clearly defined. Properties coming under each planning unit should be listed down with their survey numbers and owners name. A criterion for selecting the planning unit is contiguous land with more than one hectare area. Isolated parcels with less than one hectares of area should be eliminated from this zoning. This will help to avoid piecemeal approach.

Fig. 16: Delineation of Planning Unit



Source: Generated by Author

- Awareness classes should be organized. Training of trainers is the first step to be taken. Corporation authorities, registered designers and people at ward committee level should be properly educated so that they can convey the details regarding this zoning to the common people who approach them.

The owner's should be directed to contact Building inspectors / overseers for building permit. At this stage if the authorities have a proper training they can give correct guidance. Authorities will be able to tell the owner his land is located within the green to panned development area and in which planning unit he belongs to, the other land owners within the same planning unit and criteria for developing their land. A clear understanding of the purpose of this zoning is a must for the co-operation of land owners.

- Handouts and documents with worked out examples should be distributed to the authorities and concerned owners.
- In the pooled out 65 percent of the land only agricultural activities are permitted with priority to organic farming. The total area of this zone is 1,256 hectare 65 percent of which is 822 hectares. 822 hectares of dispersed land pockets within the city for agricultural activities. The act will improve the environment as well as ensure food security.
- FAR, coverage and other building regulations in individual plots will be as per the KMBR regulations.
- The land owners will have complete authority over the agriculture activities. A trust will be formed incorporating all the contributed land owners to look after the land. The revenue generated will be shared among the land owners in proportion of the land contributed by them.



- Construction activities are strictly prohibited in the 65 percent of land.
- The 35 percent of the land will be registered in the name of the owner with pattayam. The owner will only have a land title over the remaining 65 percent of land without any pattayam.
- The owner has to pay tax for the entire land but tax for the 65 percent of land will be reimbursed to him.
- The revenue generated from the land will be given to a contributed owner based on this land title the owner can transfer this title to his children or can sale the title. The person getting the land title will become a member of the trust formed in the name of the contributed owners and will be entitled for the revenue corresponding to the land title.
- Land owners with less than 70 sq mt (1.45 percent) of land after contribution an area which may not be sufficient for a homestead development, such plots can be combined and in the combined area multi-storied development will be provided. The number of floors in one plot should not exceed four. Owners not interested in living in flats should be given compensation and they will not be a part of the reconstitution process.
- The land owner can maintain the land title over his contributed 65 percent of land but the ownership of all the buildings within the green land will be vested with the government. These buildings can be used as government guest houses or as rental housing for low income group.
- The town planning legislation and registration legislation should be linked so that the entire process can take place without any time lag.
- The low impact development techniques identified should be strictly enforced in individual plots. Only permeable pavements should be provided within the entire parcel.
- Strategies for the development of this zone are site specific. Though agriculture activities are promoted in the pooled out 65 percent of land based on the predominant land uses in the area surrounding the land parcels changes can be made based on the suggestion of the land owners. But the activity should strictly not involve any construction. Spice gardens, butterfly gardens, open restaurants, open air theatres, parks etc are some possible options.

## 6. CONCLUSIONS

Called as the Green to Planned Development Zone, this proposed innovative Zoning classification seeks to incorporate many of the elements of sustainable planning ordinance by addressing environmental, economic and social dimensions of communities. In the sporadic growth of a city causality to environment



becomes inevitable, zoning with special registration and legislation laws can help to effectively implement planned development of communities. Compact build up with large open spaces will have a positive impact on the environment as well as people; the infrastructure can also be easily accommodated at a low cost. Pockets of land within the city for agricultural activities will give a new dimension to the city as well as its residents.

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# District Regional Development Planning and Need of Comprehensive Planning for Tourism Development of Lakefronts in Pune District

**Parag Govardhan Narkhede**

## Abstract

*The paper deals with the study of lakes in Pune Region to ascertain the feasibility and potentials to develop them as a "Lake District". In the Regional Plan of Pune District 1981 emphasis has been given on developing Western part of the District as 'Lake District', but implementation is not satisfactory. The paper discusses the issues, constraints and potential of tourism in the study area for the future development, and suggest a methodology and guidelines for planning and development of lake fronts with focus on Eco-Tourism. Since all the sites are in the vicinity of two metropolitan cities i.e. Mumbai and Pune, the attraction of tourist for these places is increasing day by day, so also the demand for tourist facilities and infrastructure in this potentially scenic belts. It is therefore necessary to take steps well in advance for promoting planned growth of tourism activities, in this belt.*

## 1. INTRODUCTION

Industrialization increased the pace of urbanization all over the world. The consequential development caused increase in wealth of people. Increased pollution and congestions further increased stresses in the lives of urban masses. To get rid of stresses temporarily, people felt need for recreation and living in the natural surroundings. This phenomenon is observed world over and India is no exception. Tourism today becomes a major industry. Local people get employed and government gets foreign exchange. In 1989, nearly 13 lakh foreign tourists visited India. The number increased by 5.3 percent in 1990. India also made considerable progress in local tourism. In 1989, nearly 5 crore Indians reported to have taken out tours to various places in the country.

Pune district is situated in proximity to Mumbai and ranks second to Mumbai in industrialization and urbanization in Maharashtra. It is well linked by good transportation network to major cities and growth centers all over India. Major part of the district falls in the Western Ghat region. Pune district is dotted with several spots of natural beauty, historical importance and religious significance and has therefore considerable potential for promotion of tourism, sightseeing and mountain sports.

Western part of the district is hilly with offshoots of the Sahyadris and contains number of water supply, irrigation and electricity generation lakes. Starting from the Yedgaon Lake in Kukadi of Junnar Taluka in the north upto Bhatghar

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on Nira River to the south, there are more than ten major lakes all situated in the western part. These would offer scope for water sports activities, trekking, rock climbing, etc. This part of the District thus offers opportunities for being developed as a beautiful lake district.

## 2. TOURISM DEVELOPMENT

According to the Oxford Dictionary, the meaning of word tourism is business of providing accommodation and services for tourists who visit a place for pleasure. The prime aim of a tourist is pleasure and leisure, but this is associated with business, educational, religious, cultural, and other social purposes.

In the present scenario, tourism of different kinds has emerged keeping in view specific needs and requirements of people. It may be classified into different types depending upon the objectives of tourists such as leisure and pleasure, holiday, pilgrim, festival, beach and coastal tourism, hill tourism, adventure tourism, cultural tourism, educational tourism, social tourism, conference tourism, sports tourism, research tourism, eco tourism. More specifically, tourism can be grouped into following three categories:

- **Business Tourism** : Traveling for business reasons including attending conferences, exhibitions.
- **Specific Tourism** : Pilgrims, students and others whose travel motivation is specific to particular needs.
- **Leisure Tourism** : People visiting places for pleasure or out of interests taking holidays.

The main components of tourism planning and development (Fig. 1) are accessibility, accommodation and recreation.

### 2.1 Eco-Tourism

Eco-tourism focuses on local cultures, wilderness adventures, volunteering, personal growth and learning new ways to live in our vulnerable planet. It is typically defined as travel to destinations where the flora, fauna, and cultural heritage are the primary attractions. As the demand from tourists to visit natural scenic areas increases, developers have

Fig. 1: Basic Tourist Facilities





resorted to exploit this segment of tourism market by developing tourist attractions in and around scenic sites, such as mountains, forests, beaches, lakes and cultural and historical areas. However, over development can cause environmental degradation. There is a need to balance the requirements of tourism development, with the environmental constraints to ensure both economic and ecological sustainability.

Eco - Tourism Policy, 2000 of Himachal Pradesh defines eco - tourism as venturing into and enjoying nature in such a way as to assure that the negative impacts on the cultural and natural environment are minimized and mitigated. Eco - tourism Society defines eco - tourism as purposeful travel to natural areas to understand the culture and natural history of the environment taking care not to alter the integrity of the eco - system producing economic opportunities that make the conservation of natural resources beneficial to local people. Australian National Eco - Tourism Strategy defines as nature based tourism that involves interpretation and education of the natural environment and managed to be ecologically sustainable.

So eco - tourism is a form of tourism inspired primarily by the natural history of an area including its indigenous cultures. The eco - tourists visit relatively undeveloped areas in the spirit of appreciation, participation and sensitivity. Key factors of Eco - Tourism are:

- Maximize local benefits for conservation and economic development;
- Maximize use of local products, materials; and
- Focus on recycling, waste management, alternative technologies and fuels, manuals to be produced that provide practical information on such topics.

There are number of underlying principles and characteristics commonly associated with the concept and meaning of eco - tourism. Eco - tourism characteristics are given bellow:

- It involves travel to natural destinations;
- It minimizes environmental impact and builds environmental awareness.
- It provides direct financial benefits for conservation;
- It provides financial benefits and employment for local people; and
- It respects local culture and supports human rights and democratic movements.

Approaches to eco - tourism in India include floating accommodation in the form of houseboats prevalent in Dal Lake, Kashmir and the backwaters of Allepy, Kerala which are famous throughout the world. Eco - tourism destinations in

the States of India are in Himachal Pradesh, Rajasthan, Andaman and Nicobar, Lakshadweep and Uttarakhand.

