



Friendly City, Friendly Urban Space Public Open Space Integration to Urban Settlement

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ABSTRACT

One of the features of a friendly city is the existence of public open spaces. Cities in Indonesia, particularly North Sumatra Province, do not have many good quality public open spaces on a residential scale. This paper aims to explore the criteria and strategies for planning and designing public open spaces that are integrated with the residential environment. This paper consists of three parts. The first part will review the results of research on public open spaces that the author has done in the period 2012 to 2022. The second part describes problems related to public open spaces and settlements, especially in urban areas, with special note on post-pandemic conditions. The final section contains the author's ideas regarding the integration of public open space in settlements, especially in cities in developing countries such as Indonesia. The ideas proposed in this writing would be the basic for implementing a more responsive public open space in a city that lack of urban design tradition.

Keywords: friendly city, public open space



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1. Introduction

Public Open Space and Quality of Life

In the early 1980s, Chattanooga in Tennessee, was the most neglected city. The city collapsed economically as 18,000 people lost their jobs due to the closure and relocation of factories. Meanwhile, pollutants also fill the city air, requiring vehicle users to turn on the lights during the day. As the quality of the urban environment deteriorated, the middle class began to leave the city, causing the city to lose a potential tax source for development. In this situation, the Government, the private sector and community groups together take steps to improve the quality of life by cleaning the city air, building public open spaces, developing city parks and green lanes. Some of the projects executed include: open spaces and parks built around the commercial district, non-functioning warehouses being converted into a 75-mile network of greenways, former bridges for vehicles being turned into pedestrian paths, leading to an even more vibrant economy in both river side [1].

The revival of Chattanooga illustrates the important role of open spaces for restoration, improvement and maintenance of quality of life. The existence of many green public spaces significantly attracts people to come and live, including business people and capital owners, so that economic activity moves up. Business people are no longer bound to be 'localized' in a conventional industrial center. Instead, they are free to choose attractive locations, which clearly show the community's preference for a high quality of life, which is characterized by the presence of public open spaces, proximity to recreational facilities, and a pedestrian-friendly residential environment [1]. This situation is the reason for the increase in employment by up to 57%. Leading high-tech industry brands, such as Hewlett Packard, Intel, and Hyundai, are among those attracted by the forests, orchards and valleys surrounding the city. The New York Times described the situation as “the interest of an educated workforce in the quality of life as a 'decent pay' [2].

Other cities, both in Indonesia and abroad, have shown an improvement in the quality of life of their citizens as public open spaces improve. Improving the quality and quantity of open space in the city of Curitiba, Brazil, including the increasing number of pedestrian paths in the city center significantly improves the quality of life of the city's residents. The same thing can also be seen in the cities of Surabaya, Bandung and Jakarta, which make the development of public open spaces a priority effort in increasing the happiness index of citizens.

Many other studies have proven that public open spaces make an important contribution to the quality of life [3] [4][5][6]. Physical and social activities that many people do have a positive effect on physical and spiritual health [7][8], as well as a recreational atmosphere by elements of plants, water and beautiful spatial planning, giving an impact on increasing the atmosphere of relaxation which has a relaxing and healing effect [9][10]. In addition, public open space provides opportunities for the economic development of the residents, including the increase in property values around the field and city parks, as Chattanooga's experience [1] and the other places [11]. Research conducted in the city of Medan, North Sumatra, shows the significant effect of public open space on the quality of life of city residents, especially in terms of perceptions of health, recreation and the quality of the urban environment, even though the design is not optimal (Figure 1) [12].

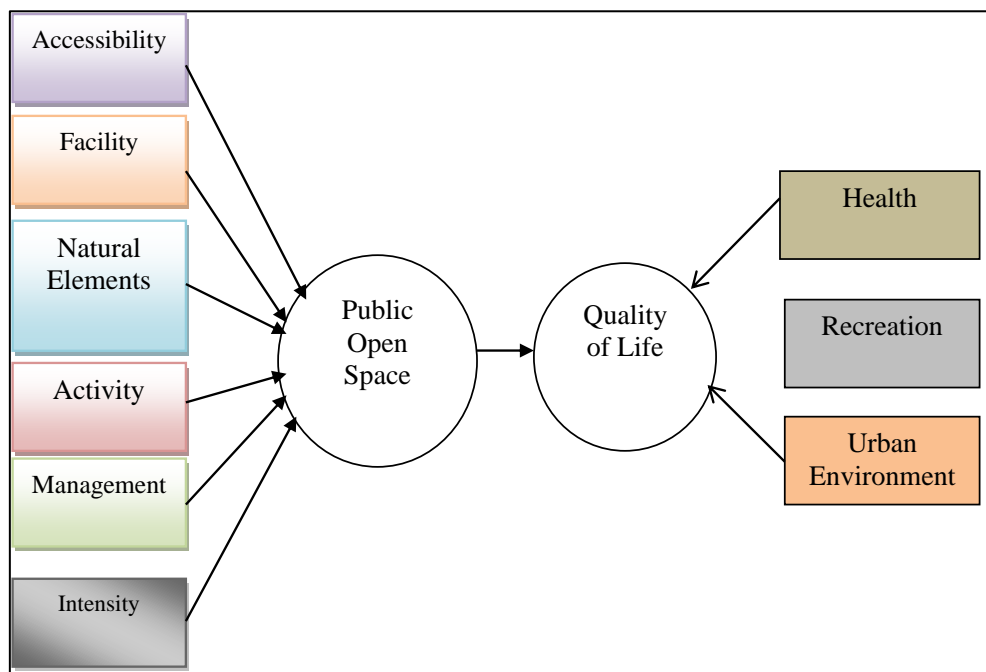


Figure 1 The effects of public open space to quality of life [12]

