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Managing the under-utilized public open spaces in a neighborhood of TIER-II cities, India

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ABSTRACT

In recent years, utilization of the under-utilized spaces has been seen with increased concentration by urban planners as it is resulting in wastage of a valuable resource, land. Studying under-utilized spaces in a city is complex as it involves dealing with multiple spaces having varied issues associated with it. The paper intends to derive a framework to study these spaces in different Indian cities and identify issues for its under-utilization. The framework is reinforced by the study of neighborhoods in four tier-II cities in India keeping population density and land use as an identical aspect in all the neighborhoods. With ideal solutions to mitigate the issues affecting the community in the vicinity, these spaces can be used to optimum level. This paper is intended to identify the similarities between the issues related to these spaces in different cities and group the issues in domains of administration, maintenance, design or planning due to various reasons for its formation and as per the planning instruments. The paper also aims to come up with ideal generic design approach for issues in design domain and frame guidelines for it to be implemented for benefits to the community in terms of safety, health and economy.

Keywords— *Under-utilized spaces, Neighborhood, Tier – II cities, Community, Public open spaces*

1. INTRODUCTION

One of the studies accurately defines under-utilized urban space as, "*A three-dimensional physical space that is part of a city, which may or may not have a functional use, is being used less than its projected full potential"* (Ukil, 2017). Places which can be put up for more efficient use by the community which is in need of it is an issue discussed among planners, urban designers related to the enhanced use of the under-utilized spaces. Under-utilized spaces relate to urban voids, interstitial spaces, spaces leftover after planning (SLOAPs), abandoned lands, which are the spaces having the potential for economic, social as well as environmental purpose. The usage of these spaces is not one of the key objectives of planning, so it is not clearly specified in the policy level. Every modern city has vacant, abandoned lands owned by public authorities in different zones. This statistic facilitates the scope for study as the necessary interventions can be initiated by the authorities themselves and the research can be put to use on a practical scale. Under-utilized spaces are abandoned water-fronts, abandoned waste disposal areas or public landholdings with no or negligible use of the spaces which are never redeveloped for several reasons. These spaces have become lost, negative, disconnected contributing to a lack of perceivable edges or form in an urban environment (Trancik, 1986). The study is aiming to identify a link between the issues related to these spaces in different cities and after analyzing them collaborating into one guideline or policy at the generic level. To formulate generic guidelines and to implement them at administrative level, an operational definition for the term neighborhood has been coined in this research which is stated as, *"An area having electoral ward boundary as the administration boundary with population density limits of 25000 – 30000 people per sq.km. of a tier II city in India with residential land use".* The reason for selection of city as Tier-II city is done as it accounts for the highest 40% share of the urban population which resides in Tier-II city and government is aiming on developing Tier II cities to lessen the stress on infrastructure of population in Tier-I city(32% population) (Chauhan, May 2017). The selection of the density limits is decided as the intermediate range of population which can be witnessed in Tier-II cities in India. The research also aims to establish a relationship between the under-utilized spaces and community which act as a unit of analysis and dependent variable respectively while health, safety, and economy as independent variables. The community is a crucial entity to study these spaces as they are the sole users and form a major stakeholder in these spaces. The effects of these spaces on the community are judged in terms of health, safety and economy and the ideal theory approach are undertaken of the place making theory as it is the best alternative to determine the perception of a place for its users.

2. LITERATURE

In broad terms, under-utilized spaces have also been meant as, "*Spaces which are undesirable urban areas that are in need of a redesign and are making no positive contribution to the surroundings or users*" (Trancik, 1986). A wide variety of terms have been used for these spaces from which one of the more explicit ones can be under-utilized spaces. Public land has a major role in