## 2.2 Lake Eco - system and Lake Tourism in India

Lakes and reservoirs are dramatic often visually pleasing features of the landscape that comprises river drainage basins and are also called watersheds or catchments.

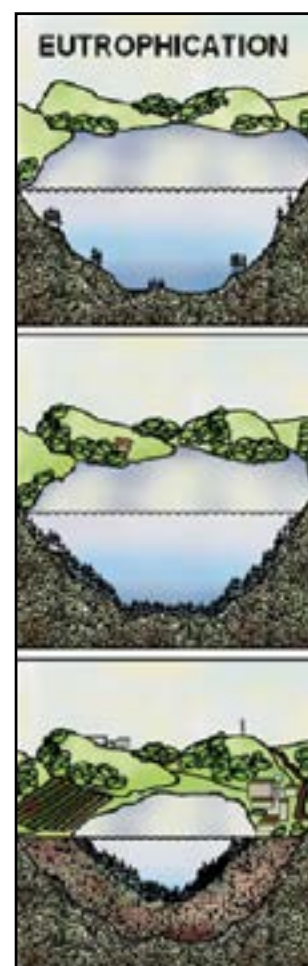
**Natural lake:** Simply stated, lakes are naturally formed, usually “bowl-shaped” depressions in the land surfaces that become filled with water over time. These depressions (also called basins) were typically produced as a result of the catastrophic events of glaciers, volcanic activities, or tectonic movements.

**Man-made Lakes (Reservoirs):** In contrast to natural processes of lake formation, reservoirs are man-made water bodies, usually formed by constructing a dam across a flowing river. Upon completion of the dam, the river pools behind the dam and fills the artificially created basin.

There are many lakes in India, like Chilka, Pulicut, Kolleru, Sambhar, lakes of Pangong also Tso Morario in Ladakh. Dal lake in Jammu and Kashmir, Lonar Lake of Maharashtra, lakes of Kumaon, those of Nainital and Bhimtal, etc. There are unaccounted lakes, which are slowly becoming extinct, changing into a place or bog. Sedges and insectivorous plants start to grow in the bog in due time.

Lake pollution has become an important issue and its several forms could be seen throughout India. Eutrophication: the weeds take over is one prominent form (Fig. 2). The natural processes by which lakes form, evolve, and disappear takes thousands of years. For example, sedimentation where the lake fills in with sediments over time. This process is a natural part of lake aging, governed by gravity and forces of rain and wind which move soils from the surrounding watershed into a lake, a process of erosion. These soils settle on the bottom of the lake causing the lake to become increasingly shallow. Acidification in which air pollution affects lakes. Acid rains can change the chemical balance of the lake, sometimes with severe consequences. Toxic contamination means excess chemicals contaminate lakes. Toxic chemicals may enter and contaminate lakes from a variety of sources such as waste discharge from industries, pesticides runoff used by farmers, urban storm runoff, waste water discharge, chemicals in the air, dumping of mine wastes, chemicals, fuel oils, etc. Exotic Species Infestation means the aliens have arrived. Another threat to the lakes is the infestation of the lake by exotic species. Several exotic species have caused considerable harm to our lake ecosystem. Because these species are imported from other area or country, they do not have predators. This allows them to grow and out-complete many of our native species.

Fig. 2: Eutrophication





The Earth is called the water planet because it has approximately 14,108 cubic kilometers of water. However, 97.5 percent of this water exists in the seas, and nearly all of the remaining fresh water is locked up in the Antarctic or Arctic ice caps or as groundwater. Therefore, we can freely access only the water in lakes (0.007 percent ) in rivers (0.002 percent ). Of these, lakes are the best available freshwater source on the Earth’s surface. The lakes, also serve several purposes like:

- Lakes as a water sources;
- Lakes for fishing purpose;
- Lakes as tourist and recreation locations;
- Lakes as biodiversity conservation areas; and
- Lakes as natural balance preserving reservoirs.

### 3. CONCEPT OF LAKE DISTRICT IN CUMBRIA, UK

Lake District located in north-west of England is the UK’s largest National Park extending over an area of 880 sq. miles. Lake District (Fig. 3) gained the National Park status in 1951. National Park Authority looks after the Lake District, and they also protect and conserve the Landscape and also promote the enjoyment. Farming has historically been the major industry in the region. Sheep farming

remains an important factor both to the economy of the Lake District, as well as in preserving the stunning landscape which attracts visitors and hence income to the region. The region remains one of the main sources of both granite and slate used in the building industry.

The Lake District is about 34 miles (55 km) across north-to-south or west-to-east. The Lake District’s location on the north-west coast of England, coupled with its mountainous geography. The U- shaped valleys are filled with the lakes that give the park its name. The upper regions of the mountain contain the plantation of Oak and Pine. Much of the land is often wet, due to the high rainfall.

Two types of volcanic rock found there, Skiddaw Slates and Borrowdale. It has traces of prehistoric and medieval field

Fig. 3: Detail Layout of Lake District





systems. Important monuments in the Lake District include Roman Roads, stone circles and forts. The summer temperature is 20 to 30°C at sea level and winter temperatures are 0 to 10°C at sea level. Sheep farming remains important both for the economy of the region and for preserving the landscape which visitors want to see. Dairy farming as well as mining, particularly of copper, lead, barite, graphite and slate, was historically a major Lakeland industry. Development of the pencil industry is another activity undertaken in this area.

England's highest mountain, Scafell Pike (3,210 feet) and the largest lake is Windermere Lake. It has sandy beaches to breathtaking mountains. The fields are lined with ancient dry stone walls and hedgerows, and with the backdrop of spectacular mountains and lakes. Places to stay and visit vary from attractive villages to bustling market towns and places of complete solitude. There are countless delightful arts, crafts, antiques and books shops, garden centers and nurseries, wide selection of specialist food shops, etc.

It has diverse landscape. Not only that in the Lake District a great natural wilderness is formed over millions of years, it has also been molded by thousands of years of human activity. Thus, it is a mix of farmland, woodland, lakes and settlements. The Lake District is one of the few lasting places in England where the red squirrel still prospers.

#### 4. LAKE DISTRICT IN NAINITAL, UTTARAKHAND

Nainital is a glittering jewel in the Himalayan necklace, blessed with scenic natural splendor and varied natural resources. Dotted with lakes, Nainital has earned the epithet of 'Lake District' of India. The most prominent of the lakes is Naini Lake ringed by hills. Nainital has a varied topography. Some of the important places in the district are Nainital, Haldwani, Kaladhungi, Ramnagar, Bhowali, Ramgarh, Mukteshwar, Bhimtal, Sattal and Naukuchiatal

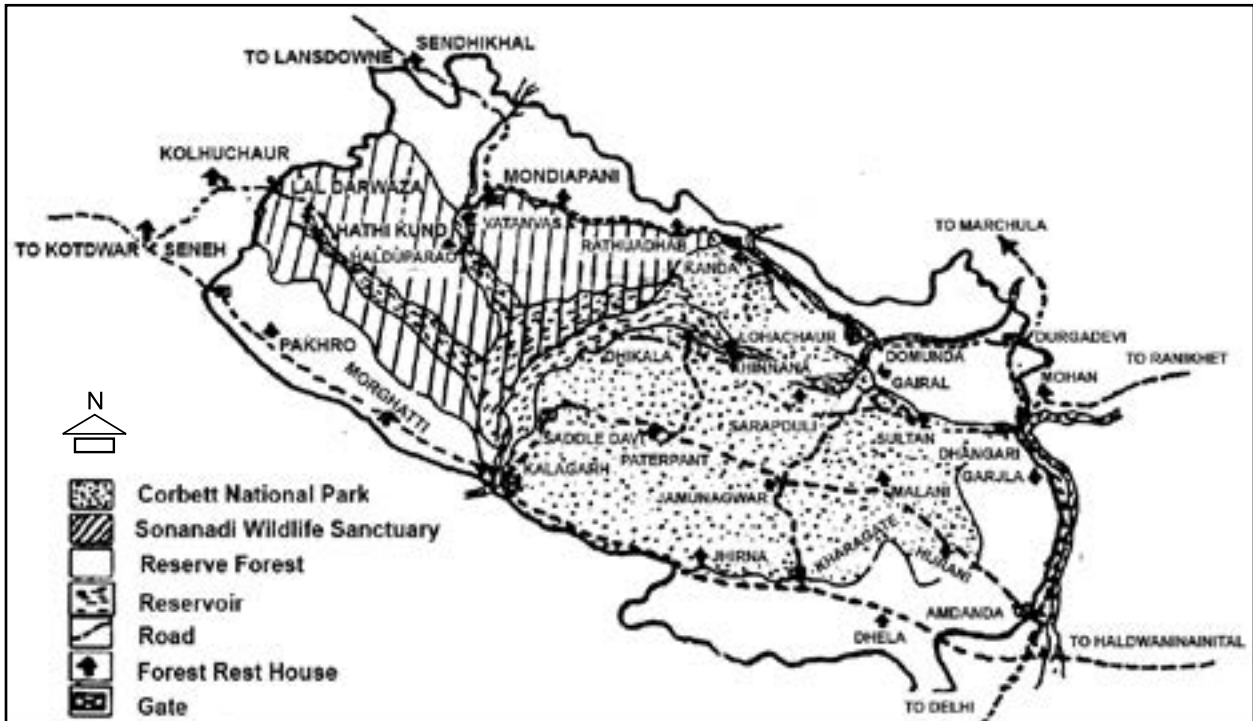
**The Corbett Park** is the first national park of India established in the year 1936 it was named Hailey National Park. In 1957, the park was rechristened as the Corbett National Park in the memory of Late Jim Corbett great naturalist and eminent conservationist. It is 118 km from Nainital via Kaladhungi and Ramnagar. The Corbett national park covering an area of 521 sq km is situated at the foothills of the Himalayas. It spreads over parts of two districts; a major part of park with an area of 312.86 sq km falls in Pauri Garhwal district and the balance 208.14 sq km in Nainital district. The park (Fig. 4) occupies portions of Kalagarh and Ramnagar forest division's. It falls within the trek of land known as Paltidun.