Public Open Spaces Issues: A Note From Sumatra Utara

As many cities in the world, several studies conducted by the author on public open spaces in North Sumatra, one of the largest provinces with the largest population outside Java, show the important contribution of public

open spaces to people's quality of life. Many other studies conducted by individuals and study institutions. Especially in developed countries, the studies recommend a number of criteria that are used as benchmarks in assessing the success of a public open space. One of the criteria that is often used is what is offered by Project for Public Spaces, a study institution that studies many public open space projects in various cities in the world. According to this institution, several aspects that make a public space successful include: sociability, uses and activities, comfort and images, access and linkages. Each factor has several indicators that show how it works as a successful public open space [13].

Research that has been conducted by the author from 2011 to d. 2021 provides some special notes about the characteristics of public open spaces in cities of North Sumatra, Indonesia, which have several differences compared to what was stated by PPS, although there are also some similar features. The cities in this study consist of: Medan, Batubara, Binjai, Brastagi, Kisaran, Lubuk Pakam, Pandan, Pematang Siantar, Sipirok, Stabat, Tarutung, Sibolga, Rampah. The city of Medan, as the third largest city in Indonesia with a population of more than 2.5 people, is the object of study with a wider range of types, ranging from public open spaces in urban villages, to gated community complexes, and several public open spaces in the city center with a scale extensive service. Meanwhile, observations carried out in other cities are generally urban-scale squares and parks [14].

There are 2 types of public open spaces studied in the city of Medan, namely the urban service scale and the neighborhood service scale. All of these urban-scale public spaces generally have complete facilities, including picnic/park facilities, children's play areas, jogging tracks and or pedestrian paths, multipurpose fields for various functions (sports, children's and youth games, official government ceremonies, trade fairs). and small and medium-sized industries, party rallies, religious ceremonies, to performing arts). However, the design quality is not good enough, nor the management. By this condition, users' satisfaction show score more than 3, lower than 4 in 5 points Likert Scale. It means that people are not satisfied enough. Among several aspects, the accessibility is the lowest score of users' satisfaction. The other appearances of these urban scale public open spaces are as follows: the visitors are mostly low to middle income people; the community uses POS intensively in term of duration, frequency, various visitors social background, and there are also various activities [12][15][16].

Public open space at neighborhood scale in Medan show some features as follows: the quality is much lower than the urban scale POS; the users' satisfaction lower than 3, means that they are unsatisfied; the uses is more intensive than the urban scale POS. In Rahmadsyah square, an urban village in east Medan, there are no many features, nor management. The squares are not well maintained and no some aesthetic benches or fountain. Nevertheless, community uses it intensively. Even under a heavy rain, kids play football happily. At the other part there are other kids sit and talks, or a group of mothers gather. It is an active public open space without a serious designed facility [15][16].

Still at neighborhood scale, the author studied two biggest gated communities in Medan, namely Taman Setia Budi Indah and Cemara Asri. We found that the most users are people outside gated community, as if the residents said: 'no, it is not ours, we don't use it intensively'; The fact shows it is Gated for housing units cluster, but the open spaces are open to public. Everybody can come and enjoy the environment. Walking, watching bangau birds, fishing, or shopping at street vendors' stalls. The quality of the public open spaces is varied, depend on the management. But Cemara Asri offers many features compare to Taman Setia Budi. There are many visitors come the open spaces, but the uses intensity is lower than the urban/neighborhood scale POS [12][15][16].

From the Study of Sumatra Utara, the author observed and analyze the quality and the public life in twelve small towns public open spaces in Sumatera Utara province, namely: Batubara, Binjai, Brastagi, Kisaran, Lubuk Pakam, Pandan, Pematang Siantar, Sipirok, Stabat, Tarutung, Sibolga, Rampah. The facts show that the average design quality is low, many facilities are not well maintained, some of them are not equipped with facilities; the uses intensity is higher than urban scale POS of Medan, many citizens come and execute many

activities until night; people generally satisfied with function and activities of POS, even for the poorest quality POS without adequate facilities [17].