guiding urban developments. Urban developments can be controlled by the market mechanisms or with the existence of public land stock. It can be used to orient urban development for the interest of the public with adequate legal and administrative measures. Another important role of public land is by creating healthy urban spaces by obtaining a proper relationship between population density and public use open spaces which requires extensive land. Finally, the common use of urban spaces can be provided by public lands thus decreasing the social tension between classes of society, in turn, providing social support (Cirik, March 2005). In the Indian context, the Re-Imagine Public Spaces program has been conceptualized by SD Corporations to transform public spaces into vibrant, active and safe spaces, under which they are remaking Mumbai's public spaces through the background of transforming under-utilized open spaces into vibrant public spaces (Thacker). The causes which lead to the formation of these spaces is a result of different inter-relating factors as per different authors which is combined together and explored as political reasons (Arunita, July 25, 2002), within urban design context (Trancik, 1986) or economic, locational and physical obsolescence (Cirik, March 2005). The political explanation gives an idea about inefficient decision making, poor land management, poor coordination between planning and investments etc. while as defined by Trancik in 1986 there are five major factors that led to formation of these spaces like use of automobiles which led to construction of highways, flyovers, and the resulting spillover spaces, privatization of public spaces, parking lots, changing land use which can be held true in case of the studied cities. Various other terminologies which can be related to these spaces are *"Temporarily Obsolete Abandoned Derelict Sites* (TOADS) (Greenberg, May 2000), *Urban Voids* (Armstrong, May 2006) or *Dead Zones* (Doron, July 2010)". These spaces have been intervened with different approaches like in Covington, USA undertaken by Hub + Weber Architects, which has resulted in lowering of the crime rates, economic development of the area and better health conditions (PLC, 2016). Another successful project in Baltimore, USA, a government initiative termed as *"Power in Dirt",* deals with adopting community to vacant lots by revitalizing the lots. (Power in Dirt, n.d.). The Alley Network Project (Square, n.d.) has also been a wide success in Seattle done by the collaboration of Copenhagen based Gehl Architects and International Sustainability Institute. The organization project for public spaces has framed certain guidelines to approach public spaces to understand the users' perception. The approach of placemaking theory as per the guidelines are given by project for public spaces (Spaces, n.d.) is followed in various studies for academics as well for the study of these under-utilized spaces or voids. Various approaches have been considered for a rethinking of these spaces. The approach being undertaken to deal with these spaces varies as in relation to people's lifestyles, or as healthy places (Ubuntu Green, 2013). Some authors have also given a way of sustainable urban design approach towards voids at residential neighborhood scale like (Lee) who has divided voids into the plot, block and community level. In the Indian context, urban voids have been defined as *"unutilized, under-utilized or abandoned land due to defunct uses."* (Ar. Neelam Kushwah, 2017). These voids are also being looked as for with relation to capitalism or shared spaces in some web blogs as well. One of the Ph.D. dissertation proposal stated as, "*The Development of a Public Land Management Policy for Under-utilized Space in Bangkok, Thailand*" (Arunita, July 25, 2002) mentions the identification for convertible land done by MIT Consultants Team for the development of Bangkok wherein the potential land has been categorized into types like *disused housing/ factories, waste disposal areas, land in abandoned areas, land formed under canals, land along roads* etc. The paper throws some light on the shortage of adequate information on the policy for these spaces and the role of institution and supports as a need for implementation as a policy and the vital role of institutional bodies to carry out the potential utilization of these spaces.

Despite being so many terminologies and approaches, as lack of planning guideline and policy for implementation is critical, urban voids are overlooked and yet depicted as negative from realms of planning and urban theory (Joanne Hudson, July 2009). One of the gaps identified is all the studies are site context related and none of them can be applied elsewhere which results in lack of generic guidelines or to implement as a policy for these spaces in different regions. To propose generic guidelines, there was a need to keep a parameter of similarity between different areas of intervention wherein operational definition of the neighborhood has been framed and the similar parameter identified is the density of population and land use of the area. The paper thus attempts if a link between identical under-utilized spaces can be found regarding the issues and ideal generic solutions can be proposed for optimum land utilization.

3. AIM

To enhance the utilization of the under-utilized public open spaces for health, safety and economic benefits to the community in the neighborhood of Tier-II city in India.

4. OBJECTIVES

- Parameters to identify under-utilized spaces
- Identifying indicators to study the effect on the community
- Assessing the effect of under-utilized spaces on community
- To develop a framework to identify the domain of issue based on the effect
- To propose an ideal approach for spaces with issues related to the design domain

5. RESEARCH QUESTION

What can negative effects of under-utilized spaces on the community be mitigated to benefit the community?

6. METHODOLOGY

- Conceptual idea of the topic from vegetable market space not used to its full potential to under-utilized spaces in the city. Literature study on under-utilized spaces.
- Identification of parameters to assess the under-utilized spaces in a city.
- Narrowing down to neighborhood level study. Selection of tier of city and population density limit of the electoral ward to frame and implement generic guidelines.