General information about the Corbett Park is given below:

Area in sq km	- 1318.54
Corbett National Park	- 520.82



Fig. 4: Corbett Park

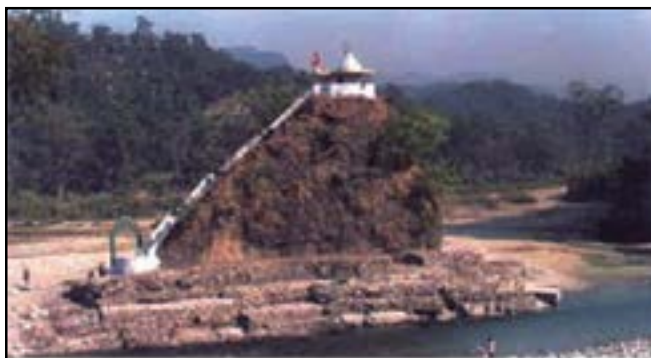


Sonanadi Wildlife Sanctuary - 301.18

Reserve Forest - 496.54

- Main rivers flowing through the reserve are Ramganga, Sonanadi, Mandal, Palain. Wild animals seen include mammals such as Wild Elephants, Tiger, Leopard, Civet, Jungle Cat, Leopard Cat, Sambahar, Chital, Hog Deer, Barking Deer, Ghural, Neel Gai, Wild Boar, Slothbear, Marten, Otter, Mongoose, Hare. There are over 580 Species of resident and migratory birds. Reptiles include Gharials, Crocodiles, Python, Turtles, King Cobra, and Lizard. Prominent fish forms are Mahseer, Goonch, and Trout.

Fig. 5: Garzia Temple



- Nearby places include Sitabani, Garzia Devi, Kalusidh, Machor, Kalagarh Dam, Lansdowne, Kaladhungi Corbett Museum, Nayagaon waterfall, and Nainital. There is a huge rock perching out of the Kosi river bed. On the pinnacle there is a beautiful temple of Durga Devi named as Garzia Devi. An enchanting view of river Kosi can be seen from the top of the rock.

It is a good place for bathing, basking, and worship and lunch enroots to Corbett Park.

- The forest in the park mainly consists of Shisham, Sal and Chir. The park is rich in wild life such as elephant, tiger, panther, bear, dear, pig, jungle cats, porcupine, hyena, and jackal. Amongst the birds are the pea fowl, the jungle fowl, grey and black partridge, pigeons, quails, kingfisher, kite, lark and the woodpecker. The Ramganga is full of Mahseer fishes. Amongst the reptiles are Python, Crocodile and many species of Lizards and Snakes. Tigers are fairly well distributed over the park.

**Ambazari Lake, Nagpur** is a garden (Fig. 6) was developed in 1958 in an area 0.5 acres. Now the Ambazari garden is one of the biggest and beautiful informal gardens in the city occupying an area of 25 acres. With the large collection of indigenous and exotic plants it serves as a centre for information on the natural flora of Vidarbha and students of botany, Horticulture and Landscape Architecture visit the garden. In the year 1997 boating was started but due to fewer contracts it was upto year 2000 only.

**Fig. 6: Ambazari Lake, Nagpur**



## 5. LAKES IN PUNE CITY

Pune city is the divisional headquarter of western Maharashtra and headquarter of the district. Administratively, Pune district is divided into 14 - Talukas, 13 - Panchayat Samitiis (blocks), 2-Municipal Corporations and 11 - Municipal Councils, 3 - Cantonment Boards and 1,844 villages.

There are two major lakes in Pune city i.e. Pashan Lake and Katraj Lake. Pashan Lake is situated 12.0 km off the road to National Defence Academy. It is an Ornithologists delight, as it is the favorite haunt of migratory and residential birds. For bird watching head towards this little lake. The Lake is not as rich as it was about five years ago, when seeing sixty species in a morning was easy. The main problems are siltation, proliferation of Ipomeas weeds, dumping of chemical effluents (on small scale) and Eutrophication. This lake has the potential to develop as a tourists spot; due to its location, topography, bird sanctuary and a temple. The beautiful Pashan Lake is home to a variety of migratory and residential birds, which is sure to delight the ornithologists. Plans are afoot to declare this as a bird sanctuary to protect its rare species of water.





Katraj Snake Park is situated on the Pune - Satara Highway near Bharati Vidyapeeth Campus just 7.0 km from city. The lake is surrounded by Snake Park started in 1986 with the help of the Pune Municipal Corporation. The park today has a collection of wonderful reptiles, birds, a baby leopard, crocodiles, and others. The prize collection is of course the six year - old, nine feet long King Cobra.

Tourism potential and existing scenario in several lakes including Khadakwasla, Walwan, Panshet Shirvate, Varasgaon, Wadiwale, MulshiAndar, Kasarsai, Chaskaman, Lavarde, Dimbhe, Pawana, Manikdoh, Bhushi and Vadaj. In addition to the lakes there are other factors of tourism potential in the district. A moderate climate generally with temperature never rising over 40°C in the major part of the district. Historical forts include Sinhagad, Rajgad, Torna, Tikona, Lohagad, Shivaneri, Purandar, Rajmachi, Vichitragad and Tunga. Places of historical importance are Tulapur and Vadu where ChatrapatiSambhaji sacrificed his life and of course the city of Pune itself which was the seat of the Peshawas for more than a century. Temples are Ozar, Lenyadri, Ranjangaon, Theur and Morgaon which are the five of the 8 spots of God Ganpati; Jejuri famous for its hills and temples of the God of Khandoba, Alandi and Dehu the towns of the two Saints Dnyaneshwar and Tukaram; Bhimashankar which is one of the twelve santas of

Lord Shiva. Caves: Karla and Bhaja Buddhist caves and Bedase Caves. Lonavala and Khandala are two hill stations and their surrounding area having a good existing tree cover and scenic forest cover. Wild Life Sanctuary: Bhimashankar Wild Life Sanctuary.

**Table 1: SWOT Analysis**

Main Criteria	Sub Criteria
Strength Accessibility	Distance
	Availability of Mode
	Road Quality
Existing scenario (Tourist Potential Existing)	Existing Facilities
	Surrounding Attractions
Weakness	Climatic
	Restricted Area
	Limitations Due to authority
Opportunities	Controlling. Perimeter of lakeshore
	Visual Pleasure
Threat Existing Ambiance	Over crowding
	Pollution
	Residential Activity
Soil Erosion	Rainfall
	Slope
	Soil type
Eco-sensitivity	Watershed Prioritization
	Presence Of endangered Flora

### 5.1 Identifying Eco-tourism Potential for Hill Station Lake Town, Pune

Satellite Remote Sensing data have been used to prepare, land use and land cover map. NDVI Map has been generated for better decimation of forests and other land uses classes. The forests are further sud - divided into three distinct canopy density classes. The shifting cultivation areas which are an integral part of forests have been classified into current and abandoned shifting



cultivation respectively. Because these are the critical areas need the immediate attention for the ecological restoration. Land use and land cover classes are very much useful for eco - tourism potential assessment. There are in all nine classes and accordingly the weightages has been given in the GIS domain on the basis of the relative importance of land use and cover classes from the point of view of eco - tourism development. Soil map have been utilized, prepared by Agricultural and Soil Survey Department Pune District, which highlights there are four types of soil found in this area, that has been sub - grouped into three types of productivity level based on its texture, depth and moisture holding capacity level, etc. The area of highly productive soil within forests has been considered for assessment and identification of potential eco - tourism area by using the forests mask. The slope map has been used to identify eco - tourism potential areas i.e. recreational zones, as higher slope helps for the adventures sports like rock climbing, trekking and hiking middle slopes are gives the site seeing, green parks, botanical gardens and other nature parks and flat to gentle slope for residential and service centers. The back of water is proposed to be developed for water sports and wetlands for bird watching purposes.

