

# SIGNIFICANCE OF URBAN GREEN SPACE NETWORK FOR MYSURU CITY

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## ABSTRACT:

Urban green space (UGS) is an incredibly important element to be looked at and nourished within all the land use. The rapid urbanisation is directly affecting the UGS as key elements. The optimum distribution of the UGS and its accessibility helps in maintaining the harmony in between the environment and the urban areas. The green space network analysis of the UGS of Mysuru city was evaluated with a methodological framework to understand the scenario of urban green network in densely built urban area. The UGS per capita and accessibility of all the present green spaces are studied to know its functionality. As it is a well-known fact that the quality of life, human well-being are the important factors influenced by urban green and open spaces accessibility and also helps in improving the strategic lifestyle in the urban areas. Eventually, contributions from UGS to the urban areas are very broad and multidimensional like, social, cultural, recreational, economic, environmental and aesthetic.

**Key Words:** Urban Green Spaces (UGS), Network, Open Areas, Connecting spaces.

## 1.0 INTRODUCTION

Rapid Urbanisation is trending to exploit the sensitive spaces like urban green spaces and other open spaces for the development of roads and buildings which is inversely affecting the urban biodiversity, says Yokohari et al., (1994); The European Commission (1996) states that the urban green space is important as buildings and physical infrastructure for a city and although it is under serious threat due to unplanned urban growth. Mitchell and Popham (2007) states that people who live near green spaces are healthier than people who live farther from green spaces. Botkin & Beveridge (1997) states that Rapid urbanisation has resulted in upgrading of interest in urban green space, and the ways in which this green space can benefit cities and their inhabitants, and how addressing the same has become key issues in urban planning. Currently sustainable development of a city focuses on the "green network" as a major strategic tool, opinions Conine et al., (2004). Henceforth UGS network intertwines the recreational and the cultural essence of an urban

fabric which helps in maintaining and restoring the urban ecology. A fair distribution of the urban green spaces all over the city caters accessibility for each and every inhabitant of the city.

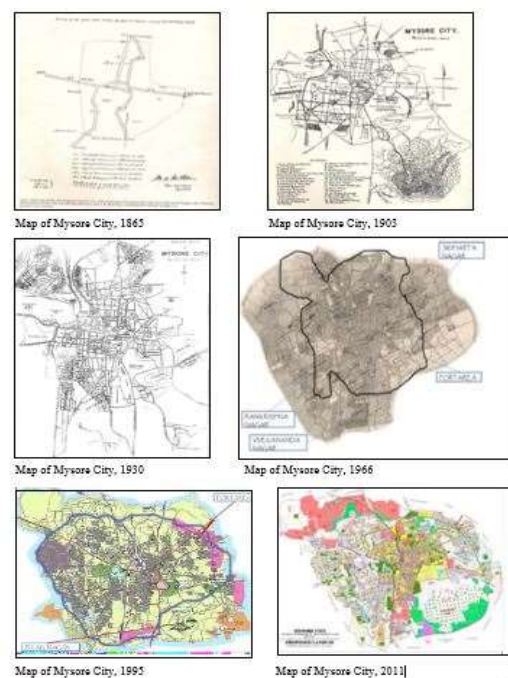
## 2.0 BACKGROUND OF MYSURU

Mysuru is the second largest city and lies in the base of Chamundi Hills and one of the important cities in Karnataka where urban sprawl is in faster pace. Mysuru has a population of 1,696,577 lakhs persons as per Census 2011 and occupies an area of 27984.22 Hectors based on existing land use. The city is growing rapidly since a decade and has spread over a radius of 20 km and well known for its culture and heritage. Mysuru is an educational, commercial and administrative hub and one of the tourist centre. Mysuru City is located at 12.30°N 76.65°E and has an average altitude of 770 metres (2,526 ft). Mysore lies in the tropics, with temperatures ranging from 16° C to 27° C in winter and 27° C to 35° C in hot summer. The

average annual rainfall is about 800 mm (86 centimetres of rain annually, most of it during the monsoon, in the June-October period). Percentages of total land area in Mysore city occupied by park and open spaces and water bodies are 13.74 percent and 2.02 percent respectively.

