OPEN SPACES ASSESSMENT IN URBAN AREAS

ABSTRACT-

Open spaces in urban areas such as urban parks are necessary as it provides green spaces to the residence and such spaces are considered as the lungs of the urban area. Urban parks are municipal parks, public parks and its common features are playground, garden, picnic facilities, restroom etc depending on resources. These spaces are the link between man and nature and ensures relief from the monotony of the urban life. Public spaces in urban areas is decreasing rapidly and negligible as the population is increasing and requires more resources for land settlements.

KEY WORDS- Urban Parks, Green Spaces, Public Spaces, Nature, Urban Life, Population, Resources,

1.0 INTRODUCTION-

Open space is the openly access space in a city which can be used by every individual in the society. It includes roads, parks, squares; temples, riverbanks and it also partially includes government buildings where people can get partial accesses. The term "landscape" is important and complex, and it has various definitions and uses across scientific fields. According to the literature on landscape, environmental science, urban studies, geography, and other fields all take various approaches to it. Some promote a holistic understanding of the environment, which is appealing on paper but challenging to put into practise. As a result, there are many topical methods that emphasise various elements or combinations of elements that contribute to the structure and functions of landscapes from a scientific perspective. According to the Council of Europe, a landscape is a feature of a geographical area (land) that changes over time as a result of both natural and human factors at work. As a result, it has human and natural components. According to Bruni, a landscape is "a combination of natural and societal assets." Landscape is presented to the senses of an intentional observer as a combination of all discernible characteristics within a geographic area. This makes it (landscape) a subjective issue that can only be described and not generalised or quantified in environmental psychology because it is a question of perceived experience.

The public open spaces are necessity for good landscape quality as well as quality life, but due to ongoing rapid urbanization throughout the world, the distance between urban dwellers and nature is increasing, thereby decreasing urban landscape quality. With such significant benefits to quality of life, public open spaces in urban areas over the world are facing problems, e.g. encroachment and the deteriorating public open spaces in quantity (area) and quality (scarcity). Processes of densification and urban sprawl have wiped out green cover, water bodies and several public open spaces at the cost of residential and commercial development.

1.1 OBJECTIVE -

- To ensure public open space provision in the county is sustainable and contributes to the wider planning and development vision for the county.

- To address any deficiencies in the provision of public open space across the county and to ensure that all communities have equal access to a range of formal and informal spaces for recreation sport and play.
- To establish standards for parks and open spaces that will help inform policy in terms of Quantity, Quality and Accessibility.
- To facilitate wider community involvement in the improvement and management of the county's parks and open space provision.
- To provide a clear rational for future financial investment in parks and open spaces, through the provision of a comprehensive evidence base.
- To improve the quality standards of parks and open spaces.

1.2 THE IMPORTANCE OF OPEN SPACES IN A CITY:

Environmental Benefits- It's been proven that trees improve air quality by adding oxygen and removing pollutants. In addition, green spaces with less pavement have a cooling effect, reducing city temperatures in the summer. Not only does this cool down humid summers, but saves energy costs to cool buildings. A 2013 study found that rooftops with grass and plants beats asphalt and gravel roofs as they help cool the building while providing a more aesthetically pleasing place for tenants to visit. Another environmental benefit to open space, particularly green space, is help with stormwater runoff. Unpaved ground absorbs water, aiding in water collection during storms and helping to prevent flooding.

Exercise- Open space such as parks, walking trails, playgrounds and fields are great areas for recreation. These spaces encourage people to walk and exercise by providing places for physical activities – whether organized or spontaneous. This is especially important for city residents who cannot afford gym memberships or exercise classes.

Mental Health- Exercise has great mental and physical health benefits. Open spaces also boost a sense of well being by providing calm places to stop and think without the city noise and hustle, bustle. This helps reduce stress by providing a respite from the city.

Community Benefits-Open spaces are areas for recreation, but they can also be social spaces for people to gather, meet, play, and talk. Open space can be used for cultural purposes, for social events or to engage in recreational activities with one another.