## 5.2 Tourist Circuits

The western part of the district is hilly area having the Sahyadri Ranes. All the places of tourist interest are located in that area only. So there is opportunity of one or two day package tour. The possible tourists circuits (Fig. 7) of one or two day package are follows:

### Circuit 1

Lake - Pimpalgaon Jog, Manikdoh, Wadaj, Yedgaon

Fort- Shivaneri

Temple - Ozar, Lenyadri

M.T.D.C. Resort - At Malshej Ghat

### Circuit 2

Lake - Chaskaman, Dimbhe

Temple- Bhimashankar

Wild Life Sanctuary - Bhimashankar

M.T.D.C. Resort - At Bhimashankar

### Circuit 3

Lake - Parvana, Mulshi, Wadivale, Valavan, Shirota, Andar

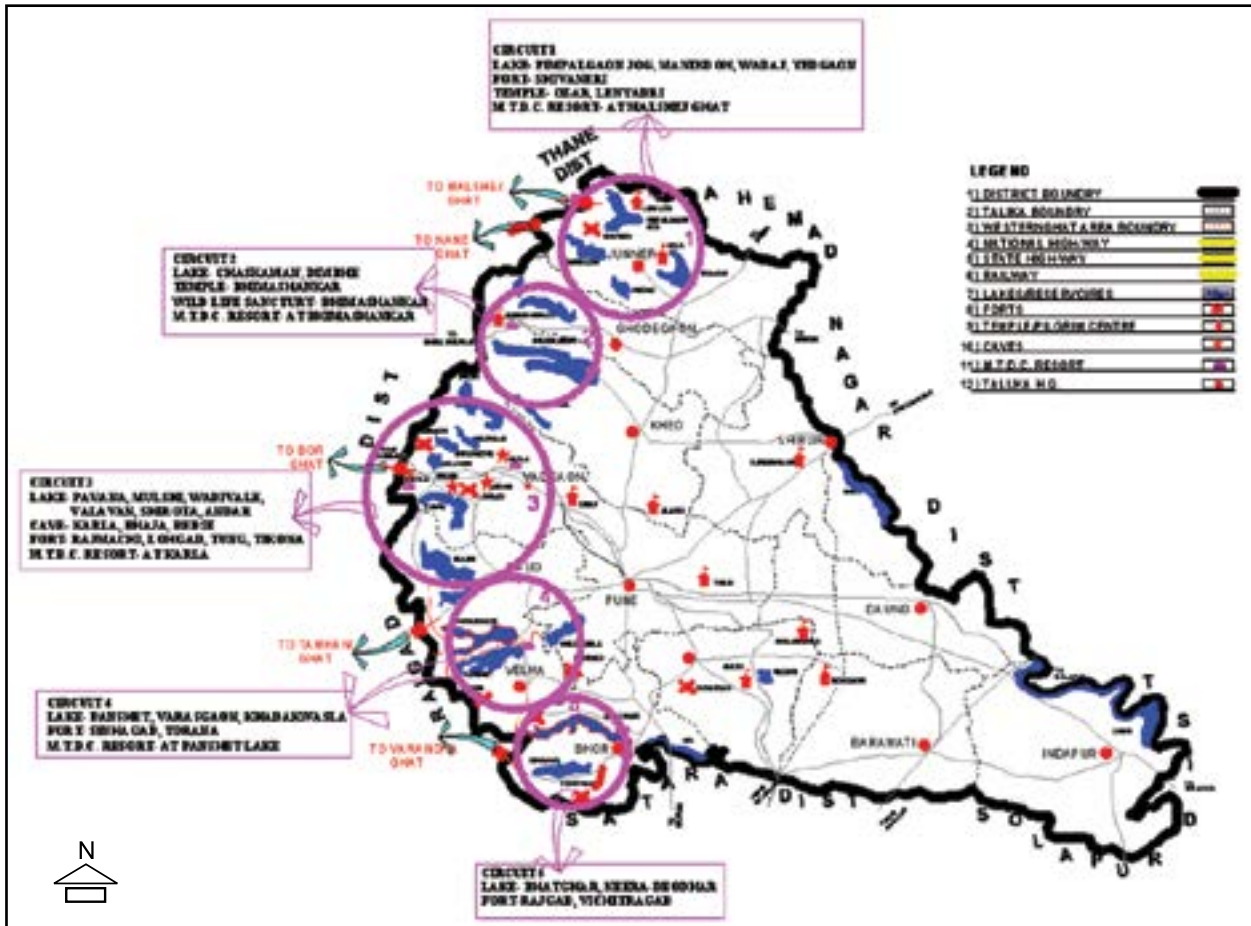
Cave- Karla, Bhaja, Bedse

Fort - Rajmachi, Lohgad, Tung, Tikona

M.T.D.C. Resort - At Karla



Fig. 7: Tourist Circuits in Pune District



**Circuit 4**

Lake - Panshet, Varasgaon, Khadakwasla  
 Fort- Sinhadag, Torana  
 M.T.D.C. Resort - At Panshet Lake

**Circuit 5**

Lake - Bhatnagar, Neera - Deodhar  
 Fort- Rajgad, Vichitragad

Even though there are 13 lakes in the study area, but at present there is no accessibility to all the lakes. Some of the lakes are under private authorities. Important factors for the analysis for the lakes in the area are:

- **Tourism Regulation:** All the dam area having tourism potential and experiencing tourism attraction, construction of farm houses, weekend



**Table 2: Interesting Feature in the Vicinity of Lake Area and its Distance in km**

No	Name of Lake	Dist-Ance from Pune City	Forts, Temples/Any Interesting Feature in the Vicinity of Lake Area and its Distance in km	No. of Tuorist Per Day	Total T.D.Z. Area in Acres	Availability
1.	Chaskaman	73	Bhimashankar 20 Dimbhe Dab 25	1009	05.93	YES
2.	Shirota	65	Rajmachee Fort 15 Karla Caves 15 Bhaja 23 Wadiwale 15 Walvan 22	350	02.00	YES
3.	Walwan	65	Shirote 22 Lonavala 05 Karle 10 Lonavala Lake 04 Bhaja 13	500	--	YES
4.	Pawana	60	Tunga (from lake side) 04 Tikona 12 Lohgad- Visapur 10 Bhaja 13 Bedse 08	2288	12.80	NO
5.	Mulshi	45	Korigad (from lake side) 04 Lavarde Lake 12	1061	05.96	NO
6.	Lavarde	55	Mulshi Dam 12	102	--	--
7.	Varasgaon	38	Panshet Lake 06 Varasgaon 06 Sinhgad 16	291	00.50	--
8.	Panshet	38	Varasgaon 06 Khadakwasala 03 Gunjavane Dam(from lake side) 05	1226	06.78	--
9.	Khadakwasla	17	Varasgaon Lake 06 Panshet Lake 06 Sinhgad 16	765	04.30	YES
10.	Bhatghar	53	Baneshwar 15 Bhor Rajwada 05 Neera Deodhar Dam 15 Rajgad (from lake side) 03	1239	04.30	--

cottages, hotels, etc; are very common here. So there is a need to regulate such activities and allied activities.

- **Soil Erosion at Lake Shores:** The geography, climate of most of the dams makes the surrounding soil erosion prone. To reduce the natural aging of the lake this soil erosion should be reduced.



- **Encroachments:** Illegal haphazard occupied Lake Basin and lake shore areas by the farm houses capable of inducing faster rate of lake aging. So this encroachment in lake, lake shore and Lake Basin areas should be stopped.
- **Conflict in Policies for Development:** As described earlier there is a conflict in existing policies and entire development scenario is in confusion. Conservative Regional Plan and Hill station development policy supporting urban growth in the region are two major regulations. Hill station development policy is too general so causing negative impacts on the development.
- **Lack of Government Agencies:** The area should be under one authority for the comprehensive development of the area including lakes, lake shore and lake basin. Currently different authorities are involved in these areas having different focuses. So there is need to understand the image of the region in comprehensive manner and plan for it.

### 5.3 Case Study of Lavasa

The Lavasa Corporation Limited (LCL) have developed over 3,240 hectare of land for 'Lake Town' as hill station located along the bank of Warasgaon Dam backwaters at Mose Valley, Taluka Mulshi in Velhe, district Pune. Location of proposed lake city project is in the catchment area of Warasgaon dam Pune district of Maharashtra state. The main source of water to Warasgaon dam is from river Moshi that originate in the crest-line of Western Ghat. The lance of the proposed Lake City project from Pune city is 45 km and is aligned in the west direction.

The objective of LCL is to develop this 'Hill Station' into a self-contained and 'Eco-friendly' town which have offered 'World-class facilities / infrastructure.' The location is a strip of about 20.00 km in length and about 5.00 km in width. Total geographical area of the study area is 10,623 ha spread over in 17 banks of river Moshi. Out of 2,485 ha (23.39 percent ) area is covered by forests. Three villages' area under Velhe Taluka and fourteen villages are in Mulshi Taluka. The villages identified in Mose for development activities area located on left bank of river on three villages on right bank and Dhamanohol in the centre. All the villages' area is in the water shade or in the catchment area of Warasgaon Dam of river Mose. In the site area water bodies are on the east and Hill Station developmental activities area are on west. The development activities area as proposed in Master Plan for the various categories of population area as under:

- Visiting population (tourist) who would be visiting hill station for entertainment, leisure, relaxation, training, and conference. These people would stay in hotels, resorts or serviced apartments;

- People purchasing second homes;
- Permanent residents who would live and working the location in the vicinity; and
- Employees of the workshop, service station, laundry, etc.; located within the hill station.