### 2.1 Timeline Development of Mysuru city:

**Figure 1:** Development of Mysuru



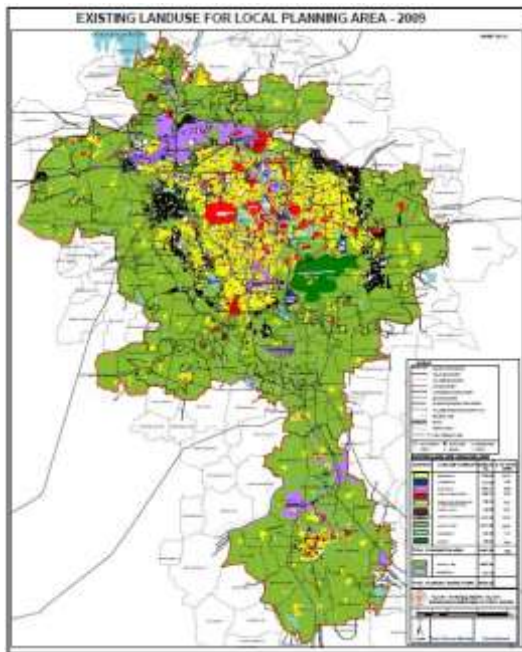
Source: T. P. Issar, The Royal City – Mysore

**Table 1:** Population and Spatial expansion of Mysuru city

Sl.No	Census Year	Population	Area in Sq kms
1	1901	68,111	19.5
2	1911	71,306	24.7
3	1921	83,951	24.7
4	1931	1,07,142	32.2
5	1941	1,50,540	34.2
6	1951	2,44,323	34.2
7	1961	2,53,865	37.7
8	1971	3,55,685	37.7
9	1981	4,79,081	40.05
10	1991	6,53,345	68.79
11	2001	7,85,800	92.20
12	2011	16,96,577	279.82

Source: Census of India and MUDA, compiled by author

### 3.0 Land Use of Mysuru Local Planning Area:

**Figure 2:** Land Use of Musuru city, 2009

**Source:** Mysore Urban development Authority

The traditional urban structure that influenced the urban growth, density, urban form, the infrastructure facilities existing, and the green and open spaces in the urban areas of Mysuru. In the local Planning Area, there are two major urban areas viz. Mysore City Corporation Area, the Nanjangud Town Municipal Area, and a few outgrowths in the KRS area and the industrial estate developments around Thandavapur, village between Mysore and Nanjangud. Besides, there are a number of spot developments in the rural belt and around these urban areas. The Planning Authority has divided the city Local Planning Area (L.P.A) divided into 45 planning districts.

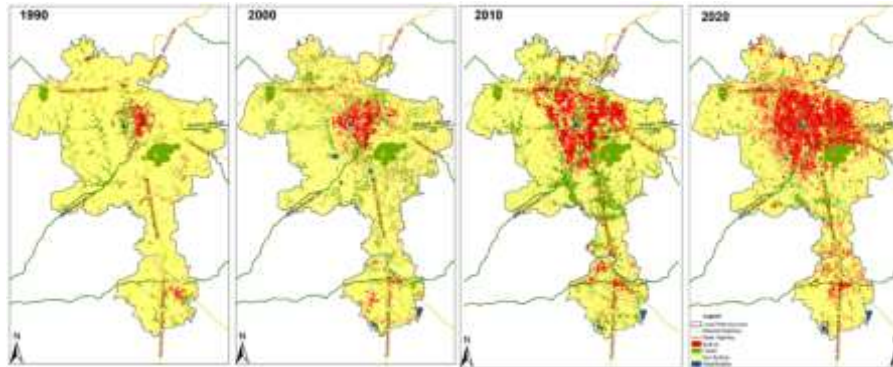
**Table 2:** Existing Land Use of Mysuru city 2009

<b>Existing Land Use-2009- Overall LPA</b>			
<b>Land use Category</b>	<b>Area in ha</b>	<b>Percentage to Total Connurbation Area</b>	<b>Percentage to Total Area</b>
RESIDENTIAL	7766.92	24.70	15.32
COMMERCIAL	517.85	1.65	1.02
INDUSTRIAL	1882.21	5.99	3.71
PUBLIC/SEMI-PUBLIC	1665.73	5.30	3.28
PUBLIC UTILITY	148.56	0.47	0.29
OPEN SPACE	788.22	2.51	1.55
TRAFFIC & TRANSPORTATION	4137.04	13.16	8.16
AGRICULTURE	13417.95	42.67	26.46
WATERBODY	352.35	1.12	0.69
FOREST	766.50	2.44	1.51
<b>Total Connurbation Area</b>	<b>31443.34</b>	<b>100.00</b>	
AGRICULTURE	18647.94		36.77
WATERBODY	617.15		1.22
FOREST	0.00		0.00
<b>Total Area of the Planning District</b>	<b>50708.43</b>		<b>100.00</b>

Source: Mysore Urban development Authority

**4.0 LANDUSE LAND COVER (LULC) OF MYSURU:**

**Figure 3:** Decadal growth of Land Use and Land cover of Musuru city



Source: Mysore Urban development Authority, Compiled by author

**Fig no 4:** Decadal growth of Land Uses of Musuru city



Source: Mysore Urban development Authority, Compiled by author

From the above chart, it is clearly established that the non-built up areas and water bodies diminished and built-up areas increased over the years due to urban spatial and population dynamics.