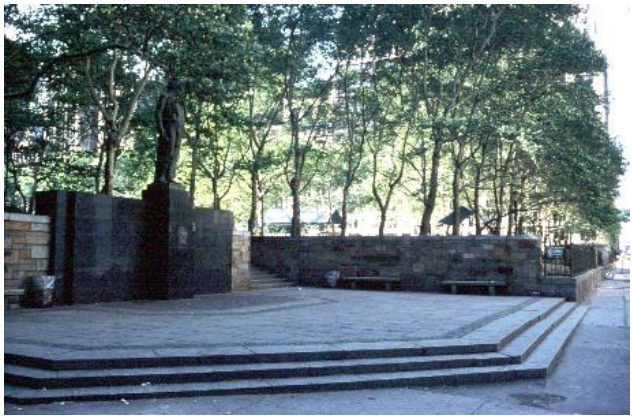
1.3 REASONS FOR FAILIURE OF OPEN SPACES:-

Lack Of Places To Sit - Many public spaces don't even provide a place or lack of seating areas. So, in their protracted quest just to be comfortable, people are often forced to adapt to the situation in their own way. A lack of *good* places to sit is an equally important issue. A choice of seats in sun or shade can make all the difference in a place's success, depending on its climate and location. Allowing people to sit near a playground or within view of other activities is also crucial.

Lack Of Gathering Points - This includes features people want or need, such as playgrounds, or places where varying elements--bus stop, vending cart, outdoor seating--combine to create a gathering point. Food is often a critical component of a successful gathering point.

Poor Entrances And Visually Inaccessible Spaces - If a space is to be used, people need to see it and they need to be able to get to it.

A dark or narrow entrance such as those that used to be at New York City's Bryant Park keeps people out instead of inviting them in. The same entrance, redesigned to be more inviting and open, has kiosks that sell coffee and sandwiches, and the interior of the park is visible from the street.



Dysfunctional Features- Oftentimes features are designed simply to punctuate the space, serving a use more visual than functional, instead of encouraging activity to occur around them - as at this waterfront park in Barcelona, below.

Good features, such as the friendly gorilla at the Berlin Zoo, encourage activity to occur around them.

Paths That Don't Go Where People Want To Go- Paths that lead to nowhere are useless, as demonstrated at this Phoenix, Arizona park. The Luxembourg Gardens in Paris, however, show the art of making a path that pulls people along it, or allows them to stop and relax.

1.4 IDENTIFICATION OF OPEN SPACES:-

The study uses four POS: Open land (without green), Open green patches (having short grasses), Parks and playgrounds and Vegetation cover (plantation and tree cover) as well as population density as the indicators to assess the landscape quality. Various types of open spaces like barren land, shrub land, urban forest, plantation, community parks, private gardens, religious grounds, etc., will been taken to assess the quality of landscape in Indian cities. The typologies of public open spaces, e.g. open green, playground, open space, parks, plantation, urban forests, etc., will be used as indicators of urban landscape quality along with other indicators from human, cultural and environmental parameters to develop the urban landscape quality index; therefore, we will select the indicators based on these studies. The land which is vacant with or without short boundary walls and waste land without any green cover has been classified as open space. The areas with short grasses and shrubs of any size and dimensions have been classified as open green. The public sitting spaces and gardens are classified as parks and playgrounds. The forested and plantation areas, trees along canals, streets and patches of green cover are classified as vegetation. The parks and playgrounds are the anthropogenic public space that reflects whether the area is planned or not. They offer physical activities like walking and leisure activities, while within residential areas they offer public sitting space.