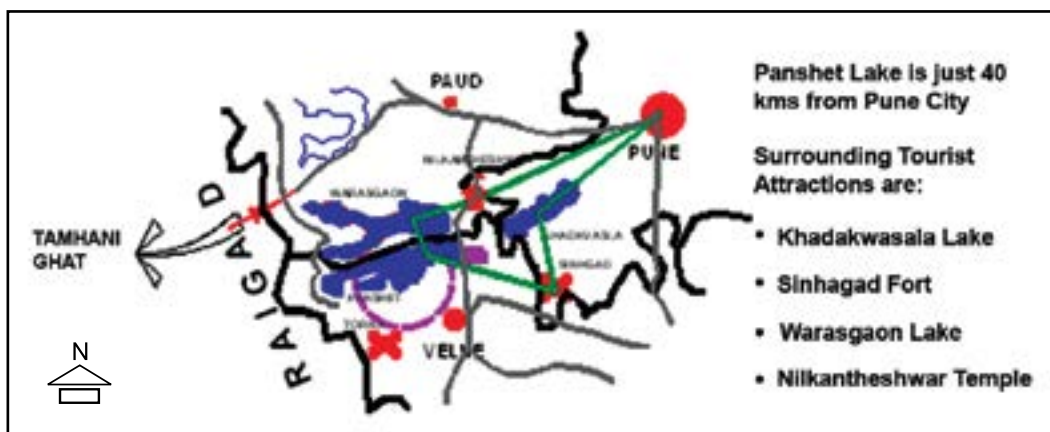
It is envisaged in the Master Plan that tourists will be provided with entertainment and relaxation facilities of international standards. The facilities include water sports, water park, amusement park, golf course, cinema hall, safari park, bird park, sports complex, rope way, cable car, mountaineering, mountain trekking and biking trail. The facilities for second home could be farm houses, bungalows, serviced apartments, etc; which will be availed by the owner during vacations. Permanent residents would be offered individual homes on plots of varying size with the high standard educational facilities via schools colleges, research institutions and management schools to cater the educational needs. The permanent population would avail all the amenities developed by LCL.

#### 5.4 Proposals and Recommendations

Panshet Lake is just 40 km from Pune city (Fig. 8). While going to Panshet Lake from Pune city a tourist circuit is possible, this covers the surrounding attractions which are Khadakwasla Fort, Sinhagad Fort, Varasgaon Lake and Nikantheswar Temple. Considering these tourist attractions there is potential for weekend tourism, accordingly, following zones could be formed:

- Heritage Zones - Sinhagad Fort;
- Religious Zone - Nilkantheswar Temple;
- Recreational Zone - Panshet and Varasgaono Lake; and
- Adventure Zone - Natural rugged topography of area.

Fig. 8: Panshet Lake





The weekend cottages have come up on the hills and hill slopes, which cause erosion of hills and hill slopes. The location of site is at Panshet Lake, and total geographical area is spread over in two villages in the banks of Lake Panshet. The village of Ghivashi and Ambegaon fall under Velhe Taluka. On the north of the site is Varasgaonlake, on the west Raigad Taluka on the South Bhor Taluka, on the East River Mutha and Pune city. The site is approachable by the road Pune - Khadakwasla - Sinhadgad - Panshet. The north south edge drains into centre of the lake.

It comes under moderate climate zone. The major soil type of the catchment area is erosion prone sandy soil. The average rainfall in the district is 1,150 mm. About 87 percent of annual normal rainfall is received during monsoon months. i.e. June to September. The days are hottest during April with a mean daily max. Temp. of about 38 degrees to 39 degrees, nights area warmer during may and June with means daily minimum about 23 to 24 degrees. During summers the maximum temperature rises upto 43 to 44 degrees. December is coldest month with daily mean maximum temperature of 30 degrees and min. at 12 to 13 degrees. The humidity of the region varies between 79 to 80 percent on an average. Existing facilities at Panshet Lake are boating facility, MTDC resort, Snack centre and Parking spaces.

### 5.5 Policies for Tourism Development around Lakes

Maharashtra Tourism Development Corporation or other private players may develop the site. Strategies for development and promotion of tourism facilities are listed below:

- The area between 100-500 meter belt around the FSI or HFI line of lakes should be considered as special tourism development zones and the development of tourist resort and facilities should be permitted in this belt at the site duly selected.
- No development should be permitted within 100 meter of the edge of water at high flood level, except boat house, jetty, etc.
- Accommodations for overnight tourists should be planned :
  - o Partly in form of conventional hotels,
  - o Partly in camping grounds containing tents and caravan sites, and
  - o Partly in the surrounding villages through local initiative. One fifth of the total tourist may be assumed for this purpose to be requiring facilities for overnight stay and these may be divided in the 3 categories above in the proportion of 1:1:1 where local people are will to provide for tourist facilities, concessions like extra FSI should be granted to them as an incentive.



- Farm houses should not be permitted within TDZ, and where they are in the vicinity of lakes they should not be permitted without ensuring the sludge and garbage disposal will not pollute lake waters.
- TDZ's will normally extend upto 500 meter from the high water level but considering the vastness of any lake, tourism based low density development may be permitted in the areas beyond.
- Maximum F.S.I. for resort development should be 0.25 and where tourist facility development is undertaken by local initiative a concessional F.S.I. of 0.33 may be permitted, provided that F.S.I. provision will not apply to development in gaothans.
- Maximum area of plot for tourist resort development should be 2 acres in which, ground and first floor construction with a maximum height of 9 mt should be permitted. Further, these should be of such a type as would merge with surroundings.

The development in TDZ within the 500 meter belt around the lakes, the FSI should be 0.10 with structure of ground floor only with height restriction to 5 mt where the project by the local residents is in the form of extensions of his existing buildings the total FSI allowed including the existing built up area should not exceed 0.15. In the a forestation zones within 500 meters to 1500 meters belt around lakes where low density is essential a forest house type development, with only ground floor structure may be considered on plot with minimum area of 1 hectare instead of 6 hectare.

The following development control rules should govern building and other developments in the region:

- Permissible Uses: The following uses will be permissible in the Tourism Development Zones or TDZ
  - o Conventional hotels, including cottages for tourists;
  - o canteens and restaurants and tea stalls;
  - o bath and toilets for camping sites, providing for tents and caravans;
  - o public utilities and services like information center, tourist reception center, telephone booths, first-aid centers, structures for recreation purposes such as health farms, water sport facilities, marine jetties and pontoons for docking of boats, swimming pools, boats house, badminton halls;
- Tree plantation: Maximum number of appropriate species of trees, preferable 800 trees per hector, should be planted and reared for at least one year. Permission for commencing construction should be given only after a certificate from the competent forest authority on the survival of the required number of trees is obtained;





- **Restriction of the Building:** No buildings including temporary structures or any camping ground will be permitted in areas having slopes steeper than 1 in 5. Similarly, no structure including temporary structures and tents and caravan sites will be permitted in the belt of 50 meter from the high flood level of lakes and 200 meter from boundary of protected monuments and temples of tourist's importance. However temporary removable ground floors structures including tents, camping grounds may be permitted in;
- The belt of 50 meter to 100 meter from HFL and FSI of the lake is provided further that toilet Blocks are allowed within 100 meter from HFL and FSI of the lake;
- **Treatment of effluent, etc:** Proper arrangement for treatment and disposal of sewage and sludge and solid wastes shall be made to satisfaction of the water pollution control board. No untreated effluents should be allowed to pass into the lake waters;
- **Provision of avoiding crowding of cottages, etc:** To avoid crowding of cottages and other structures at a single point in case of tourist resorts having, holding area of more than 4 hectare;
- Clusters of cottages and other structures shall be permitted on the basis of 1 cluster per each hypothetical division of the area into 4 hectare lots, and the minimum distance between one cluster and other another shall be 150 meter;
- **Open space along all sides:** Minimum open spaces on all sides shall be 10 meter;
- **Other features of building:** Normal rules shall apply in respect of building features other than the above; and
- The construction shall be in harmony with the surrounding landscape and local architectural style.

## 6. CONCLUSIONS

Pune district is situated in the proximity of Mumbai and ranks second to Mumbai in terms of industrialization and urbanization in Maharashtra. Major part of the district falls in the Western Ghat region and richly endowed with a number of small and large lakes both natural and man-made. Many of them have potentials to develop into great tourist spots.

Lakes and major dams of the Western Ghat area in Pune district have potentials and threats that should be dealt wisely and carefully for sustainable use and benefit the region. The Western Ghat being the eco - sensitive area has certain limitations for development. Therefore, the development in that area should be eco-friendly. The rich flora and fauna available in that region also



needs to be preserved. It has advantages as well as disadvantages. But it is on how you achieve the balance between tourism development and environment protection through design strategy. But the eco-friendly development may be possible for the Tourism Development of Lake fronts. Development should be low rise like cottages with use of local materials, and use of local culture through eco - tourism. This may give benefit to local people in form of employment opportunities.