- Identify four cases of such tier II cities (5% of 88 tier II cities in India) (Aurangabad, Bhiwandi - Nizampur, Kolhapur, Sangli) (Finance, 2015) with specified density limits and similar land-use for study.
- With multiple wards, a ward which is one of the oldest and well connected and located at the city center or as the major commercial hub of the city preferred.
- Identify the under-utilized spaces in the neighborhood by overlaying land use plan and google earth image and compare the similarities with the cases for various issues.
- Select a site for demonstration and identify the under-utilized spaces.
- Conduct surveys and identify reasons for space wastage.
- Propose an ideal approach for these spaces after analyzing the cases, literature.

Fig. 1: Methodology

7. DATA COLLECTION

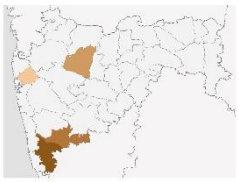
The number of Tier-II cities in the state of Maharashtra is highest which accounts to 11, with one of the highest states of the rate of urbanization and the contribution to national GDP being highest as per 2011, (Kapoor, 2012) the cities selected are from the state of Maharashtra for study. The land parcels identified as under-utilized spaces as per the categorization is done by MIT Consultants show resemblance to each other in the four studied cities. The categorization of spaces identified in the cities by linking with each other and with MIT Consultants categorization is done as follows:

- *Land along canals* – Land along Nala - (Aurangabad, Kolhapur)
- *Land along roads* – Beneath Flyover - (Bhiwandi-Nizampur, Kolhapur)
- *Abandoned Lands* - Vacant lands - (Kolhapur, Sangli)

Spaces designated as public open spaces are also considered to check if any negative effect. These spaces included *residential neighborhood park* in Aurangabad, Kolhapur, Sangli, and *Public Park* in Bhiwandi-Nizampur, Kolhapur, Sangli. Context-specific spaces which were relevant to studies for under-utilized spaces as per the literature are also studied like *alleys* in Kolhapur and *spaces used for exhibitions* in Bhiwandi and Aurangabad.

Maharashtra

Fig. 1: Location of Maharashtra in India



Kolhapur, Sangli, Aurangabad, Bhiwandi (Thane)

Fig. 2: Location of four districts in Maharashtra

(Source: Author)

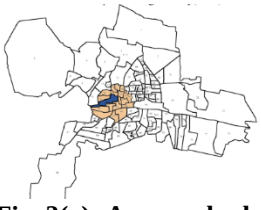


Fig. 3(a): Aurangabad– Ward No. 33, 61

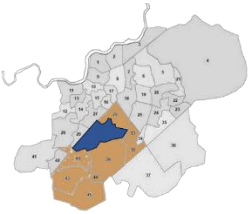


Fig. 3. (b) Bhiwandi– Ward No. 30,31, 32

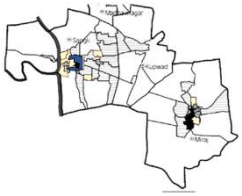


Fig. 3 (c): Sangli– Ward No. 50,64,65,68

Fig. 3. (d) Kolhapur – Ward No. 24,40,41,42

8. SURVEY TECHNIQUE AND OBSERVATIONS

To assess the effect on the community of the under-utilized spaces, aspects of place-game, and questionnaire of under-utilized spaces for Bangkok was clubbed together which can be related to the Indian context and a series of closed-ended questions along with open-ended questions were asked in the survey. The survey was conducted on each location of under-utilized space in each of the 4 cities wherein as per recommended by Creswell and Hancock (Hancock, 2009) with the sample size of 20-30 for the type of survey to be conducted which falls under qualitative survey and the type of sampling recommended by Morse with theoretical or purposeful sampling (Gutterman, May 2015)with phenomenological approach for data analysis as it would give accurate and appropriate data was undertaken with some cases of snowball sampling as well to have furthermore accuracy in the survey. (Stephen J. Gentles, 2015) After the survey, optimization run tests are to be conducted on each location to mitigate the ill-effects in terms of health, safety, and economy on community and to find the ideal design solution in which these effects can be mitigated. The similar types of under-utilized spaces in all 4 cities showed similar issues of concern from the survey wherein we can formulate generic guidelines up to certain level wherein the issues can be addressed through generic guidelines. The closed-ended questions in the survey had a rating scale from 1 to 5 wherein the spaces are linked with similar spaces in another city on the basis of opinions of similar opinions regarding the same question in different cities for the same type of under-utilized space. Each space was surveyed with a sampling size of 20 in the way mentioned previously. The questions included like:

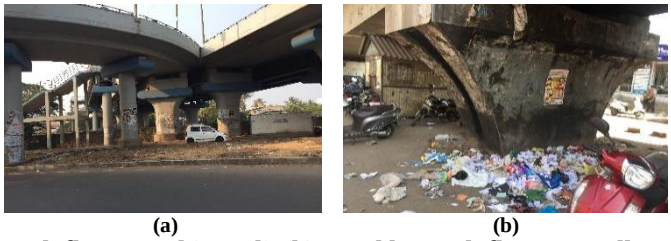
- The place is attractive – Health
- The Place had the potential for crimes – Safety
- No Maintenance of the place – Health
- Presence of seniors, ladies – Safety
- The place is comfortable to walk – Safety and Health
- Comfortable places to sit – Safety
- Frequent Community Events on the place – Economy

After a survey being carried out at each space, the issues related to space were grouped into specific domains to identify the potential scope for intervention related to space. The different typologies of under-utilized spaces in different cities show different domains of issues associated with the under-utilization of the spaces and affecting the community in a negative way. However, similar typology of spaces even in different cities showed similar domains of the issue concerned with space which proves the need for proposing generic guidelines and guidelines can in turn benefit community in a better way in terms of health, safety, and economy. The domains identified for intervention are *design, planning, administrative and management* based on the planning instruments and reasons for the formation of the under-utilized spaces. The survey carried out also gives a conceptual idea about the need and aspirations of the community from that space which would be beneficial in proposing guidelines. For design demonstration, the city of Kolhapur is selected on the basis of maximum 6 typologies of under-utilized spaces wherein the design detailing of Alleys is considered as there are 14-15 number of such spaces repeated on site having similar impact and considerable amount of wastage of land and the design learnings from Seattle Alley network (Square, n.d.) or some concept of design intervention which is executed in foreign countries can be put up to use for community in Kolhapur with some influence of Indian context essential.

(a) **(b)**

Fig. 4: (a) Land along Nala– Aurangabad, (b) Land along Nala - Kolhapur *(Source: Author)*

Space is used as a playground in two cities and due to the polluted water passing nearby, the place is turning a center for anti-social activities as well as affecting the health of users nearby. This is considered as a *design and management* issue as there is no dedicated designed space as a stadium or there is no maintenance of the place on observation.



(a) **(b)**

Fig. 5: (a) Land beneath flyover- Bhiwandi, (b) Land beneath flyover- Kolhapur *(Source: Author)*

Space is used to celebrate festivals in both the cities surveyed and similar inferences can be put up of women safety, risks at night. Issues pertaining to the spaces are regarding the *management and design* of the space as there is no dedicated function below the Flyover and no maintenance is done on observation.

(a) (b)

Fig. 6 (a): Vacant land– Kolhapur, (b) Vacant land– Sangli *(Source: Author)*

Due to the land without any use or any designated function, issues affecting health came up due to the disposal of garbage in such places and breeding of insects. This can be categorized into *design* and *administrative* issue as no designed function from the space due to the inefficient decision making of authorities on observation.

(a) (b) (c)

Fig. 7 (a): Neighborhood park– Aurangabad, (b) Neighborhood park– Kolhapur, (c) Neighborhood park– Sangli *(Source: Author)*

With more than 63% of people in the survey agreeing to the point of lack of maintenance of these spaces in three cities, these spaces are proving a major threat to the health of community living in the vicinity. Equal suggestions for a facility relating to youth is the need for community in this space to be more beneficial. This is purely a *management and design* issue due to lack of maintenance and lack of dedicated space for cultural events and youth facilities on observation.

(a) (b) (c)

Fig. 8: (a) Public Park– Bhiwandi- Nizampur, (b) Public Park– Kolhapur, (c) Public Park– Sangli *(Source: Author)*

65% of people in the survey discussed the lack of maintenance of these spaces in two cities but still, majority finding it comfortable and safe to walk gives the need to protect the health of a community before any major threat. This is purely a *management* issue just due to lack of maintenance and cleanliness on observation.

(a) (b)

Fig. 9: (a) Exhibition Space- Aurangabad, (b) Exhibition Space– Bhiwandi *(Source: Author)*

Land as a resource is being used on the occasions of exhibitions or events while for the remaining period it acts as a vacant land with no dedicated function assigned to the place which makes a *design and administrative* issue as observed.

