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Making Urban Parks User Friendly, A Blue - Green Initiative & Climate Resilient Under Urban Planning Approach

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***Abstract* - The recreation can be classified basically into passive and active recreations. In urban planning the urban parks should be under passive recreation spaces and playground under active recreation spaces in land use planning. But the present land use planning under planning & development and governance authorities have clubbed both, thus people neither using park for passive purpose and nor as playground as most of the planning district and neighborhoods are not provided with playground. So aged people are inevitably using park by carrying children along with them as there are no dedicated space for children to play. The other significant observation is that 'can a urban park & open spaces under land use category is possible to plan for integrating under the requirement of present urban prerequisites. This paper has been developed to address these issues as principal component. The study has been carried by selecting planned neighborhood in the urban context of Mysore.**

Key words: Climate Change, Urban Planning, Sustainable Land Use Planning, Non-Motorized Transport, Policies, Mitigation.

I. INTRODUCTION:

According to *Global Report on Human Settlements 2009 on 'Planning Sustainable Cities'* there is a need to look at ways to reform urban planning to meet the major urban challenges of the twenty-first century include the rapid growth of many cities and the decline of others, as they have directly and indirectly responsible for causing sever climate changes and the in adequacies of contemporary urban planning around the world that has largely failed to address these challenges to mitigate the impact climate changes and also fails in satisfying the true requirements of the people. This report documents many effective and equitable examples of sustainable urbanization that are helping to define a new role for urban planning in promoting economically productive, environmentally safe and socially inclusive towns and cities for the future needs. According to the studies in the report the effectiveness of urban planning as a tool for dealing with the unprecedented challenges facing 21st-century cities and for enhancing sustainable urbanization. It is realized that in many parts of the world, urban planning systems have changed very little and are often contributes to many urban problems rather than functioning as tools for human and environmental improvement and to play new role of urban planning in promoting sustainable urban development.

The urban planning can be relooked into rectify the mistake by considering a micro level component in the urban planning, that is, especially related to planning of neighborhood parks. The neighborhood parks have long served as vital green lungs and social anchors within cities. Traditionally envisioned as spaces for relaxation, recreation, and community interaction, neighborhood parks are intended to foster well-being, social cohesion, and ecological balance at the micro-urban level. However, in the context of rapid urbanization, increasing in land value & population densities, and evolving in changed lifestyles, these spaces are struggling to meet the diverse and dynamic needs of urban residents. This shortfall is particularly evident in their inability to support meaningful passive recreation and activities recreation spaces, though there is a to promote mental wellness, social inclusion, and low-impact engagement with nature as urban pre-requisites in the present urban context. There is a pressing need to reinterpret the planning and design approaches for the true functionality of neighborhood parks, and fulfill needs of futuristic urban scenarios, where urban space is limited opportunities for accessible, inclusive, and climate-responsive public spaces in the existing land use planning and master plan practices.

Thus, most master plans and urban planning space standards, guidelines, regulations policies continue to satisfy a quantitative dimensions of planning and have made the existing practice of green space provisioning primarily satisfies the size, number, and percentage of land use planning norms for distribution of parks helps to ensure a baseline availability of parks & open spaces; but it often fails to address the qualitative aspects such as spatial experience, user need diversities and sensory

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comfort, ecological & ecological integration and also cultural relevance of post modern life styles. As a result, many neighborhood parks exist merely as open plots with just a token of greenery inserting with exercise and play equipments and multifunctional activities that cannot resonate with the socio-cultural needs of the communities they serve. Thus, in this paper a study has been carried to explore the opinion of the residents of a neighborhood and their needs by analyzing the existing planning approach and norms by selecting planned neighborhood in the urban context of Mysore. The perception according to different authors expertise in the area of urban society and environmental needs in the present context has been summarized by reviewing the following literature.

II. REVIEW OF LITERATURE:

A review of literature, on climate change to understand the role of urban planning has been done as the scope planning for parks and open space in the urban land use planning has some relevance in relation to climate change issues.

In the present context the climate change presents a significant challenge to planning for urban and other settlement systems worldwide. The literature on, 'Climate Change Impacts On Urban Planning In The Cities', by Heidi Shalaby and Somaya Aboelnaga [2017], stresses that the climate change impact effects will likely intensify over the coming decades. Whilst humanity may be able to take collective action to limit the intensity of these effects, scientific evidence indicates that some are already happening and will continue to occur, irrespective of any ongoing mitigation. In this context the planners role is impartent through urban and regional planning interventions. That too in the urban context, the climate change impacts such as increased rainfall intensity, storm surges and flooding and urban heat island etc., these effects are likely to affect many urban systems worldwide. The affect severity are on the populations and infrastructure & services they were supported. [Heidi Shalaby and Somaya Aboelnaga 2017].

According to literature on *urban adaptation to climate change: climate services for supporting collaborative planning,* there is a mounting international interest about how to address the implications of climate change for urban areas. The availability and sharing of "good" knowledge and information is a key prerequisite for a successful planning in cities. Urban planning for ***adaptation*** is largely considered as a collective process. This raises the importance of the availability/usability of proper "planner/user friendly" interfaces to interpret and translate the available information into adaptation decisions, and to facilitate the information sharing and collaborative decision making within the interaction network in which the different actors are embedded. Nevertheless, collaborative planning is far from being the standard in urban adaptation. The effective planning and management possible through collaborative process for climate service development. [Raffaele Giordano et al 2020].

Thus the climate friendly urban planning plays a key role in climate change ***mitigation*** and ***adaptation*** and allows for sustainable development of living conditions for future generations. It has been long understood that urban land use ang regulation measures such as urban greening, park & open spaces, planted facades and roofs or highly reflecting building materials are able to dampen excess heat and help reducing energetic costs. Transferring scientific and often theoretical knowledge into actual urban planning however necessarily involves an interdisciplinary dialogue. These literature intends to provide a methodological perspective in order to answer the question how results from urban climate studies can be linked to planning and architectural design of future urban areas. Results from state of the art research are evaluated and critically addressed, hence providing a catalogue for urban planners and stakeholders which should serve as basis for a re-evaluation of the term 'smart city'. [Joachim Fallmann and Stefan Emeis, 2020].

The research study 'Urban Planning For Climate Change', is attempting to offer a paradigm for examining urban and regional planning needs to take climate change into consideration in the development, design and re-development of urban areas, as it is a common problem all over the world. Nearly seventy percent of the world's population lives near areas where sea levels are expected to rise dramatically and inundate urban areas. Thus, urban planning is at the forefront of the needs of basic human existence as all face a new challenge of matching the forces of nature against the building systems of mankind nearer to coastal area as well as in main land. Unfortunately, very few urban planning tools are being considered in the re-deployment of resources in a climate change era by national and local policymakers. It is time to suggest a research and policy paradigm to craft better urban planning systems in response to climate change. [Edward J. Blakely, 2007]

The climate change variabilities are causing urban flooding in urban basins due to lack of effective draining system along with encroachment of water body areas due to increasing urbanization are intensifying the flooding. Floods are among the most powerful forces on earth, causing enormous damage all over the world. Studies shows that floods have a large impact on human well-being and economy. Economic damage, eco-system damage, and loss of historical and cultural values constitute direct consequences of flood. They lead to the loss of human life and cause negative human health effects.. The study evidently explored

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that the drainage systems infrastructure of the city of Mumbai is not able to cope with high-intensive rainfall. Clearly, the storm water draining system has inadequate capacity along with many other problems. The study also suggested that improvement in the drainage system can reduce the losses of 100-year return period flood by almost 70%. Moreover, the variability of trends in precipitation that are observed at Mumbai also presents a challenging task for the management. [Arun ana, 2013].