Construction of a farm house or house as a weekend holiday resort are already coming up on the hills and hill slopes and also in the lake basins. There is need to control such activities. Whenever lake front development takes place to explore potential of particular sites or the region, it is found that afterwards it adds to the surplus housing of the elite classes and not within the reach of the common people. Present development of such sites is sandwiched between two policies, one is based on hill station development policy, and the other is conservation and regional plan policy. New and existing policies must strike a balance between environmental protection and tourism development.

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# Planning Policies and Strategies for Shahjahanabad : A Critical Appraisal

**Bikram Kumar Dutta and Sanhita Bandyopadhyay**

## Abstract

*Immensely rich in cultural heritage, Shahjahanabad with its palaces, mosques, bazaars (markets), gilded domes, havelis, katras and a maze of lanes and bye lanes had been one of the most beautiful cities of the Orient. The image varies from the ancient forts and settlements of Mughal emperor's Delhi to the distinctive retail and wholesale markets of the modern one. The original layout of the city was changed with the advent of British regime. 50 years of ever changing of planning practice always impose a 'new' deviating from old without considering its natural gamut and sustainable pathway for revival of its glory. There is an urgent need to reframe the strategy for revitalizing its glory in focusing of heritage conservation and decentralization of activity.*

## 1. INTRODUCTION

Shahjahanabad or the walled city is the seventh city of Delhi. Prior to it, six other cities were built on different sites namely Lalkot, Siri, Tughlakabad, Jehanpanah, Ferozabad and Purana Qilla. Barring Shahjahanabad all other six cities perished. Shahjahanabad was built in the 17th century for a population of 60,000 covering an area of about 569 hectare. The city was developed in typical Mughal style, densely built with organic street pattern. It was planned with a concept to have different identified areas, earmarked with specific uses such as different activities and trades in different lanes. The streets / lanes and bye lanes were of varying width designed primarily for pedestrian movements and animal driven vehicles. The original layout of the city was changed with British regime and further alignment of railway line along with growth of industries and commerce was largely responsible to increase in population. However, the Shahjahanabad city by and large retained its tradition and original character over the period by accommodating the growing and changing population as well as various kinds of economic activities.

Now, it is characterized by intense wholesale and retail commercial activity. It is also the cultural, administrative and economic heart of the old Delhi. Further the city is also renowned for its rich heritage and secular architecture. As per the Master Plan of Delhi (MPD) - 2001 and Zonal Development Plan the walled city has been designated as Special Area (Zone-A) for which conservation and environmental upgradation are the utmost need. The city suffers from inadequate

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infrastructure, traffic congestion, unauthorized constructions and misuse of residential premises for non residential activities. Hence the city has a presence of mixed land use with commercial activities in the ground floor and residential use in the second floor. There is an urgent need for making strategy for revival of old glory.

## 2. HISTORICAL FOOTPRINT

The image of Walled city varies from the ancient forts and settlements of Mughal emperor's Delhi to the distinctive retail and wholesale markets of the modern one. The walled city is plagued with problems of traffic congestion, infrastructure deterioration, unauthorized construction, dilapidated housing condition and makes traders of the area to convert their residential premises for non-residential uses. The tenacity of traditions and the porosity of space over a time span of nearly four centuries make this city miserable. The historical footprint enlighten the 50 years Delhi's ever changing policy for reshaping city without considering its natural gamut.

Three distinct layers have marked this city i.e. Mughal City (1638-1819), the Colonial Shahjahanabad (1819-1947) and the Post-Colonial Shahjahanabad (1947 onwards).

### 2.1 The Mughal City (1638-1819)

Mughal monarch Shahjahan established Shahjahanabad circa 1638 as a capital city from Agra enclosing a wall punctured with eleven major gates they are (Kashmiri Gate, Mori gate, Kabuli Gate, Lahori Gate, Ajmeri Gate, Turkman Gate, Delhi Gate and Zennal Al Masjid Gate, Nigambodh Gate and Quila Gate still persist, remain are no more found) from which radiated highways to all parts of his empire. The city's urban design was an amalgamated model of Persian, Islamic and Vedic principles. Its architects Ustad Hamid and Ustad Ahmed made this with Islamic

Fig. 1: Shahjahanabad Concept

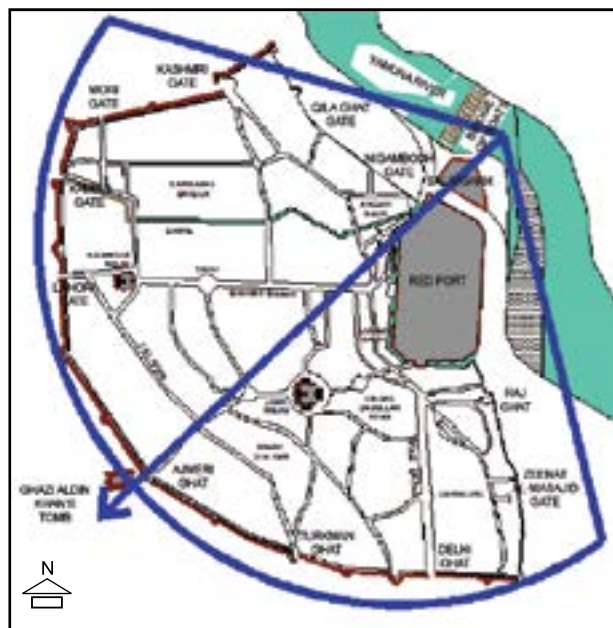


Fig. 2: Shahjahanabad 1938-1919





cosmology, man macrocosm analogies; Spine - Chandni Chowk, Ribs - streets, Head - Fort, Heart - Jama Masjid, Organs - Sarai, Wall - Skin. Following Dettmann (1969) (Fig. 1 and 2) described it as formal geometric pattern. The Vedic texts of 16th century Vastu Shastra and the Mansara on architecture and city planning respectively are perceived to have influenced its settlement geometry as bow shaped semielliptical (Karmukha) city located on a river, its axes interpreted as the bow and the archer's arm, and, its circumferential streets the bow shaft. The junction of the two axes, an auspicious center, is the Emperors Palace or the Red Fort.

Hydraulic system in order to ensure a constant year round supply of water entered the city by the Kabuli gate in the North West and then split into two branches - one down the middle of Chandni Chowk and other into fort. Chandni Chowk was forty yards wide and contained 1,500 shops with two squares, same height arcade with painted verandahs. Havelis reproduced a scaled down version of the Palace complex like Sarai of Jahanara Begum (now as Bhagirathi Palace). These Havelis with their spillover dependants building around them formed the nucleus of the 'morally' system. Several locality names (Teliwara, Malliwara, Katra Nil, Farashkhana, Ballimaran, Khari Baoli) survive showing caste or social grouping. Fort palace was self contained unit with Diwan-E-Aam (Hall of Public Audience), Diwan-E-Khas (Hall of Private audience), etc. Another important mosque is Jama Masjid. Mughal garden had split in Chharbagh (four gardens) concept i.e. Tis-hazaribagh just outside Kabuli Gate, Raushanara Begum Garden near Lahori Gate, Nawabsirhindi and one near Kashmiri Gate. In 1845-1846 the city had population with 137,977 in 576 *mohallas*. Faiz Bazaar and Chandni Chowk the two main axes had well stocked shops of even imported goods. The city had a healthy trade presence.

## 2.2 Colonial Shahjahanabad

Two phases mark this period, a begin 1803 onwards and an aggressive 1857 to 1947 one. Early British rule was marked by mild activities, as, proposing sanitary guidelines, restoring the indigenous Shahjahani water system, establishing satellite settlements outside the city walls (Civil Lines, Mubarakbagh, Kishanganj, Cantonment) and the Residency for Ochterlony and, later, Metcalf. After the 1857 revolt, large parts of the city were restructured making British power more visible. The notable changes were ejecting the city's population and destroying one third traditional neighborhoods. Introducing Edgerton Street (Nai Sadak) into the fabric and other new streets towards the centre and north of the city had formed. Replacing the Royal *Sarai* with the Town Hall had introduced the railway system 1867 by removing gardens and *katras* in that area, clearing the surroundings of the Palace complex 500 yards around as a defense measure, holding three *Darbars*, (1877, 1903, 1911) Established a temporary capital as Civil Lines (200 acres) and planned a new capital. The reconfigured roads for isolating the Red Fort

and changed water channel to roads divided red fort and Chandni Chowk and ultimately fragmented the city. Introduced trams, the *chowks* were functioned for commerce rather than for community (Fig. 3).

### 2.3 Post Colonial Shahjahanabad

The new establishment was seized with housing people of a divided country and Shahjahanabad offered an opportunity from its vacated properties by Muslim families after partition of India in 1947. The new Master Plan (1961) detailed out strategies (through zonal plans) of population densities, land uses, exiting of obnoxious industries, and as well as special programs for greening, improving, rehabilitating, conserving or redeveloping degraded areas. Schemes which got implemented were an implant of an outside world.