**5.0 URBAN GREEN SPACES OF MYSURU CITY:**

Mysuru and its surrounding is rich in flora and fauna. Mysuru has managed to save large tracts of land as reserved forests and open areas. The

total area of Parks, Play grounds and open spaces within the city 700.25 Hectares and covers the area up to 1.51% of total existing Land use. There are reserved forest and conserved green areas also within LPA. The largest of them is the Chamundi Hills-Reserved Forest, which covers an approximate area of 613 ha. The total area of the reserved forest in Mysuru is 950 ha that is 1.47% of the Land use. All the Residential Neighbourhoods which have been developed by the Mysore Urban Development Authority and Private Developers are required to reserve 10-15% for parks and

open spaces. Many parks are being developed by the Private Agencies/Developers, MUDA and MCC within their jurisdictions.

**Table 3:** Classification of UGS of Mysuru city

<b>Classification of Urban Green Spaces in Mysuru city</b>							
<b>CITY FOREST AREAS</b>	Zoological Garden	Chamundi Hills reserve forest area	Area around forest department				
<b>INTEGRATED GREEN AND BLUE SPACES</b>	Karanji lake	Kukkarahalli lake	Lingabudi lake	Hebbal lake			
<b>INDUSTRIAL GREEN ZONES</b>	Infosys campus	BEML campus	J.K.Tyres campus	L & T campus	GRS Fantasy park	Sericulture department	
<b>RELIGIOUS LANDSCAPES</b>	Chamundi hills	Shukhavana	Kishkinda Moolika bonsai garden	J.S.S Suttur mata			
<b>HISTORICAL LANDSCAPES</b>	Lalith Mahal green area	Railway museum	Jeevarayana katte park	Freedom fighter's park (Subbarayana kere)	Doddakere Maidana (Exhibition ground)		
<b>REGIONAL PARKS &amp; OTHER OPEN SPACES</b>	Brindavan gardens	Talakad	Nagarahole national park	Bandipur National park	Srirangapatna Ghosai Ghat	Ranganathittu Bird sancury	Shivnasamudra falls
	Melukote temple complex (Hills)	KRS Dams					
<b>MAJOR/OLD NEIGHBOURHOOD</b>	Sanjeevini Park	Dr. Ambedkar park	Javregowda park	Dr. Rajkumar park	Dr. Vishnuvardhan park	Kuppanna park	Thathaya park

<b>OD PARKS</b>							
	Curzen park	Children's Traffic park	Vishwa manava park	Jayanagara park	Mysore Ananthswami park	Chaluvamb a park	Sanjeevini Park
<b>INSTITUTIONAL GREEN SPACES</b>	University of Mysore campus	Karnataka state open university campus	(CFTRI) Central food technology and Research institute	Regional institute of education	Central institute of indian languages	(DFRL) Defence food research laboratory	(AIISH) All India institute of speech and hearing
	Krishna rajendra hospital	Mysore Medical college	Govt Aurvedic Hospital	Police traing colleges	Administrative training institute	J.S.S groups of institutes	Sharada vilas college
	Marimallapa school and college	Teresian School and college	SDM institutes				

**Source:** Master Plan of Mysuru -2016, compiled by the author

The Space Standards for Parks are indicated in the Urban Development Plan Formulation and Implementation Guidelines and are as follows:

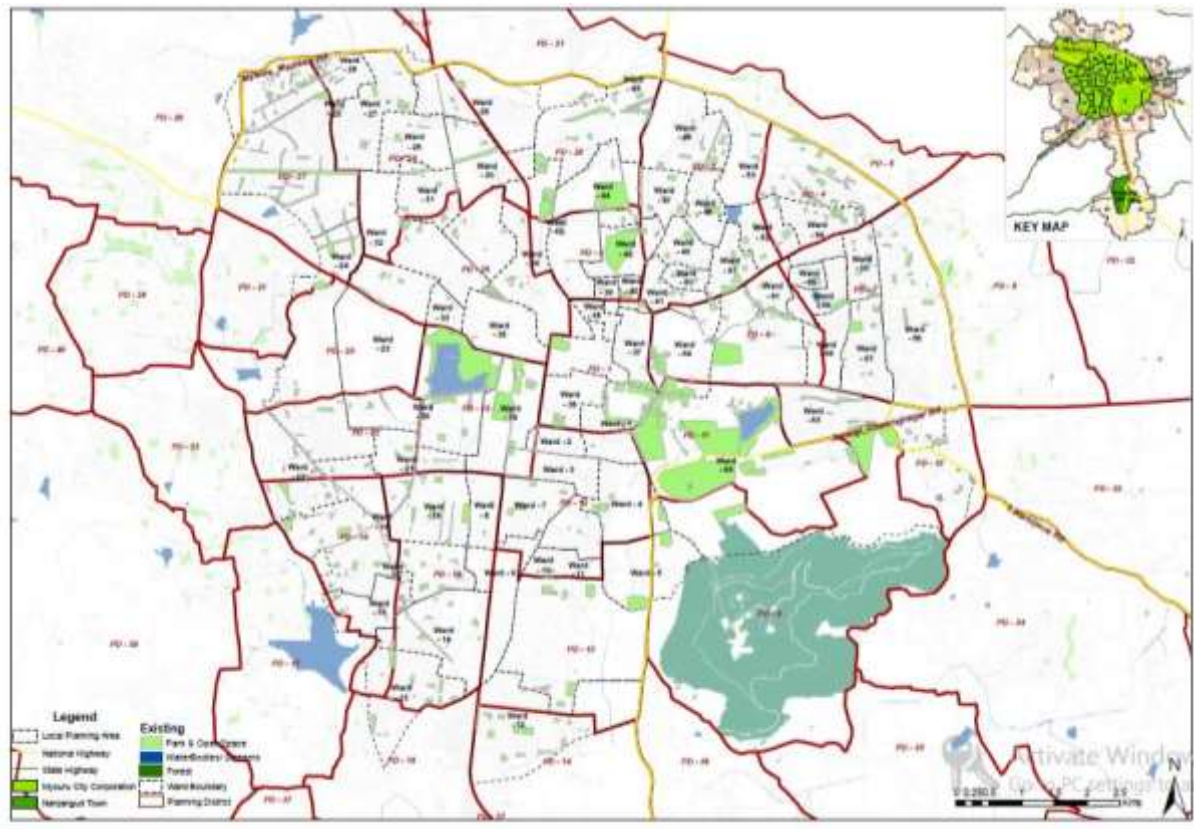
**Table 4:** Urban Parks classification according to UDPFI guidelines

Sl.no	Type of UGS	Abbreviation	Area of Definition
1	Housing Area Parks	HAP	<5000 Sqm
2	Neighbourhood Parks	NP	5000-10000 Sqm
3	Community Parks	CP	10000-50000 Sqm
4	District Parks	DP	50000-250000 Sqm
5	Sub City Parks	SCP	250000 Sqm & above

**Source:** UDPFI guidelines

The Urban Parks and its distributions in the City of Mysuru is depicted in the following table.

**Figure 5:** Existing Urban green spaces of Mysuru city

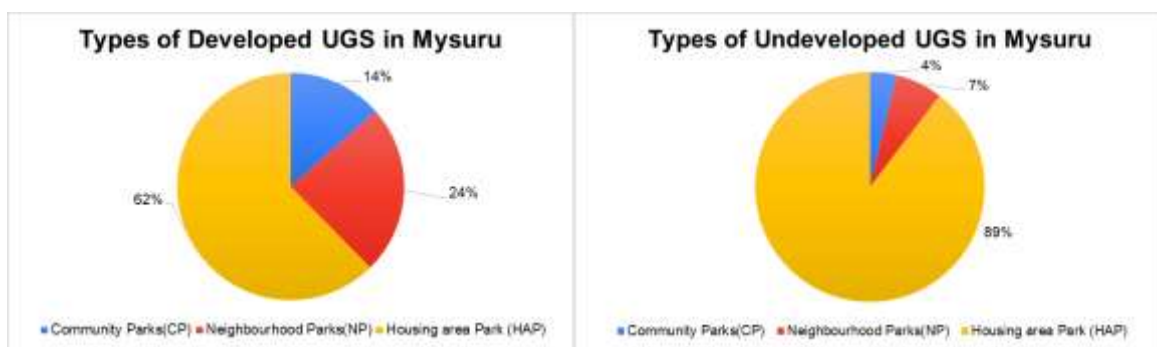


**Source:** MUDA, compiled by author

There are 24 community parks, 43 Neighbourhood parks and 111 Housing area

Developed in Mysuru city. The Undeveloped parks to include 13 community parks, 23 Neighbourhood parks and 310 Housing area parks.