(a) (b) (c)

Fig. 10: (a) (b) (c) Alleys in Kolhapur *(Source: Author)*

The spaces are linear narrow lanes with no lighting have a suspicious atmosphere giving rise to anti-social activities and are not at all maintained for cleanliness. A *design and management* issue can be considered for these spaces on observation due to the inefficient decision making of authority to come up with some design proposal to activate alleys.

9. DATA ANALYSIS

The same typology of under-utilized spaces in different cities had a similar negative effect associated with it. The severity of the negative effect of the spaces is analyzed on the indicators of safety, health and economy on the basis of observations and surveys carried out for the questionnaire. The matrix puts forth the severity of the effect of the typology of space.

●●●: High Severity ●●: Moderate Severity ●: Low Severity

Table 1: Severity of the negative effect related to space *(Source: Author)*

Indicator	**Safety**		**Health**			**Economy**	
Negative effect/ under-utilized space	Anti-social activity	Safety from vehicles	Waste disposal	Breeding of insects due to waterlogging	Presence of stray dogs, pigs	Dedicated function/ program to space	Modifications/ development of the program
Land along Nala	●●●	●	●●●	●●●	●●●	Nil	Not Applicable

Indicator	**Safety**		**Health**			**Economy**	
Negative effect/ under-utilized space	Anti-social activity	Safety from vehicles	Waste disposal	Breeding of insects due to waterlogging	Presence of stray dogs, pigs	Dedicated function/ program to space	Modifications/ development of the program
Space beneath Flyover	●●●	●●●	●●	●	●●	Nil	Not Applicable
Temporary Exhibition Space	●●		●●		●	Temporary	Not Done
Vacant Land		●	●●●	●●●	●●●	Nil	Not Applicable
Neighborhood Park		●●	●●	●●	●	Yes	Not Done
Public Park		●			●	Yes	Not Done
Alleys	●●●	●●●	●●●	●●●	●●	Nil	Not Applicable

The major negative effects relating to safety are anti-social activities/ crime and safety from vehicles can be analyzed due to causes of absence of lighting and no traffic calming measures where both the causes are of *design* domain. For health, waste disposal, breeding of insects due to water logging and presence of stray dogs, pigs can be the negative effects caused due to lack of maintenance of the space which relates to *management* domain. Absence of any function to the space and lack of development or modifications in the assigned program to the space if any are the negative effects from economy point of view where the major cause is lack of decision to assign a function/ program and in turn acts to the space can be seen as an issue of *design, administration and management* domain which is the most significant of all. This is because of the causes of the negative effect of the space can be mitigated by just assigning a dedicated function to the space which will nullify the causes of other negative effects like absence of lighting and it will give sense of ownership of the place to the people who are carrying out the activity in the space where they will take care of the maintenance of the space, once the basic infrastructure is provided by the management. The proposed solution or guideline should have maximum involvement of the community as they are the major stakeholders and users of these spaces.

10. CONCLUSION

The need for the study of identifying the potential utilization of land as a resource to avoid wastage in different Tier-II cities in India by keeping some parameters constant to have similarity for ideal comparison gave us similar typologies of under-utilized spaces in different cities. The issues related to the spaces for their under-utilization and its effects to the community can also be linked in different cities, which gives more boost for implementation of generic guidelines for the identified typologies of spaces. The absence of lighting, lack of presence of people are some of the major reasons for these negative effects which can be due to a major cause of the absence of any dedicated activity to space which can be tackled through *design issue* as one having highest weight among all the issues as another type of issues give temporary solutions. Proposal of activity with provision of lighting supported by the neighboring built use and as per the aspiration of the community which will encourage footfall and give sense of ownership of the place to the people engaged in the activity will also take care of the maintenance and cleanliness would help to optimize the use of the space to its potential. Furthermore, the ideal identified approach which can consider these parameters and followed for utilizing similar spaces like alleys is that of *tactical urbanism* (Collaborative, 2016)which has been resulted into economic development of area, benefits to health of community and one of the prime factor for this approach which is very much relevant to the study, is safety. Applications of these strategies have proven successful in the Indian context as well in case of Mumbai, for example (Biswas, 2013). The sub-parameters of proposals of lighting, activities like street vendors, games, yoga, a street painting which is supported by the neighboring built use of the alleys and covering of drains and maintenance of alleys results into positive effects on the community and in turn benefit in terms of major indicators of safety, economy, and health respectively.

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