1.5 CALCULATION OF PER CAPITA POS

The demographic data obtained were used to find out the ward-wise population distribution and density. Choropleth method is used to plot population density using Arc Map 9.3, and the extracted features of urban landscape quality were thus overlaid to assess the relationships between population density and per capita POS. The ward-wise per capita availability (percentages) of POS has been calculated by using formula

$$\text{Per Capita POS (sq. m)} = \frac{\text{Total POS in a Ward}}{\text{Total Population of a Ward}}$$

CALCULATION OF LANDSCAPE QUALITY INDEX

To calculate the landscape quality index firstly, the per capita availability of each indicator of urban landscape quality taken in this study, i.e. open space, open green, vegetation, etc., was calculated separately. Then, the Z score of each indicator was calculated by using formula

$$Z_{ij} = \frac{x_{ij} - \mu_{ij}}{\sigma_j}$$

where i, j are the unit of observation and number of indicators, x—per capita score of one indicator of a ward, μ—mean score of that indicator of all wards, and σ—standard deviation of that indicator of all wards.

2.0 LACK OF OPEN SPACES IN MUMBAI:-

Mumbai, India's financial capital, is spread over 604 square kilometres and, according to the 2011 census, is home a population of 12 million. Having sufficient accessible green open spaces is a crucial ingredient to create "sustainable cities and communities," as per the UN's Sustainable Development Goals. Mumbai has an abysmal 1.24 square metres of accessible open space per person, ahead only of Chennai, which stands at 0.81 square metres per capita. In comparison, Delhi has 21.52 square metres and Bangalore has 17.32 square metres of open space per capita. Other global megacities fare better than Mumbai as well; London has 31.68 square metres, New York City has 26.4 square metres and Tokyo has 3.96 square metres of open space per capita.

The 2014-34 development plan for Mumbai, drafted by the Brihanmumbai Municipal Corporation (BMC), bumped up the percentage of open space in the city from 26 percent in 2012 to 46 percent in 2016 by changing the definition of open space. The new plan includes open spaces in the revised definition of 'environmental' areas, and views it as areas under coastal regulation zones I (ecologically sensitive areas like mangroves, coral reefs and biosphere reserves) and III (relatively undisturbed areas, and rural and urban areas that are not substantially developed); beaches; areas under nullahs, creeks and rivers; and areas formed because of sedimentation in the city's creek regions. This revision has put Mumbai at par with Singapore and Sydney, Australia, in terms of percentage of open space . However, most of the newly-added environmental spaces are inaccessible to the people and thus should not qualify as open spaces.

While there is no defined international benchmark for how much space should be accessible per capita, global organisations have offered some guidelines. The World Health Organization (WHO) has set a minimum limit of nine square metres of open space per capita in urban areas, the UN has pegged this figure at 30 square metres, and the EU considers 26 square metres of open space per capita as acceptable. In India, planning agencies follow the URDPFI guidelines, which suggests that 10-12 square metres per person are desirable.

In all, Mumbai has 15.37 square kilometre of accessible open space, providing free and fair entry to all citizens. However, many gardens, playgrounds and recreation grounds that are part of this open space are ill-maintained and have broken infrastructure. The inaccessible spaces, such as those occupied by private gymkhanas and closed playgrounds owned by private entities, add about 128.41 square kilometres of open space for the city.

Although Mumbai's total geographical area is 458.28 square kilometres, the BMC's 2014-34 development plan covers only 415.05 square kilometres. The rest falls under the state's special purpose authorities such as the Mumbai Metropolitan Regional Development Authority (MMRDA), and under state and central agencies such as the district collectorates, Maharashtra Industrial Development Corporation (MIDC), Mumbai Port Trust, Airports Authority of India and the Indian Railways. The BMC's current land use shows that open spaces form 3.7 percent of the total area of the city. The current development plan aims to achieve an open space standard of four square metres per capita for the entire city.