The literature of *storm water drainage plan & guidelines* of urban settlement located on the bank of the Brahmaputra river in Bangladesh; defines storm water and urban wastewater drain system planning and guidelines for the urban areas. The planning and guidelines are for the settlements regularly affected by internal storm water flooding primarily with an adequate drainage infrastructure, and deficiency in maintenance and management of the drainage system. [Shah Alam Khan M, 2015]

In recent years, new planning tools have emerged to aid planners to achieve multiple goals of sustainability. The Green Factor tool has been adopted by some cities to increase the share and effectiveness of green intervention areas in planning. According to the study the tool functions well, improvements could be made in relation to monitoring, an ambitious target can also set in the tool that could encourage or force developers to aim higher with the planning of green areas and construction, but existing regulations has its own challenges in its use. Urban green areas, which are integral to human health, represent a complex and necessary feature of the urban landscape. Green areas provide ecosystem services, either through local climate regulation carbon sequestration or reduction of storm water runoff, amongst other things. There is an increasing pressure for the urban planning sector to be able to account for all these ecosystem services. Of course, there has been an emergence of new planning and modelling tools that are both process and substance-oriented for a growing number of concerns, but urban planners facing the problem of unprepared regulations are to be used for planning of green infrastructure and green areas, in particular. [Sirkku Juhola, 2018].

UN-Habitat, or the United Nations Human Settlements Programme, is the UN agency focused on advancing socially and environmentally sustainable cities and towns. Its mandate is to promote better urban futures by working towards adequate shelter for all and developing sustainable human settlements in an urbanizing world. Thus, it has initiated the

Habitat I that was the first United Nations Conference on Human Settlements. It took place in Vancouver, Canada, from 31 May-11 June 1976. The United Nations General Assembly convened the Habitat I conference as governments began to recognize the need for sustainable human settlements and the consequences of rapid urbanisation, especially in the developing world. At that time, urbanisation and its impacts were barely considered by the international community, but the world was starting to witness the greatest and fastest migration of people into cities and towns in history as well as rising urban population through natural growth resulting from advances in medicine.

Twenty years after Habitat II, the second United Nations Conference on Human Settlements took place from 3-14 June 1996, in Istanbul, Turkey. Also nicknamed “City and Town Summit” by Secretary-General Boutros Boutros-Ghali, its objective was to address two major themes concerning all nations: “adequate housing for all” and “viable human settlements in a changing world full urbanization”.

Indeed, in 1996, it was already estimated that nearly half of the world's population lived in cities, that more than a billion people in the world lacked adequate housing and that more than 100 million were homeless. shelter. The then projections for 2025 were that more than two thirds of human beings would be city dwellers.

Habitat III, the United Nations Conference on Housing and Sustainable Urban Development, took place in Quito, Ecuador, from 17 - 20 October 2016. In resolution 66/207 and in line with the bi-decennial cycle (1976, 1996, and 2016), the United Nations General Assembly decided to convene the Habitat III Conference to reinvigorate the global commitment to sustainable urbanization, to ratify the “New Urban Agenda”, building on the Habitat Agenda of Istanbul in 1996.

Member States of the General Assembly, in resolution 67/216, decided that the objective of the Conference is to secure renewed political commitment for sustainable urban development, assess accomplishments to date, address poverty and identify and address new and emerging challenges.

UN-Habitat in this June 2025 conference in Seville, discussing financing gaps for SDGs, including urban issues. **Environment-2025 Conference:** A national Indian conference in March 2025 on environmental issues, highlighting national efforts. And World Habitat Day 2025 event at Nairobi, Kenya of 6th October 2025. This is accelerating urban growth, while changing territories significantly; making urban crisis response and urban displacement a timely focus for the 2025 World Habitat Day.[UN National Report of Indonesia, 2015].

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The conference on Sustainable Development and Environmental Protection (Strategies and Procedures for Developing Nations) was organized to bring together researchers, specialists and stakeholders from around the globe to share information and experience. The conference was designed to develop strategies around some of the core issues concerning how to develop strategies for a sustainable development and environmental protection in developing nations. The conference themes were focused at issues around: a) Built Environment, b) The Natural Environment, c) Environmental Accounting, d) Environmental Governance and Corporate Social Responsibility, e) Environmental Health, f) Agricultural Environment, g) Socio-economic Environment and h) Industrial Environment.

In the developing countries, many of these, have been externally conceived , motivated and promoted through different stakeholder participation even then the achievements are not satisfactory, due to the usage of un-updated policies and tools while executing the new formats of recent sustainable and resilient planning and development interventions both at local and national level. Climate is a principal physical environment factor in the design of buildings and settlement hence, climatic design creates comfortable, energy efficient and environmentally wise buildings. The role of architects in sustainable development is to contribute through designing buildings, which achieve the objectives of sustainability. In order to achieve sustainable development, buildings must be designed inclusive of the concepts of sustainable development. Such buildings will have a positive impact on the environmental, social and economic systems, which will lead to enhancing both the economic well being and environmental health of communities and the quality of life. Therefore, architects should pay maximum attention to design buildings that can be adapted to local climatic conditions in order to provide occupancy comfort while using minimum artificial energy. The planners too have the same responsibility in creating habitable spaces which is futuristic within the framework of sustainable and resilient principles. [Adedeji Daramola et al, 2010]

Resilient planning is another development parallel to sustainable planning. A study by Ewin Sofian Winata et al, in 2017, on the topic ‘adaptive governance for building urban resilience: lessons from water management strategies in two Indonesian coastal cities’, has discussed the issues using a combination of vulnerability and resilience frameworks. This paper examines governance challenges and strategies to coastal and water-related resilience in two Indonesian cities. It compares the methods that local governments have used to engage different stakeholders and enact various policy solutions, in order to understand how multi-scalar elements of governance influence vulnerability and adaptive capacity to water-related hazards. [Ewin Sofian Winata et al, 2017]

The Global Report On Human Settlements 2009 argues that future urban planning must take place within an understanding of the factors shaping 21st-century cities. The factors including: the environmental challenges of climate change and cities’, by planning compact cities, self serving & walk able neighborhoods to reduce excessive dependency on fossil fuel-powered vehicles, creating more carbon sequetrol greeneries and water bodies to reduce urban heat islands, mitigating urban flood & storm flow managements etc., and planning to face the demographic challenges of rapid urbanization in urban areas especially in less developed and developing nations and also developed nations challenges of shrinking cities, ageing and the increasing multicultural composition of cities; increasing socio-spatial challenges, especially social and spatial inequalities, in urban peri-urban areas. Because the important conclusion of the Global Report is that, even though urban planning has changed relatively little in most countries, since its emergence about 100 years ago, a number of countries have adopted some innovative approaches in recent decades. These include strategic spatial planning, use of spatial planning to integrate public-sector functions, under malty perspectives at the neighborhood level, and planning for new and more sustainable spatial forms for the new urbanism. However, in many developing countries, older forms of master planning have persisted. Here, the most obvious problem with this approach is that it has failed to accommodate the ways of life of the majority of inhabitants and needs of environmental chnge impacts.

In India, in recent decades the urban planning follows as primary reference of the *Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, 2014*. It recommends a minimum of *0.5 hectares of neighborhood park space per 5,000 populations*, ideally to accommodate within a 400–800 metro walking distance. While this provides a baseline for spatial provision, implementation is inconsistent across cities and towns. The focus remains largely on quantitative coverage; how many parks are provided and what are their sizes with varied hierarchy. Further the planning approaches doesn’t focus on their actual functionality, design quality and inclusiveness.

Many Indian neighborhood parks suffer from poor planning and design principles, lack of user-specifics, minimal passive recreation features, inadequate maintenance, and low safety standards and other convenient spaces along with other supporting minor facilities like insufficient seating, poorly designed pathways and many are un-shaded with children's supportive, age and gender friendly spaces and the like areas with limited scope along with the needs of elderly or differently-abele users often find the spaces inaccessible. There is also a noticeable absence of landscape diversity, sensory features, or ecological

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thinking in the planning and design. Parks are frequently treated as leftover open plots rather than integral, living systems within the urban layout. In high-density areas, space constraints further limit the feasibility of conventional parks, necessitating creative and compact solutions. However, Indian urban planning has yet to fully embrace flexible and multifunctional park typologies. Moreover, community participation in the design and upkeep of parks is minimal, leading to misalignment between user needs and park offerings under the current local and global climate changes. Urban local bodies and planning and development authorities often less dedicated scope for the intervention or participation of professionals like landscape architects or urban ecologists, resulting in generic and underwhelming park and open space environments.