**Figure 6 & 7:** Types of developed & undeveloped UGS of Mysuru city



**Source:** Department of Horticulture, Mysore city corporation, compiled by author

Ward no 40 has the highest area reserved for undeveloped community parks (CP) with 97871 Sqm which can be the most potential form of UGS with the highest scope of future development. This is followed by ward no 46 with the area of 65713 Sqm reserved for the community park which is undeveloped.

**6.0 Significance of Urban Green Spaces of Mysuru city:**

**6.1 Social Interests:**

The human well-being and a healthy lifestyle is inversely proportionate to the frequent

connection between the residents and the UGS. Many studies conducted in developed countries highlights on the benefits of UGS like, more visits and interactions with the UGS will helps reducing the stress from the routine life and many UGS acts as the sustainable agent for the community have a healthy open spaces. UGS and public spaces may also work as a social ties within the urban fabric where a huge gathering can happen and helps increasing the social and communication skill of the users. Henceforth the sense of safety and belongingness is significantly seen among the residents.

### 6.2 Environmental Interests:

The wide spread environmental interest of the UGS ranges from conservation of biodiversity to the urban climate regulations. The purification of air, provision of shade and increased rate of precipitation are all the benefits from the UGS. This helps in creating a pleasant micro climate and temperature drop. An ecological study by P. Boland and H. Sven states that the 10% addition to the greeneries has reduced the total energy required to heat or cool by 5 to 10% in an example of Chicago. And also states it reduced 85% of air pollution by natural filtration method.

### 6.3 Economic Interest:

It is a well-known fact that the Urban Greeneries contributes a lot for increasing the value of the property and helps budding of economy for the any Urban land form. Many places like Thailand, Singapore, Malaysia, Bhuthan attracts a lot of tourists. Tourism being one of the major attraction of Mysuru city have all the potential to become an iconic and a nature tourist centre if the greeneries are enhanced and worked to make it a sustained tourism centre.

## 7.0 Benefits of Urban Green Space Network:

[1]. A city increases its potentiality to become a successful and a Sustainable space by enhancing a Urban Green Space Network. No doubt it becomes an attractive place where people will be pleased to stay and work.

[2]. A place becomes Natural and Resilient by protecting the wetlands, ecology and forest areas. The city's water bodies become resilient to extreme weather events.

[3]. Integration of Urban Green Space network into the city's Master plan connects every part of the city and ensures the development opportunities for exercise and promotes mental wellbeing on the Off-road paths and pedestrian pathways.

[4]. Urban Green Space Network helps in making a city low carbon place, by locking up the carbon emissions within the Urbanisation acts of traffics and Industries.

## 8.0 Issues and Challenges:

Mysuru city's land use has only 2.51% of space reserved for green and open spaces where in the UDPFI guideline directs at least 15-20% of the land use to have a green and open spaces. Mysuru city has around 343 Undeveloped and 178 Developed parks as per the records of Mysore City Corporation. That is, only 34% of the Parks and Open spaces in the city of Mysuru is developed and another 66% is yet to develop and many developed parks are not maintained well and failed in attracting the users and providing the user satisfaction (Primary survey data).

**Figure 8:** Developed & Undeveloped UGS of Mysuru city





**Source:** Department of Horticulture, Mysore city corporation, compiled by author

The Parks and Open Spaces of a city constitute 788.2 hectares and the per capita green space is just 0.000112 sqm which is a major issue of the city. A per capita of at least 10-15 sqm of public green spaces has to be available in an urban area directs World health organisation. Almost 50% of the residents do not have an access to the urban green spaces within their walking distance (300-500 m). And the distribution of the urban green spaces is also unsatisfactory. Accessibility of UGS for the residents and its evaluation can be considered as an important aspect of analysing the urban green spaces.

### **9.0 Proposed Strategies for improving the Urban Green Spaces Mysuru:**

The City's urban agglomerations have become a centre for economy in the present scenario. It becomes very crucial to have an efficient growth and performance to contribute to city's economy. Mysore is emerging in the fast pace of development, therefore the need for the requirement of appropriate strategies with respect to its sustainability is crucial. There is a need for addressing the recurrently emerging issues in general as the urban sprawl which is creating increased pressure on the green spaces around the borders of the city where the agglomeration effect is observed.