2.1 Evolution of policies governing Mumbai's open spaces

Fig 2. Total provision made for the gardens department from 2018 to 2020 (Compiled by ORF from BMC budgets)

Year	Provision for Gardens department (in cr.)	Total MCGM budget (in cr.)	% of total budget
2020-21	227	33441	0.7
2019-20	277	30693	0.9
2018-19	244	27258	0.9

2.2 The Brihanmumbai Municipal Act:-

The BMC is responsible for the civic administration of and providing infrastructure and amenities in Mumbai. The BMC Act, which details the rules for the city, does not consider the maintenance of open spaces as a mandatory duty but mentions it as one of the civic body's several discretionary duties. Since the Act doesn't specify how open spaces should be treated, the BMC has adopted a casual attitude towards their upkeep, which in turn has impacted budgetary allocations. In 2017-18, the BMC allocated only 23 1.3 percent of its total budget towards the maintenance of open spaces, cutting it to 0.7 percent in the 2020-21 budget (see Figure 2). th The state

government could step in, under the provisions of the 74 Amendment, to encourage the BMC to make the maintenance of open spaces a mandatory duty. An attempt on this front was made in 2016 when a legislator introduced a private member bill, but the state 24 government quashed it for political reasons.

3.0 METHODOLOGY:

The following research takes a comparative and investigative approach of rapidly declining of open spaces and what are the effects of it. And to explore how and why people use designed public spaces and to explore what is the role of public spaces in the formation of social interaction platform.

There are several ways to conduct research methodology: -

1. Literature Review: Through numerous literature evaluations, the initial step in this research is to look at lost open places and how they relate to society.
2. Survey can also be performed in order to gather data on people's perceptions and experiences.
3. Interviews and focus groups consist of talking to subjects face-to-face about loss or lack of open spaces.
4. Observing people interacting with your experimental open space's elements.
5. Case Study: Before developing a sustainable development strategy, it is important to identify the many types of lost open spaces in urban areas, as well as their current condition, any remedies that have already been attempted or are being proposed, and the reasons for their success or failure.
6. Analyse the the parameters are identified and will be analysed on the basis of qualitative aspects if there are any positives/negatives for the society. If it's benefiting the society and its structure or it creates yet another problem for it.
7. Continuously evaluating the research methodology, and making adjustments as needed to improve the effectiveness of the research so the design does not create any other problem.

4.0 CITATION

Formulating open-space policies for India's cities

https://www.orfonline.org/research/formulating-open-space-policies-for-indias-cities-the-case-of-mumbai-65007/

Assessing The Quality Of Green Open Spaces: A Review

https://www.researchgate.net/publication/236941777_Assessing_the_Quality_of_Green_Open_Spaces_A_review

Public Open Space, Physical Activity, Urban Design And Public Health

https://www.researchgate.net/publication/272508646_Public_open_space_physical_activity_urban_design_and_public_health_Concepts_methods_and_research_agenda

RESEARCH PAPER NAMES:-

- ASSESSING THE QUALITY OF GREEN OPEN SPACES: A REVIEW
- URBANISATION AND GREENING OF INDIAN CITIES: PROBLEMS, PRACTICES, AND POLICIES
- ASSESSING THE QUALITY OF GREEN OPEN SPACES
- PUBLIC OPEN SPACE, PHYSICAL ACTIVITY, URBAN DESIGN AND PUBLIC HEALTH
- THE INCREMENTAL DEMISE OF URBAN GREEN SPACES
- ASSESSMENT OF PUBLIC OPEN SPACES (POS) AND LANDSCAPE QUALITY BASED ON PER CAPITA POS INDEX IN DELHI, INDIA
- ASSESSMENT OF URBAN GREEN OPEN SPACES OF MICRO- AND MESO-LEVEL ZONES, BASED ON THE GROWTH PATTERN: CASE OF PATNA CITY
- QUANTITATIVE AND QUALITATIVE ASSESSMENT OF URBAN GREEN SPACES IN BOUSSAADA CITY, ALGERIA USING REMOTE SENSING TECHNIQUES
- ASSESSMENT OF PUBLIC OPEN SPACES (POS) AND LANDSCAPE QUALITY BASED ON PER CAPITA POS INDEX IN DELHI, INDIA