Therefore, a study has been carried with reference to neighborhood parks by selecting a residential area in the urban context of Mysuru in Karnataka state, India. By considering a neighborhood as a critical micro-urban unit system that requires strategic reinterpretation in the exiting context. The study emphasizes that the future of these parks lies not in their expansion by area, but in their evolution by function, perception, and use. Passive recreation should be central to their planning and design ethos, and urban planners must prioritize lived experience over spatial statistics. This necessitates a shift in planning methodologies from rigid zoning norms and template-based park layouts to flexible, participatory, and user-sensitive approaches.

III. STUDY AREA:

Mysuru the second largest city located at closer proximity to Bengaluru; a state capital of Karnataka state in India. Mysuru has a salubrious climate with an average temperature varying from 16° C to 35° C. Mysuru located at 12.30°N 76.65°E and with average altitude of 770 metres (2,526 Ft.). It spreads over an area of 128.42 Km^2 at the base of the Chamundi Hill. Mysuru has major surface water bodies in the form of lakes with many minor water tanks inter connected with many natural water courses. The summer season is from March to June, followed by the monsoon season from July to November and the winter season from December to February. The annual rainfall of Mysuru city is varying from 750mm to 800mm. Mysuru is located with a semi-arid climate. The city is subjected to short duration high intensity rainfall and increased temperature.

Figure 1: Location Map

(Source: **MNLPA Master Plan 2031)**.

The political history of Mysore was very significant between 1761–1799 and is the political history during the rise of Haidar Ali in 1761 to that of the death of his son Tippu Sultan in 1799. During this period the contiguous historical regions of Mysore State and Coorg province on the Deccan Plateau in west-central peninsular India, the Mysuru city and its region started developing from the time of Wodeyar dynasty throughout their genealogy. The ruling dynasties especially as expounded in later period with the British on the Mysore by demonstrating their "unbroken" royal lineage, has made the Mysore city as capital of the former princely state of Mysore. But during the reconstitution on the linguistic reorganization of the state in 1956 formed its new headquarters at Bangalore and has made Mysore as district. Later, on the first of November 1973 the state was renamed as Karnataka. The then Mysore district comprised of 3 sub-division viz. Mysore [now the Mysore is called Mysuru], Hunsur and

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Nanjangud sub divided into 11 taluks with a total area of 11954 sq.km. The district was bifurcated with the creation of a new district viz. Chamarajanagar, with its headquarters at Chamarajanagar by taking out the taluks of Chamarajanagar, Gundlupet, Kollegal, and Yelandur. Thus, the district at present consists of 7 taluks with a total area of 6269 Sq.km. The city was subjected to a rapid development and spread across an area at the base of the Chamundi Hills as the city is well connected to Bangalore, Mangalore, Hassan cities by road way, railway and also connected to major cities of adjacent states; Tamil Nadu, Maharashtra, Goa and Kerala by national and State highways, railways and also by air way.

The size of population also started growing. According to 2001 census Mysuru city has a population of 7,62,408 it is increased to 8,87,446 population size in 2011 with 4,43,813 males and 4,43,633 females. The gender ratio is 967 females to every 1000 males and the population density is 6223.55 per Sq. Kms. The literacy rate is 82.8%, which is higher than the states average. The city has good potential for postmodern development, thus it has much faster developed urban areas along its major arterial roads. The city growth and developments are governed by the Mysore Development Authority [MUDA] and the Mysore City Corporation.

The present growth and development dynamics and its trend in Mysuru city is started reflecting the symptom of further growth and development. The future growth of Mysuru will accommodate many major industries, high end residential urban extensions, and commercial centers due to the Bengaluru - Mysuru infrastructure Corridor and double lane railway and ten lane expressways to Bengaluru have made the city have lesser travel time and establishes more interaction between the state capital. The Master Plan for the Mysuru city has a good proposal for its prosperous future growth and development and making the city denser and making the city more congested. , there is a need for preparing the city for its future urban growth and development prosperity by strengthening its physical infrastructure. Because the imbalances of the past and present growth and developments and the current dynamics of climate change and their impact demands many initiatives as urban prerequisites to promote sustainable planning and developments, but it is observed that the practicing planning approaches, policies regulations are facing many challenges as the most of the planning initiatives as urban prerequisites to promote sustainable planning and developments are not effective enough to reach or fulfill the objectives of any sustainable planning and developments initiatives, Thus, following study has been carried in the urban context of Mysuru to explore how effective the NMT is functioning which was introduced in the city in the recent past and also to find what are the planning needs are required to be improved to make the NMT to satisfy the urban mobility needs efficiently.

IV. POPULATION GROWTH DYNAMICS OF THE CITY:

A study carried for understanding the how the city has been prepared through master plan for accommodating the present and its scope of accommodating future population growth. It shows that the increasing trend in its population growth but shows a little decreasing rate of growth [table 1 & fig 2].

Table-1: Decadal population growth of Mysuru [1901-2011].

Year	Population	Growth rate %
1901	68,111	-8.00
1911	71,306	4.69.
1921	83,951	17.73
1931	1,07,142	27.62
1941	1,50,540	40.51
1951	2,44,323	62.33
1961	2,53,865	3.91
1971	3,55,865	40.11
1981	4,76,442	34.69
1991	6,52,246	36.37
2001	7,85,800	20.27
2011	9,19,414	23.41
2021	16,50,000	79.50
2031	21,00,000	27.30

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(Source: Census of India and MNLPA Master Plan 2031)

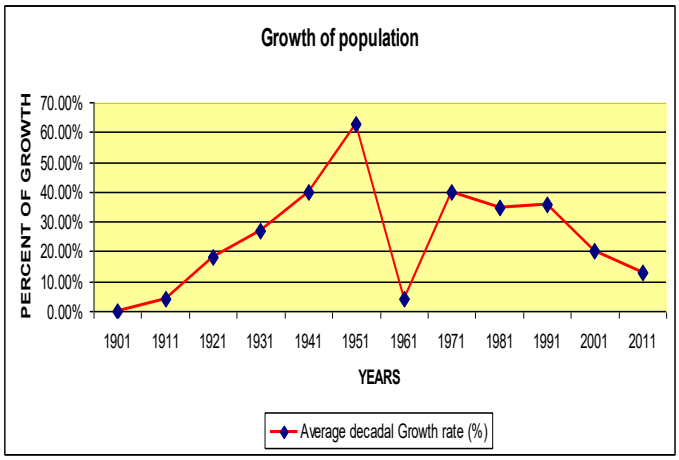

Figure 2: Decadal population growth of Mysuru [1901-2011].

(Source: MNLPA Master Plan-2031)

The Mysuru City was started developing as single nucleolus but now due to the growth and development demand the urban context of Mysuru is integrated with its adjacent town called Nanjungud within its planning jurisdiction called Local Planning Area [LPA]. The population growth trends have been studied based on the census of India data for the entire LPA. The master plan for 2031 has reserved about area of 509.03 sq.km. for accommodating future growth and development of the city as the city has very good potential and capeble to invite huge investment on industrial developments, trade and commerce tourism and recreation etc. Because of these developmental activities the migration of population into the city has been increased from 68,111 in the year 1901 to 16,50,000 in the year 2021 and it is forecasted that the population will increase to 21,00,000 in the year 2031.