Wholesale trade (60% of the entire city's) aligned along most bazaar streets in Chandni Chowk, Chawri Bazaar and introduced into traditional neighborhoods. There was a tenfold increase in three decades. In the process, the *Katras* and *Havelis* are reshaping for commerce in an uninterrupted process. Whilst there is population loss in the city, those who cannot afford are getting more cramped in their living space. The following characteristics show the chronological decay story.

**Demographic Characteristics:** The residential population of the walled city has been steadily declining from 0.042 million in 1961 to 0.025 million in 2001 (MPD-2001). This has been mainly due to movement of people away from the central core. This was, however, accompanied by a reverse process of increase in the other activities and working population, which had further aggravated.

The population figures indicate saturation by 1961 and afterwards it has been declining continuously as evident from Table - 1. It is mostly a high-density area. The density varies from 1596 to 17 persons per hectare (pph). The highest density is found in Chitli Kabar as 1596 pph. The lower densities are found in the areas of Red Fort, Railway Station, Daryaganj and Kashmere Gate. In other areas like Churi Walan, Kucha Pati Ram, FarashKhana and Tilak Bazaar are also very high-density areas comprising of 1354 to 1501 persons per hectare.

Fig. 3: Shahjahanabad 1857

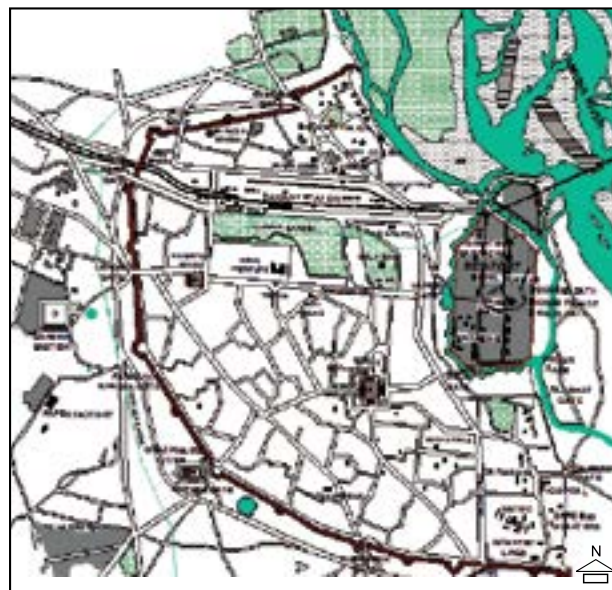


Table 1: Population Growth in Walled city (1951-2001)

Year	Population (000)	% Growth
1951	381	—
1961	420	10.25
1971	409	-2.62
1981	400	-2.20
1991	350	-12.50
2001	235	-32.86
2011	158 (estimated)	



**Land use Characteristics:** Out of 569 hectares, the area under residential measures 181 hectares, this is 31.8% of the total area. The area under commercial use is 11.7%, public and semi public facilities occupy an 7.5% of the total area and parks and playgrounds occupy an area of 96.87 Hectares or 17.0% of the Walled City area. Roads and streets occupy 23.1% of the total area where the commercial activities are recommended on the ground floor and also commercial activity on upper floors to continue.

**Economic Characteristics:** As per the available secondary data out of the total enterprises located in urban Delhi, about 7% are located in the Walled city. Out of total employment 35.80% people are engaged in retail trade followed by manufacturing and repair (18.42%). Beside these the other important avenue of employment includes wholesale trade (11.90%), financial services (9.05%) and hotel and restaurants (3.77%). Total revenue of this area is Rs 14.6 crore compare to main business hub in Delhi Connaught Place Rs. 4.6 crore Chandni Chowk-Khari Baoli-Shradhanand Marg Commercial Complex not only caters for the needs of Delhi, but also serves as the major commercial center both wholesale and retail for the entire Northern India. Food grain market at Naya bazaar and Khari Baoli, hardware and paper trade at Chawri Bazaar, iron and cement at Ajmeri Gate, cloth markets in 'Katrass' of Chandni Chowk, electrical appliances at Bhagirath Palace area, motor parts in Kashmere Gate and cycle traders near Jama Masjid constitute the vast wholesale trade for which Delhi is the major center.

**Housing Characteristics:** The extreme congestion within the Walled City and incursion of a myriad variety of activities and trade has deteriorated the living conditions. Majority of city houses are in advanced stage of decay and several areas have been overtaken by blight. As per survey of Housing and Urban Development Corporation (HUDCO) and Municipal Corporation of Delhi (1998) observed that out of total number of the properties surveyed at the selected stretches of the walled city only 4.6% are with ground floor construction while 23.8% have G+1 construction and remaining properties i.e, 71.5% have more than first floor construction which signifies the intensification of the building activities in the walled city.

Shahjahanabad has within it 42 of the 170 protected monuments controlled by the national Archeological Survey of India (ASI). The Indian National Trust for Architectural and Cultural Heritage (INTACH) have documented and furnished list of 800 listed heritage building within Walled City.

### 3. POLICIES AND STRATEGIES FOR SHAHJAHANABAD AND ITS SHORTFALL

The Master Plan for Delhi provides policy frame work guiding for walled city's development. The consecutive three perspective plans do not follow its original

pathway and always impose new deviating from old. The ever changing policy does not help out for reshaping the city from uninterrupted process of cramped development.

### 3.1 First Master Plan of Delhi (MPD - 1962)

The first Master Plan of Delhi (MPD) 1962 projected the concept of 'Urban Renewal' comprising of redevelopment, rehabilitation and conservation strategy. As shown in Fig. 4 the yellow line is depicting the discontinuous wall of Walled City. The 'first stage' of development considered redevelopment operations. It was framed for redensification with maximum 100-150 pph with facilitate with essential community facilities deviating from existing density of 1500 pph of area. Accordingly, the Zonal Development Plan (Zone - A) aimed at:

Fig. 4: Shahjahanabad 1962



- Provision of a circulation pattern with minimum widening of roads and demolition of structures in order to avoid major dislocation of the people and work. Standards for roads, out skirting the zone vary from 24 to 36 feet. Suitable parking lots of sizeable areas were to be provided at convenient points where existing road the then width was 10-15 feet.
- Provision of minimum community facilities in accordance with the prescribed standards; substantially lower planning standards were prescribed in MPD-1962 for the Walled City due to paucity of land. The land for the provision of community facilities would be made available by:
  - o Utilizing the space under evacuee and Government properties;
  - o Clearing the non-conforming land uses; and
  - o Acquiring and demolishing dangerous and the dilapidated structures.
- Turkman Gate cluster housing in four storey apartments imposed with destroying about 3 hectare area of old gate i.e. Phatak Talyan one largest courtyard and two mosques from Shahjahan's time i.e. Dujana house, an earlier Palace of Mughal nobility was demolished to rehouse displaced persons but was only partly executed. Bazaars around Jama Masjid were cleared and a garden introduced with shops relocated in a low profile Meena Bazar. Besides these planned changes, the city was on a commercial overdrive.





The entire Walled city was identified into three major components of urban renewal on the basis of the degree of deterioration and obsolescence. These were:

- o **Conservation Areas:** The residential areas that needed protection from the spread of slums. Katra Neel, Ballimaran, Dariba Kalan and New Darya Ganj were grouped in this category.
- o **Rehabilitation Areas:** The areas partially blighted where buildings deteriorated due to neglect. Phatak Habash Khan, Chadni Chowk, Naya Bans, Farash Khaana, Churiwalan and Kutcha Pati Ram were classified as rehabilitation areas.
- o **Redevelopment Areas:** The areas in very dilapidated conditions. Jamuna Basti, Lal Darwaza, parts of Matia Mahal and Suiwalan were classified as areas ripe for radical development. However, not much headway was made in improving the conditions.

### 3.2 Second Master Plan of Delhi (MPD - 2001)

As per second Master Plan, MPD - 2001, Walled city has been earmarked as 'Special Area' for the purpose of development. This area cannot be developed on the basis of normal regulations. Special regulations have been worked out for this area and incorporated in the Development Code.

The main objective for the development of Walled City is to clean the area from noxious and hazardous industries and trades to check further commercialization and industrialization of the area and to revitalize the same to its glory of the past. There is large-scale in fill by commercial use replacing residential use. The trade and commerce activities have intruded much more in all the residential areas in the Walled city.

The special regulations as per MPD-2001 specifically emphasized:

- The predominant land of this area is to be made for 'residential';
- The noxious industries and hazardous trades should be shifted from the Walled City immediately within a maximum period of five years to be replaced by other compatible uses;
- The public and semi public uses and services like hospital, dispensaries, colleges, school, police stations, fire stations, post offices, local government offices, parking, etc; should be retained in their present locations and also additional sites could be indicated in the Urban Renewal and Zonal Plans. Any changes or additions thereof shall be in accordance within the overall policy frame prescribed in the plan;
- Control for building or buildings within the use premises;

- Maximum ground coverage and FAR should be same as for the residential plot in plotted development. Higher FAR and other development control could be considered;
- The area for public facilities or for heritage value to be used as tradable FAR
- The street width in front of the plot should be left on the basis of Urban renewal scheme of the area;
- The building shall be permitted to be constructed practically in the same form and style as existing as far as possible;
- Within Walled city the building control regulations for special area should had been as under;
- Lajpat Rai Market: The single storied market on either side of Chandni Chowk to be retained; and
- The isolated use premises like school adjoining Jama Masjid, presentation Convent School and the church at Kashmere Gate, Municipal Offices at Old Hindu College Building Complex should be retained with existing building volume.