#### **9.1 Conserve the value of the environment and its ecology:**

Where the integrated development approach for both green and blue spaces can become a tool for developing the environment and ecology. Provision of good infrastructure becomes impotent as infrastructure is the key territorial element. Both urban development and also the environmental value conservation will be done at a time by doing this.

Many potential huge chunk of green spaces like Madhuvana Gardens', Chamundi hills Reserve forest areas etc can be identified and address to make it an element of tourism attraction and can be an efficient economy generator of the city.

#### **9.2 Necessity of reformatory policies and initiatives:**

The adverse effect is observed in the growing Indian urbanism this is mostly because of the unregulated development in the outskirts of the city. The role of the authorities is to have a proper governance is vital in this context. There are a few approaches by government legislation like constitutional amendment acts 1992, JNURM 2005, Atal Mission for Rejuvenation and Urban Transformation, 2015. That may need a few up gradation and recommendations like, the urban areas require a rational regional land use pattern. The inclusive development of the Urban Green spaces along with the cities many work wonders. An ideal management authority should be formed without burdening the political and bureaucratic structures and they should be capable of handling different sectors at various levels of public administration and coordinate especially with funding sectors. Activating the agro-tourism and farming within the targeted peri-urban areas may also increase the economy and helps improvising the supply of the end products to Mysuru city can help stabilising the climatic change adaptation.

At the micro level identification of potential vacant lands within the study area which are now being used by street hawkers, a few which are now converted as dump yards has the scope of getting rejuvenated as potential green spaces by implementing a few reformatory policies. This intern helps in creating a network of green space with the average walking distance limits. The same can be worked out by identifying the stake holders who can take care of the green space and tax rebate could an incentive to encourage them.

#### **9.3 Nurture the existing Built Environment to enhance its Sustainability**

Further Urban Green infrastructure has to be developed with extra care in newly developing areas of Mysuru city. Greening has to be an integral part of the structure of all new Government Projects. The "Green Index" feasibility has to be explored. More interest is taken in the developed countries to create new water bodies by getting water from other far places, whereas the existing water bodies are

vanished to create new housing layouts of the city, this is the awful situation experienced in our country. Policies has to be tougher to protect the existing water bodies and their green areas.

The Green Index has to be equally proportionate to Gross Happiness Index, this needs to be the major awareness for the Dwellers of the Urban Areas in order to enhance the Sustainability factors of the city.

#### **9.4 Unimpeded accessibility for every citizens of the society:**

Proper accessibility for all the Urban green Spaces becomes very crucial to cater all the above discussed proposals. The unimpeded accessibility for every citizens not just the accessibility between the different spaces, but it is the accessibility for all the various groups of the society like, elderly people, people with physical and mental impairments, women, children etc as recommended in SDG-2030, Goal no:11.7.

Upgrading the many different types of UGS and connecting them with the developed UGS like Landuse- Forest area, Natural woodlands, Farmlands, Grasslands, Recreational grounds, Agricultural lands, Cemeteries, Brown fields, University amenities, Institutional amenities, Tourism attractions, Leisure sports centres, Nala buffer greeneries, Brown fields, Amenity-Parking, Integrated green space along with the water bodies, etc to create a network by making it available for public usage is an ideal way of enhancing the accessibility.

#### **9.5 Public Participation an approach for the maintenance of UGS:**

The quality of any UGS can be measured in terms of maintenance of green and blue spaces and the pleasure of inhabitants on the possibility of playing a role in maintaining them within their own environments. However the decisions taken alone by the authorities have a disadvantage that citizens feel excluded from the planning till the management of UGS, consequently citizens do not feel responsible for the maintenance of their quality. By giving them the responsibility to participate in important decisions concerning the planning and

management of UGS it will be much easier to volunteer the quality of the same.

#### **10.0 Conclusion:**

The practice of UGS conservation planning has a lot of potential to nurture the natural, cultural and heritage landscapes of the city. It becomes very crucial as it functions in benefiting the quality of life upholding the essence of Mysuru. Therefore there is a lot of scope and consensus for enhancing the assessment and evaluating the UGS of urban community during planning to establish sustainability factors and create a network. Henceforth the ecological benefits in and around the city by protecting and maintaining the biodiversity works in mitigating the local issues and taking care as sustainable planning process.

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