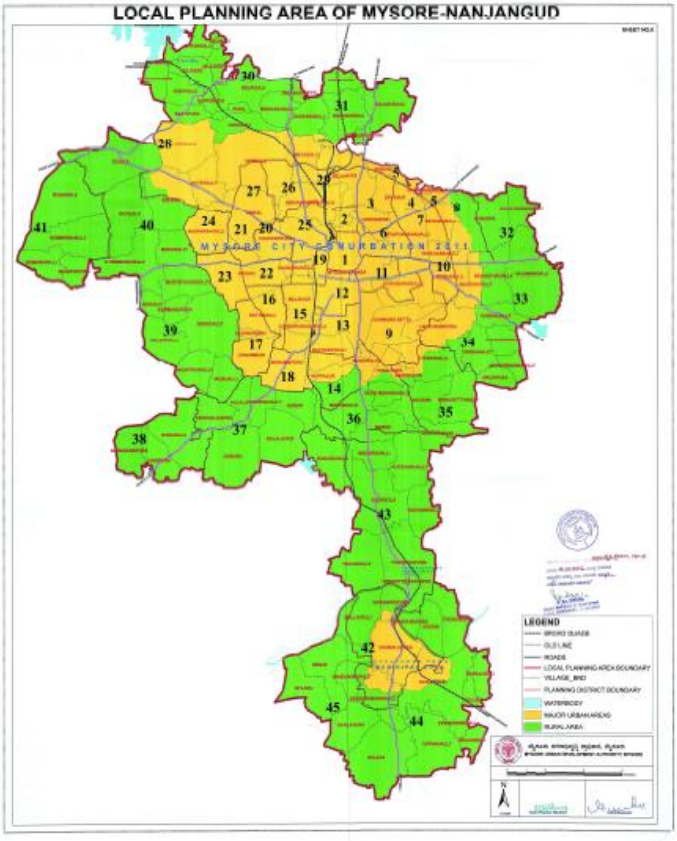

Figure 3: Proposed Local Planning Area [LPA] for the planning period 2031
(Source: MNLPA Master Plan 2031)

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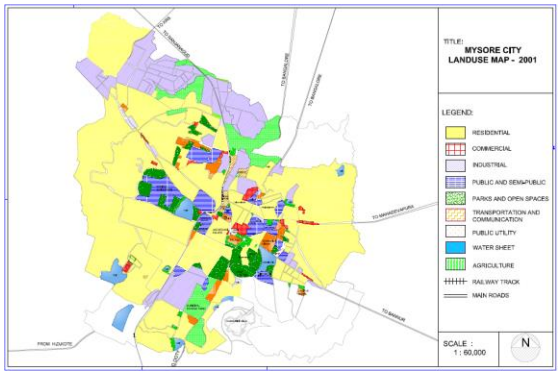
V. SPATIAL GROWTH DYNAMICS AND LAND USE PLANNING OF THE CITY:

A study on spatial growth trend and land use planning for accommodating the growth and development of present and future of the Mysuru city has been carried. The study shows that the provisions of city supporting space and infrastructure through the master planning processes from the period of the inception of planning authority called ***City Improvement Trust Board*** (C.I.T.B.) was good. The CITB was founded by His Highness Sri Nalwadi Krishna Raja Wodeyar - IV and it holds the proud distinction of being the oldest planning institution in Asia. Innovative planning combined with a humanitarian approach has achieved to allocate spaces for the city needs effectively, as the population size in turn the city size was less, there was no scarcity of urban spaces till to the formation of planning and development authority called the Mysore Urban Development Authority [MUDA]. The problem of scarcity of urban spaces have started after the planning intervention through MUDA as the land use planning were focused much on major requirements of the city needs other than the urban prerequisites like a dedicated lane for NMT. The table 2 shows land uses of the master plan carried till to the year 2009.

The land allocated for parks and open spaces in the whole city was 772.87 hectare [2.64 % of the total developed area] in the year 2009. The area under agriculture 13455.56 hectare [46.02 % of the total developed area], forest 766.5 hectare [2.64 % of the total developed area] and water body 336.1 hectare [1.15 % of the total developed area]. The area under forest and water body, though not act as park and open spaces, these play a significant role as lung spaces and mitigating urban heat. An urban area is required to have about 1/3rd area or minimum of 30% of developed land area for a balanced local climate, but the land use planning in the year 2009 has allocated only 2.64 % parks and open spaces along with 2.62% of forest and water body of 1.15% though the ZR has prescribed mandate minimum of 15% of parks and open spaces in the neighbourhoods in turn the city. The master plan for the year 2031 has allocated 1611.62 hectare [5.51 % of the total developed area] along with area under agriculture 1098.16 hectare [3.76 % of the total developed area], forest 763.92 hectare [2.61% of the total developed area] and water body 372.68 hectare [1.27 % of the total developed area]. The total land allocated for the parks and open spaces in the neighbourhoods in turn the city is increased by 2.87 % with more deficit to the requirement of the present urban heat. The city has varied proportion of parks and open spaces in different residential areas and no uniformity has been maintained in planning districts of the master plan 2031.

Table 1.2: Land use of Mysuru city for the year 2009



Existing Land Use-2009 - Mysore City Conurbation		
Land use Category	**Area in ha**	**Percentage to Total Area**
RESIDENTIAL	7049.81	24.11
COMMERCIAL	467.52	1.60
INDUSTRIAL	1320.49	4.52
PUBLIC/SEMI-PUBLIC	1551.69	5.31
PUBLIC UTILITY	107.20	0.37
OPEN SPACE	772.87	2.64
TRAFFIC & TRANSPORTATION	3413.73	11.67
AGRICULTURE	13455.56	46.02
WATERBODY	336.10	1.15
FOREST	766.50	2.62
Total	**29241.48**	100.00

Figure 4: Mysore City urban spread in 2001

(Source: Mysore Revised Comprehensive Development Plan 2009)

The urban growth and development from the year 1995 to 2011 shows a considerable increase in the area under different civic use land uses excluding the area under water body, agriculture and area under Nehru loka; an area reserved for one specific use and was planned retain as green spaces to Mysru, later the planning decision has been changed. Now that has been used to different urban development purposes. The proposed master plan 2031 has a conurbation area of 29242.5 hectares comparing to an area of 29241.48 hectare reserved in the year 2009; now these reserved area is converted development purposes by encroaching the agriculture land at the city peripheral area. this indicates the planning processes has less concern on creating green spaces there is no additional place for accommodating any kind of new planning interventions in relation to sustainable development or resilient planning and on top of it the land use percentage of minimum 15% of park and open space was decreased to 10% in the recent master planning norms. Open space availability is below the recommended URDPFI norm of 10–12 sq.m per capita.

The total area for Mysore city as per MUDA has shown an increase in its urban area to 9221 hectares in 2001 from 7569 hectares in 1995, representing a growth of 22%. As per MUDA, the total area is further expected to increase to 15669 hectares by

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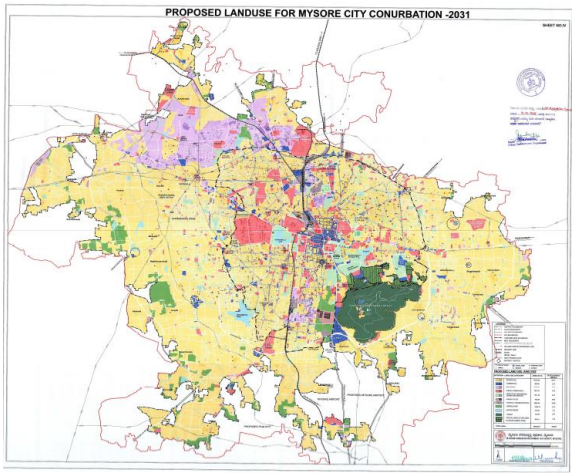
2011, representing a significant increase of around 70 % over the total area in 2001. The city area has become double to its previous decades.

The city's growth in the recent years becoming very fast and dynamic, towards southern of Mysuru the industrial areas located closer to Nanjangud. The MUDA as well as private developers have developed many new layouts in the areas as residential urban extensions including the area in the north eastern part of Mysore and still many residential layouts of private developers have lined up an array of proposals and there are many proposals to develop malls, convention centres and golf courses film city and the like to accommodate the future growth of Mysore. It indicates that, there will be determined by the Major development happening in the city. The figure 5 shows the major areas of development in Mysore that has almost filled with recent development over the proposed Land Use of Revised Comprehensive Development Plan of the year 2009 and 2011.