Fig. 5: Shahjahanabad 2001



Second MPD emphasized to rebuild walled city as a residential hub from exiting commercial trade (Fig. 5) house of Delhi that was impractical in nature. Deviating from first master plan with controlled density new code had introduced for this special area planning. It was envisaged that as far as possible Urban Renewal Project shall be self-financing. But in actual practice, no effort could be made in preparation of Urban Renewal Schemes.

### 3.3 Third Master Plan of Delhi (MPD - 2021)

According to the third MPD for 2021 guidelines, a major theme is redevelopment of old and degraded areas while taking-care of those buildings of 'heritage value are protected and conserved' with special emphasis on the following:

- Chandni Chowk recreating the lost glory; The Red Fort, Jama Masjid and Chandni Chowk have been put forward for protection and conservation of heritage buildings.
- Chandni Chowk as it is the centerpiece and dominant axis of the Walled City without going for large scale demolition and disturbing the present activities,



identified for revitalize the area for optimum transformation in the ambience of the Chandni Chowk can be achieved. It includes:

- o Boulevard Development: Capturing full road right-of-way, re-paving of road by granite stones, transplanting grown up trees, development of tourists and information booths, music stands, kiosks, telephone booths, public toilets, etc., controlling signboards, hoardings and putting up new signages, shifting of overhead cables and wires in the underground space;
  - o Improving street lighting, light masts and lighting of building facades;
  - o Running of free coaches and trolley buses between Red Fort and Fatehpuri Mosque;
  - o The informal unorganized shops and vendors to be restricted in the lanes perpendicular to it;
  - o Create a tourists and people friendly environment Chandni Chowk with complete pedestrianisation and trees; and
  - o The large scale encroachments on public lands, particularly road right of ways continue unabated.
- Metro Corridor Development: The main priority is to decongest the Old City and to shift traffic generating activities from the Old City. About 50 percent of the Inner City is within 8 to 10 minutes of walking distance from Metro Stations in Chandni Chowk. This has released congestion from already choked roads and reduced the parking demand. This has provided opportunity to pedestrian some of the roads in the Walled City and other area. It has improved accessibility and encourages decentralization of wholesale trade from old Delhi. Already flower whole sale market from Chandni Chowk had shifted to Noida Phase I.
  - Shifting of wholesale trade, noxious industries and hazardous business from the Old City: it is proposed to develop counter centres in the form of Integrated Freight Complexes at the peripheral location to shift from the Special Area in a time frame by a set of incentives; new industrial areas; development of truck terminals, vehicle repair workshop, old car markets, motor parts markets at the periphery of urban Delhi and railway freight terminals. The dreams of shifting of wholesale trade, noxious industries and hazardous trades have by and large remained on the papers.
  - Building Bye Laws improvement: Highly optimistic policy in Special Area Planning has proposed front and setback of building. The incentive of additional FAR, along with other measures like liberalization of land use time bound approvals, etc; are also found in policy. But this special area needs special focus from general condition of Delhi. There is no space between building, 100 percent covered area (Fig. 6). Without breakthrough of building practically front and set back cannot be framed. On other round policy

never appreciates major demolition of structure. The self contradictory policy needs to work out feasible, applicable planning for land use control with main emphasis on conservation practice. Action plan along with sector plan is more appropriate than only strategy planning in this case. The main problem of land control in this area is ownership and original permissible limit identification. So, Conversion charges, development charges, betterment levy and other charges are impractical. The fairy tale renewal and redevelopment policy does not make justice to community.

Practitioners suggested several attractive areas/streets (like Chandni Chowk and Dariba) can be taken up for urban renewal and pedestrianisation. Not only the Inner City, but also 30-40 years old housing complexes continue to suffer degradation and unauthorized additions and alterations. These are ripe for urban renewal, for which local bodies should encourage the residents and cooperatives and Resident Welfare Associations to take up urban renewal. But, without incorporating local people's perception; planning policies are formulated which remain on paper itself.

#### 4. OTHER PROPOSALS

**Steering Committee Recommendations:** According to the Steering Committee constituted by the MOUD (1996) recommended decentralize the wholesale trade particularly those which are hazardous. The Steering Committee pointed out that the residential area having unique character especially within the Walled City should be conserved with care and sensitivity as well as entry of vehicular traffic needs to be restrained to maintain the desired level of circulation and parking.

**Delhi Urban Heritage Foundation:** In 1997, Delhi Urban Heritage Foundation was set up under Delhi Development Act. It had emphasized to frame out rules and regulation and institutional framework for conservation of heritage and urban renewal. It also referred to create partnerships and commitments among stakeholders, to mobilize government / private investments, monitoring of the implementation projects.

**Chandni Chowk Redevelopment Plan (2009):** Municipal Corporation of Delhi (MCD) has formulated Shahjahanabad Redevelopment Corporation (SRDC) division

Fig. 6: Shahjahanabad 2021





for revitalization of Walled city. It has come up with several redevelopment plans. Firstly to Redevelop Chandni Chowk i.e. Red Fort to Fatehpuri Masjid Square, secondly Conservation of Heritage Building, thirdly Conservation and Heritage Walk ways and fourthly Multi Level Car Parking near railway station. The main emphasis of this plan is to create unique urban space for ultimate tourist destination by using environment friendly technology, pedestrianization, eco- friendly battery operated transport system within city premise, restricted vehicular path with underground cable system and tree avenue street furniture for leisure, information centers.

The goal of this action plan is to make walled city as ultimate tourist destination without considering its heartbeat activity. The Steering Committee recommended almost 15 years back to decentralize the wholesale trade from this urban fabric. But recent action plan only restrict vehicular movement on particular stretch without planning of decentralize the traders. To remove the encroacher without wholesale shifting is not possible at all. It said that 'a chain is only as strong as its weakest link'. Imposing growth never sustain from deviating its original footway. Imposing regeneration has proved leading to its condemnation as a whole of Walled City.

## 5. CONCLUSIONS

The transformation of residential premises for non-residential uses acts as a barrier in the conservation of heritage. Urban Renewal, Land Assembly, legitimate property tenure, titles and transfers, infrastructure upgradation, financial mobilization, development rights all are unintended plans. Inadvertent application of plans leads it as a status of slum under the Slum Area Act, 1956. Neither the legal framework, nor the present organizational structures have been able to control unauthorized reconstruction of historical *Havelis* and buildings or in taking up any meaningful redevelopment. On the other hand indiscriminate application of the several plans has proved counter-productive in economic and physical regeneration of the Special Area. In order to address Special Area effectively to the emerging issues there is the need for conservation and decentralization of activity to make amendments.

The utmost strategy for revitalizing the glory of Walled City should focus on: First, conservation approach to retain the overall traditional character of the Walled City. Those building are heritage importance should be conserved. SRDC has framed plan to conserve those building along Chandni Chowk street. But there are 42 monuments controlled by the national Archeological Survey of India (ASI) as well as 411 Buildings are already listed within Shahjahanabad by INTACH. INTACH has proposed 8 Conservation Zones within walled city. SRDC has proposed 10 heritage walks.



Second, decentralization of trade, commerce and industry from core area of Shahjahanabad. The main street, Chandni Chowk, is fully congested with garments whole trader. Whole sale market for grocery, paper, electronics, cycles, iron hardware other noxious industry need to be shifted in designated area. Environmental up-gradation requires reducing degenerative effects of congestion.

Third, visual integration of major landmarks: The past glory will enhance through existing visual link between the three major landmarks namely Red Fort, Jama Masjid and Fatehpuri Mosque as per original concept of Walled City of Shahjahanabad. This could have been possible to restrict FAR. The old building does not carry the loads for further rise. Judicious land use regulation could have been possible to revive its glory.

Fourth, pedestrianization of Chandni Chowk to impart grandeur to the monuments will make completely free of vehicular traffic so as to restore the human scale and convenient living. Battery operated vehicle does not solve the main purpose and condition and aesthetic is very poor. Man driven rickshaw, private vehicle and battery operated vehicle all make chaos and accident.

Fifth, introduction of activities prevalent during Mughal period such as traditional / craft bazaar, heritage walk / rides, generation of urban culture at neighbourhood level such as festivals / fairs to attract tourists. Encroachment of facets is to be vacated and allocate new area with levy. It will emerge the resource generation. Ancillary commerce will automatically shift with the shifting of trades and wholesale market. The traditional food street like 'parathagalli' (street) and other should be easily accessible. Proposed food plazas of SRDC plan is imposing a new without considering the revival of old.

Last, regeneration of heritage urban space of Delhi, Shahjahanabad will be possible to manifest its glory through decentralize trades, land use control, zoning practice monitoring amendments and stop further development and back to in-situ situation.

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