Proposed Land Use 2031 - Mysore City Conurbation		
Land use Category	**Area in Ha**	**Percentage to Total Area**
RESIDENTIAL	15735.06	53.81
COMMERCIAL	800.88	2.74
INDUSTRIAL	1812.70	6.20
PUBLIC/SEMI-PUBLIC	1981.33	6.78
PUBLIC UTILITY	192.48	0.66
OPEN SPACE	1611.62	5.51
TRAFFIC & TRANSPORT	4568.26	15.62
AGRICULTURE	1098.16	3.76
WATERBODY	372.68	1.27
FOREST	763.92	2.61
SPECIAL AGRICULTURAL ZONE	305.41	1.04
Total Area of Mysore Urban	**29242.51**	100.00

Table 1.3 Proposed Land use for planning period 203. Figure 5: proposed land use of Mysuru for the planning period 2031. (Source: Mysore Master Plan 2031).

A detailed field surveys have been conducted to study the issues related to planning and design of parks and open space in the selected planning district 21, an area formed between the master plan period 2009 and 20031. The planning authority use to call the master plan use called Comprehensive Development Plan in the planning duration before the year 2000. The master plan 2031of Mysuru has divide the whole Local Planning Area [LPA] into 45 planning district with some sub divided planning districts. A detailed study has been carried on Planning District 21. The Planning District 21, encompassing Vijayanagar 3rd Stage and Bhogadi in Mysuru city, represents a rapidly developing residential zone on the western periphery of the urban area. This district is primarily characterized by plotted residential layouts interspersed with institutional pockets and upcoming commercial developments. The area's spatial structure reflects a grid-iron road pattern in Vijayanagar 3rd Stage, while Bhogadi retains traces of organic village morphology transitioning into urban and semi-urban developments.

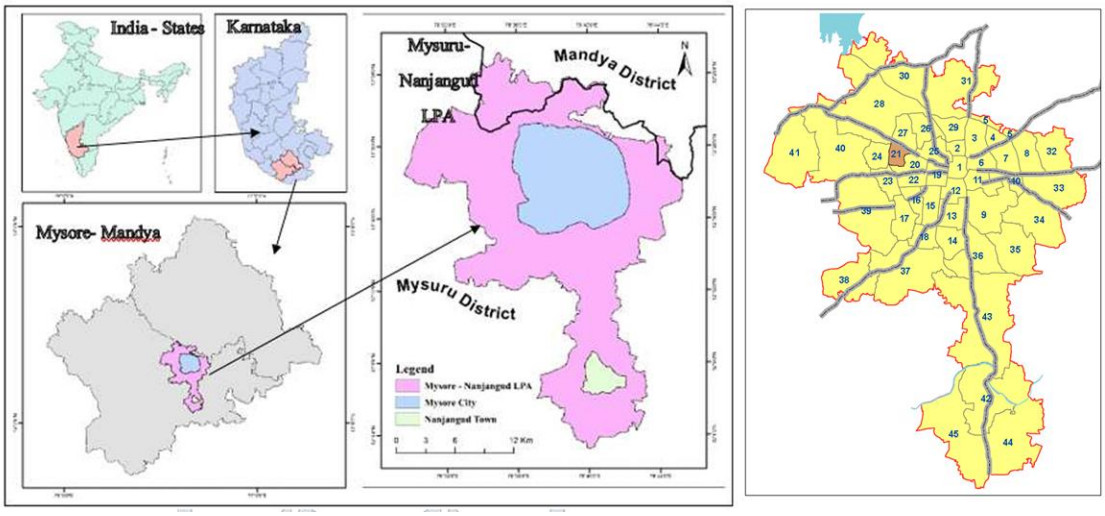


Figure 5 Location of study Area.

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(Source: Mysore Master Plan 2031)

Planning District 21 under the Mysuru Urban Development Authority (MUDA), is a major residential locality situated in the western part of Mysuru city, Karnataka. It lies approximately 7–10 km from the city Centre and includes areas such as Vijayanagar 3rd Stage and Bhogadi. The district has wide roads, educational institutions, and growing commercial activities, developing with a mix of plotted. Planning District 21 is witnessing rapid urbanization and densification.

The study area is measuring 380 hectares with a population (2025) around 48,000. The study area has city corporation Wards that includes parts of Ward Nos. 65, 66, 67, and 68 of the Mysuru City Corporation (MCC). This area is in the Planning Jurisdiction under the Mysuru Urban Development Authority (MUDA) and Mysuru City Corporation.

The study area has 18 number of notified parks and open spaces**.** These18 major are planned as designated parks land use with several small green pockets and undeveloped open plots. The major parks identified in the area are;

1. Vijayanagar 3rd stage small park
2. Vijayanagara 3rs stage big park
3. APJ Abdul kalam park/ Miyawaki park
4. Mariappan Park
5. MUDA Vijayanagara Park
6. Pyramid Park
7. Garudachar layout park
8. Bhogadi park
9. Corporation Park
10. Housing area park/ tot-lot park - 11

The existing condition of parks are not good. some parks are maintained by MUDA, most of them are underdeveloped and are lacking with proper infrastructure, street lighting, seating, and children's play areas and other required supporting infrastructure for the public use and also for maintenance. A study in terms distribution of parks and open space in the study area reveals a highly fragmented and uneven spatial pattern. While some planned layouts in Vijayanagar 3rd Stage include designated parks often developed by MUDA (Mysore Urban Development Authority) their accessibility, usability, and maintenance vary greatly. Many of these spaces are isolated within specific blocks, limiting their accessibility to the broader community. In contrast, Bhogadi exhibits significant deficiencies in formal open spaces, with most green patches being vacant plots, school grounds, or leftover buffer spaces around stormwater drains and water bodies.

A major negative aspect is the lack of interconnected green corridors along the natural water courses and un-equitable distribution of parks across the wards and planning district and also absence of hierarchy of parks. The existing parks are often underutilized due to poor pedestrian access, absence of street furniture, and lack of inclusive design catering to children, elderly, and differently-abled populations. Furthermore, encroachment on designated open spaces, insufficient tree canopy in buffer space around the existing water bodies, and inadequate integration of blue-green infrastructure through planning interventions severely impact the environmental and recreational quality of the region. Stormwater drains and natural tanks in the study area have the potential to be integrated into green networks but are neglected while planning and development.

The study adopts a mixed-method approach combining spatial analysis, field surveys, and stakeholder opinion and insights to assess the planning and design issues related to distribution and accessibility of parks and open spaces in Planning District 21, which includes residential area of Vijayanagar process 3rd Stage of Bhogadi. The spatial data analysis includes the data such as base maps, land use maps, and satellite imagery were collected from sources like MUDA, MCC, KSRSAC, and Bhuvan. Using GIS tools, to study existing parks and open spaces in the study area Buffer analysis (300m and 500m radii) was used to identify walkable access zones, while overlay analysis with built-up areas and population density helped to detect spatial disparities.

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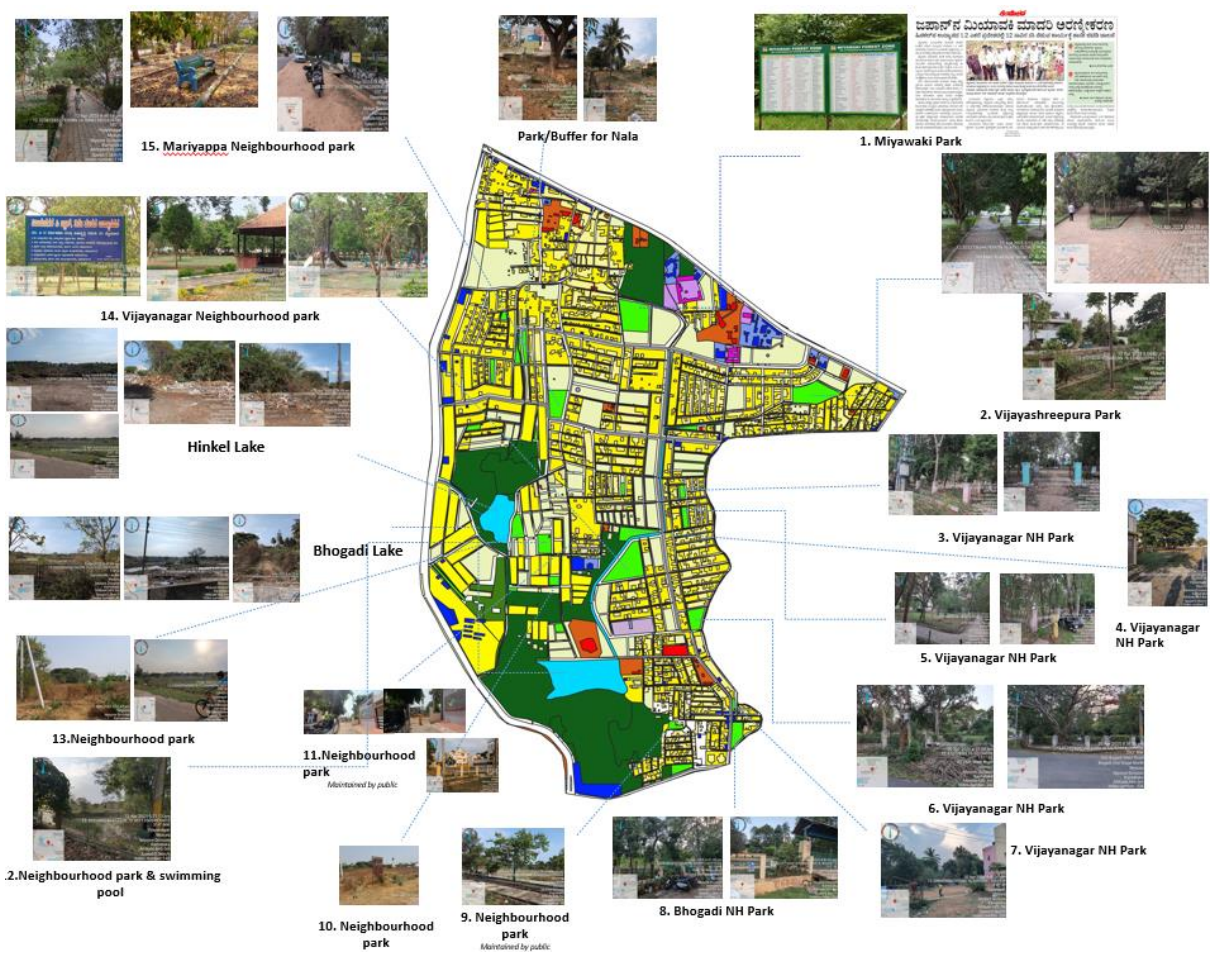
Figure 6:



Existing status of parks in the study Area.

(Source: compiled by the author)

A detailed field observational survey and residents' interview was conducted to explore ground-truth and mapped the mapped parks and open spaces in the study area to understand the accessibility and utilization aspects of the public. The analysis includes on-site assessments of park conditions, accessibility, amenities, safety, and user demographics, along with GPS tagging and photographic documentation. Additionally, informal unstructured interviews were carried out, as the issue are not so complex, with local residents, planning officials, and civic bodies to understand the usage patterns, needs, and governance challenges related to parks and open space management. A gap analysis was then done by comparing the existing open space provision with URDPFI norms (10–12 sq.m per capita) to evaluate adequacy and with the zoning regulation [ZR] of master plan 2031 and more importantly how best the existing planning principles and approach supports the residents and the present impacts of climate change prerequisites. The findings from spatial and qualitative data were synthesized to identify critical deficiencies, underutilized spaces, and opportunities for green infrastructure integration asper the sustainable development and resilient planning. The study has been designed to cover the issues to provides a comprehensive framework to assess both the quantitative and qualitative dimensions of urban parks and open spaces in the study area.

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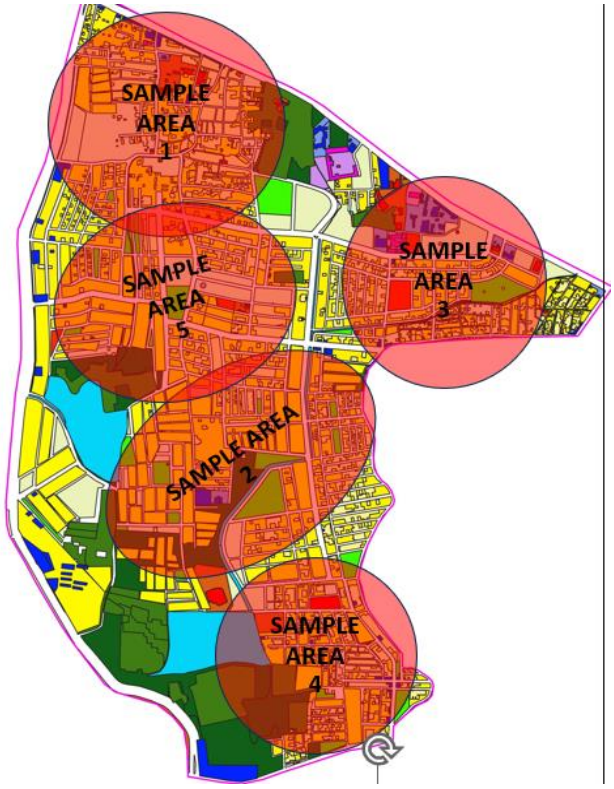


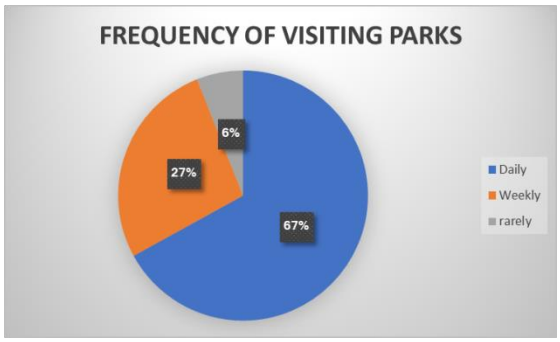
Figure 7: Map showing Sample area of residents (Source: Author)

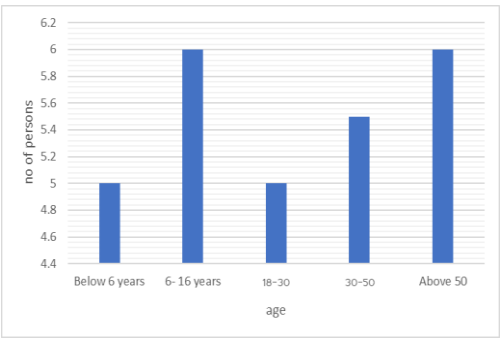
The spatial sampling study ensures representation of multiple socio-economic and environmental conditions which in turn enabling a holistic reinterpretation of futuristic neighborhood park planning. The methodology supports both qualitative and quantitative data analysis for comparative assessment and land use planning recommendations.

In the sampling study a Random sampling of park users during morning and evening peak hours called 'Park Visitors' (of number = 50), Residents (of number = 50 of Selected from nearby housing clusters around each sample park) and Experts (of number = 10) including Urban planners, landscape architects, municipal officers, and academicians interviewed via snowball sampling.

Responses from Park Visitors are of age group between 26–45 years (42%), followed by seniors above age 60 (25%). The Purpose of Visit of them are walking (60%), socializing (30%), and exercising (25%). The issues faced them are Poor lighting during late evening (45%), lack of seating (38%), and absence of toilet facilities (52%). Then the user satisfaction was analysed, about 28% were "satisfied", 55% "partially satisfied", and 17% "dissatisfied" with the adequacy of parks.

- Suggestions: More shaded zones, dedicated spaces for children and elderly, water features, digital signage, and Wi-Fi.





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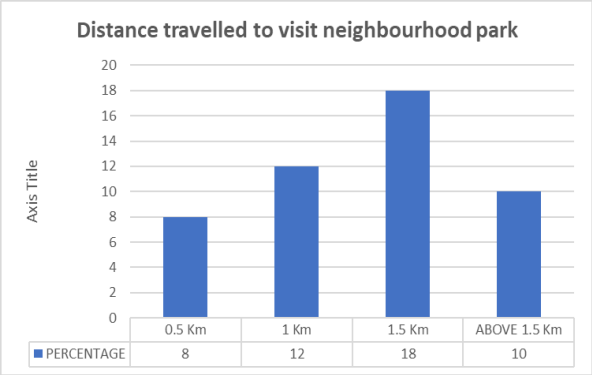
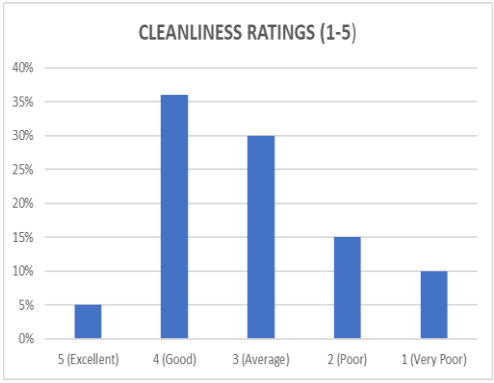
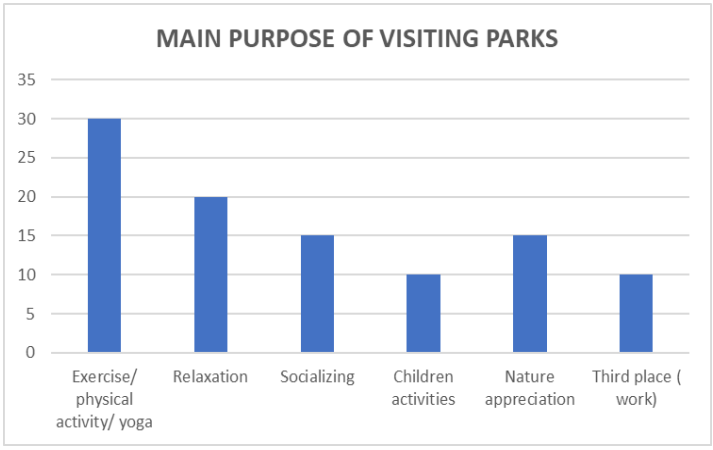
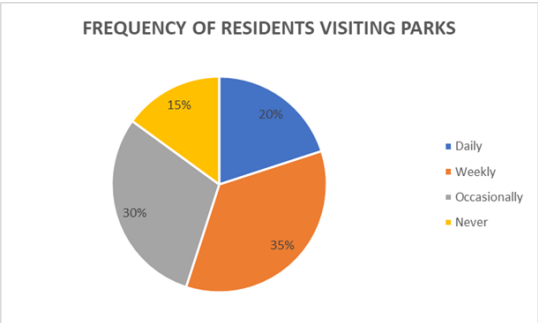
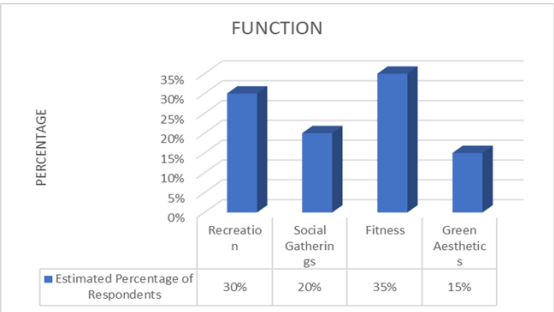






The interview survey of Residents located at more than 70% said they access to park and are live within 5 to10 minute walk from the park. Their frequency of Use is studied. It is understood that about 52% use the park more than 3 times a week as poor maintenance of the park is the main reasons for lower usage along with safety for users. And other reasons are insufficient tree cover, lack of participatory planning in park development and its adjacent area development by encroachment of needed activities. The users prefer to walk on roads as parks are small and other disturbance as they have preferred the calm ambience at parks. The residents' expectations emphasize multifunctionality, such as community gardening, open gyms, meditation zones, and stormwater reuse other than active recreations. And their **concerns** as **vision** expect parks to become neighborhood hubs that enhance well-being, social cohesion, and climate resilience under sustainable development.





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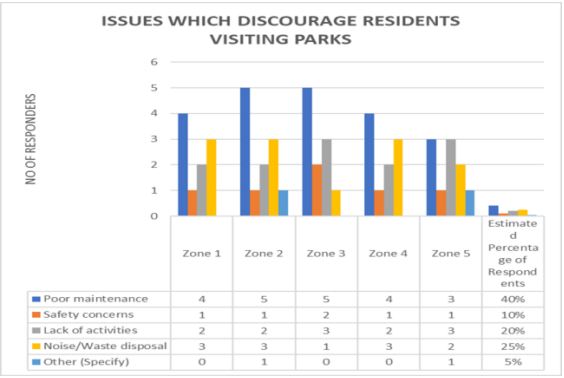

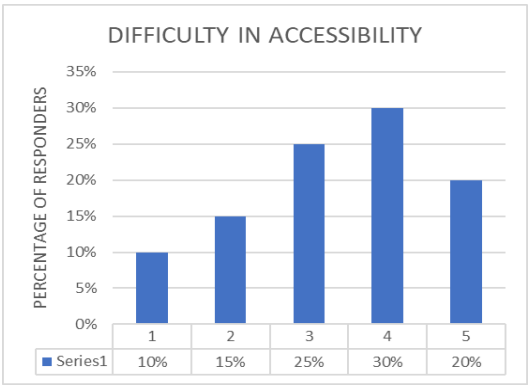

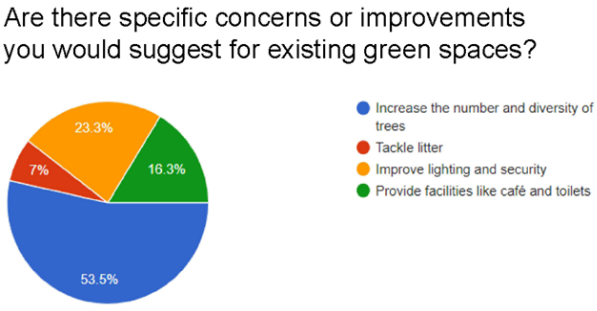

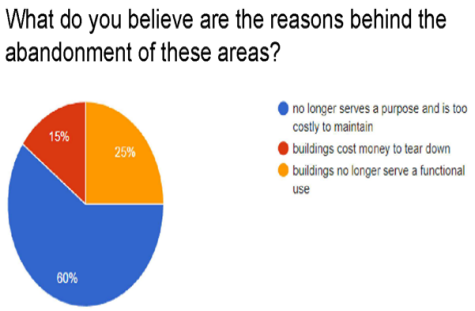

Similarly, the **e**xperts highlighted that Indian neighborhood parks are still not seen the park as aesthetic and leisure spaces and not utilize them as functional ecological assets to integrate and many parks lack spatial continuity, biodiversity considerations, and age-inclusive design.

Though there are scope to integrating urban agriculture, climate resilience and sustainable using bio-swales integrating with wet lands, permeable pavements for recharge and smart infrastructure developments (solar benches, app-based visitor analytics) the scope of developments has its own inabilities and financial constrains. The experts advocated for co-design with communities, maintenance-linked CSR partnerships, and adaptive reuse of underutilized land parcels.

Other factors unusually practiced in the parks are several parks had hardscape development through authorities have over taken the green space areas and leading to heat retention. Some parks were fenced and locked, limiting access during non-peak hours. Parks lacked clear allocation of zoning and additional land for flood mitigation, storm water storage active and passive zoning between children's play, relaxing, walking paths and other informal activities (street vendors intrusion, yoga and other socializing groups activity showed the dynamic social versatility of parks. The existing water bodies and water courses could have been integrated alog with their wet lands in the downstream areas, but not attempted, it has given scope for encroachment of natural element area and also weakens the conservation of them. These areas are filled with garbage,

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Figure 8: Scope of integrating water body and parks (Source: Author)

VI. Proposal for Making Urban Parks User Friendly: A Blue – Green Initiative & Climate Resilient Under Urban Planning Approch.

A. Passive Zoning and Segregated Zone with Buffer for Active Open Space Functional Space:

Zoning in futuristic parks are required to be ensured with proper zoning as passive zoning and segregated zone with buffer for active open space functional space for optimal utilization with specific purposes without mutual disturbances spatial organization to cater to diverse user needs while preventing conflicts in use. Parks can be divided into functional zones such as:

- Play zones with child-safe equipment,
- Senior citizen areas with reflexology paths and shaded seating,
- Meditation and wellness zones with quiet ambience and native landscaping,
- Open lawns for community events or yoga,
- Ecological zones like flood mitigation, water recharge, wet land and bio diversity urban forestry and urban agricultur and horticultural spaces etc.

Such multifunctional zoning enhances user utilization and judicial experience by offering varied activities while maintaining harmony. Design strategies may include universal accessibility, sensory design elements, and low-carbon materials. Transitional zones (buffer spaces, water elements) help in creating a sense of flow between active and passive uses. In Indian contexts, design must be responsive to climatic conditions, cultural practices, and local material availability. These function-based zones allow for flexibility, enabling parks to evolve as community needs change over time.

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B. Making Urban Parks User Friendly:

To understand the usability, functionality, and equity of neighborhood parks, a comprehensive physical infrastructure and amenities are required to be developed under the perspectives of inclusive planning.

- Walking and jogging tracks: These were assessed for continuity, material quality, shaded trees and user-friendliness spaces.
- Seating arrangements: Availability of benches or resting spaces, noting shaded vs. unshaded areas and elderly-friendly design.
- Lighting facilities: Presence and functionality of lamp posts to ensure safety after dusk, particularly for women and senior citizens.
- Children's play equipment: The number, type, safety condition, and maintenance of play structures were assessed, including inclusive play features.
- Sanitation and drinking water: Public toilets (gender-segregated or unisex), drinking water fountains, and their accessibility were documented.
- Dustbins and waste management: The presence of covered bins, segregation systems, and regularity of cleaning was noted.

In addition emphasis on security and information systems, that includes:

- Signage (directional, educational, park rules),
- CCTV surveillance (especially in larger community parks to help during crime, health causalities and to encourage all time use),

The focused on universal accessibility:

- Ramps, tactile paths, and smooth, barrier-free entrances were assessed to understand how inclusive parks are for people with disabilities and mobility impairments.
- Resting points, shaded areas, and signage with large fonts or Braille were also recorded where available.

The dimension of inclusiveness was evaluated through a spatial lens, looking into:

- Gender-sensitive design, such as separate toilets for women, safe zones, and lighting;
- Age-friendliness, e.g., reflexology paths, senior seating areas, low-threshold gym equipment;
- Socio-economic inclusiveness, where parks not only near both rich and informal settlements or low-income areas were assessed for equitable access and quality; it is for all gender, physically challenged etc.

To activate user friendly park edges and support local economies, adjacent land use strategies are proposed rather than allotting plots for residential use; ite required to accommodate space for Introducing Horticultural Producers' Cooperatives (HOPCOMs) or organic markets, milk booth, groceries, parking, allocating land for cafés, libraries, and outdoor reading corners, weekend markets, food carts, or cultural programs and the like near out side park edges.

C. A Blue – Green & Smart Initiative Under Sustainable Planning:

Several site conditions offers innovative models of futuristic park planning that can inspire context-specific adaptation in Indian cities. For example, Seoul's Cheonggyecheon Stream Restoration shows how neglected infrastructure can be transformed into vibrant green corridors. Singapore's Bishan-Ang Mo Kio Park integrates flood control with community use. Tokyo's neighborhood pocket parks demonstrate efficient use of limited urban land with inclusive design. Similarly, Copenhagen's climate parks and Barcelona's superblocks focus on pedestrian-centric, ecological design. When applying international inspiration locally, it's crucial to reinterpret to replicate—adapting elements like smart infrastructure, ecological zones, or participatory design within India's socio-economic and climatic realities. Local culture, user behavior, and affordability must guide this translation from global to local for maintaining the recreational and ecological integrity of the park.

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In the context of urban development, "futuristic" parks refer to next-generation green spaces that integrate technology, sustainability, inclusivity, and adaptability. These parks go beyond traditional recreational roles to become multifunctional public assets that support climate resilience, public health, social equity, and digital connectivity. Futuristic parks are responsive not only to demographic trends, evolving lifestyles, and ecological pressures. They are equipped to support both passive and active recreation, enhance climate resilient, urban biodiversity, and provide socio-cultural value. Such spaces are envisioned as flexible zones that can evolve over time—accommodating changing user needs, smart monitoring systems, and environmentally adaptive infrastructure. So it is required to integrate planning for park and open spaces with woter bodies and natural greens with climate impact mitigation strategis.

D. Smart Parks are Those that Use Digital Infrastructure:

Smart parks are those that use digital infrastructure to enhance visitor experience, ensure safety, and improve maintenance efficiency. Key smart elements include public Wi-Fi, allowing users to stay connected and supporting educational or work-related activities within park premises. Smart lighting systems, powered by motion sensors or solar energy, improve safety and energy efficiency by adjusting brightness based on occupancy and daylight. Environmental sensors can monitor air quality, temperature, noise levels, and soil moisture—informing city authorities and increasing public awareness. QR-coded signboards enable visitors to access information on plant species, park history, or upcoming community events. Mobile apps can offer way finding tools, event booking, or even crowd density insights to avoid congestion. In the Indian context, smart features must also consider cost-effectiveness, ease of maintenance, and user accessibility and also visual connectivity to care takers of aged and children community through smart assistances. Integrating these technologies into park systems transforms them into interactive, data-driven public spaces, bridging the gap between natural and digital environments.

E. Ecological Integration (Stormwater Management, Biodiversity Zones)

Ecological integration in parks involves embedding nature-based solutions and sustainable landscape design that address both environmental and social goals. Key interventions include stormwater management systems like bioswales, rain gardens, and permeable pavements that help in groundwater recharge and flood mitigation. Parks can act as urban green lungs, filtering air pollutants and reducing heat island effects. Creating biodiversity zones within parks—by using native plants, pollinator gardens, and habitat corridors—helps support urban flora and fauna. Wetlands and retention ponds can be integrated to manage excess runoff while creating aesthetic and educational features. Ecological integration also includes tree canopy restoration, soil health improvement, and use of organic landscaping practices. These elements contribute to the park's resilience, allowing it to function as a climate-adaptive public space. In Indian cities, where parks often lack ecological planning, this approach provides an opportunity to reimagining them as vital components of the urban ecosystem. Ecological assessment includes the presence of tree cover, biodiversity, water bodies, permeable surfaces, and microclimate regulation. This helps distinguish parks that offer environmental value versus those that are merely recreational.

VII. CONCLUSION:

The challenge of designing neighborhood parks for the future is not simply about accommodating more people or adding more green patches for recreation in the way how it is treating in the contemporary neighbouhood planning in turn urban planning. It is about redefining what these spaces mean to communities, how they can be integrated into daily urban life of both pre modern and post modern generations, and how they can serve as quiet yet powerful infrastructures of wellness, inclusion, and sustainability and resilient to climate change. This study attempted to explore facts under these dimensions, offering a framework for planning neighbourhood parks that are not only element to present spatially but functionally and emotionally significant to the people they are meant to use and serve. There is need to integrate Resident Welfare Associations (RWAs), Park Management Committees through planning and development authorities under governance models to involve public-private partnerships (PPPs) or CSR collaborations, where private entities contribute to park funding and upkeep the developmental needs. The existing land use standards of percentage allocation of parks and open spaces and the policies relating to it are required to be redefined as they are not supporting to accommodate the aspects of proposals in this paper though they are urban prerequisites.

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