The latest research was carried out at September 2021, when the city suffered of covid 19 outbreak. The author observed four urban scale public open spaces in Medan during pandemic, when government applied Limited Community Activity (Pemberlakuan Pembatasan Kegiatan Masyarakat - PPKM) level 4. Through this regulation the public facilities, including public open spaces, should be closed or at least open with limited access to public. At the urban centre, Lapangan Merdeka, city government applied more restricted limited access. In the early morning until 10 o'clock there were many visitors, but after that the place was empty. The contrast situation was found in Teladan Park. There were so many people there, so many activities, as if there was no any scary virus (Figure 2). Here were some facts highlighted: 78 % of users were worry to be infected; 33 % of visitors had not been visiting POS for more than 1 year; 79 % of them felt healthier and fresher by visiting POS; the intensity pattern of uses was not much different before and during pandemic; most people wished to get more POS at neighborhood scale.



Figure 2 The uses of Teladan Park, Medan, Indonesia, during pandemic outbreak, September 2021

From those studies we can highlight some differences between public open spaces characteristic determined by Project for Public Spaces and the facts that has been found in Sumatra Utara as can be seen at Table 1. The table shows that even though the quality of POS in Sumatra Utara not satisfactory, there were many visitors came and used the place intensively.

Table 1 The comparison between POS criteria by PPS and POS facts of Sumatra Utara

Project for Public Spaces	Sumatra Utara POS
<ul style="list-style-type: none"> • Good design quality • Pedestrian oriented access • Good management quality • Various visitors and activities • Intensive uses 	<ul style="list-style-type: none"> • Poor design quality • Motor vehicles-oriented access • Poor management quality • Various visitors and activities • Intensive uses

Public Open Space Integration To Settlement In A Friendly City

Public open spaces found in cities in North Sumatra, are generally physically separated by roads from the surrounding environment, so that it looks as if it is seen as an 'island that must be crossed'. This means that most of these public open spaces are not designed to be connected to pedestrian paths. Thus Visitors very rarely come to public open spaces on foot. More than 50% of visitors use motorbikes to visit public open spaces. As a consequence, roads around the public open spaces, even field areas, are often used as parking lots. This is due to the fact that parking areas are not always available in public open spaces. This characteristic is very different from one of the parameters of the PPS version of public open space, where connected and continuous pedestrian access is what most visitors want.

In addition, the management of public open space in North Sumatra is also not specifically regulated by a particular agency. As a result, the existing public open spaces are not well maintained, both in terms of cleanliness, order and security. The regulation only applies to communal activities uses that require a special permit. The condition of facilities that are of poor quality and poorly maintained shows that development priorities have not placed the development of public open spaces as a vital urban facility. On the other hand, the Government also does not have enough awareness and capacity to view public open space as an important aspect in maintaining and improving the quality of life of citizens, so the existence of this facility is not managed properly.

To make public open space an integrated part of settlements, the planning must take into account the various challenges above. Strategies that can be applied to overcome these problems include:

- a. Application of urban design in residential areas, where aspects of land use, building mass management, open space, information management, conservation areas, circulation, parking and pedestrian paths are regulated and designed. Through urban design, the elements of urban space in settlements can be effectively connected, as a network of functions, circulation and visuals of urban space. In spatial planning, in Sumatra Utara in particular, urban design is still very rarely applied. Whereas urban spatial design is one of the instruments that regulate activity spaces so that they can function as needed by the community, without unnecessary conflicts of interest. The basic concept of urban design is human-oriented spaces, in terms of environmental circulation, prioritizing pedestrians. The implementation of this is supported by a comfortable, safe and continuous pedestrian path, so that it becomes a connecting route that encourages residents to come from one place to another, by walking. The benefits, apart from encouraging physical activity, also increase opportunities for residents to meet and get to know each other, as well as increase accessibility to public, social and commercial functions. It will create a city that is active with a variety of citizen events, including the connection of public open spaces with pedestrian paths in residential areas
- b. Given the enormous benefits of public open space in improving the quality of life and preferences of the majority of city residents, public open space planning should be built more on the scale of the smallest unit of the housing environment, both at the kelurahan level and the regional level below which is closer to residential housing. and can be reached by walking.
- c. The development of public open spaces must be able to accommodate local activities, including traditional and religious rituals, small and medium-scale economic activities, and typical activities in each age group, from children, youth, adults, to the elderly age
- d. The development of public open spaces must consider the needs of local communities by implementing community-based planning and management. This is expected to implement a more effective use and maintenance system.

Table 2 The challenges and strategies of integration POS to settlement

Challenges	Strategies
Vehicle oriented community that needs space for parking at POS area	Urban design expansion, particularly the pedestrian-oriented design implementation from macro to micro scale
Weak management – less of financial support of government	More neighborhood POS at walking distance
Unprioritized aspect to public open space development program	Accommodate local communities' activities at all ages-range
Weak government awareness and political will	Community base planning, design and management

From the point of view of urban architecture, where spaces are expected to be well connected, it is important to develop and expand public open space planning on a macro to micro scale. On a macro scale, every neighborhood unit must be located and connected in a mass transportation network. In this mass transportation network, public open spaces are connected in a network of pedestrian paths. With this strategy, it is hoped that the existence of public open space will no longer be an island that is aligned from the residential environment, so that it is well integrated, both with other functional units, as well as with routes and modes of transportation that are oriented to the human scale. (Figure 3).

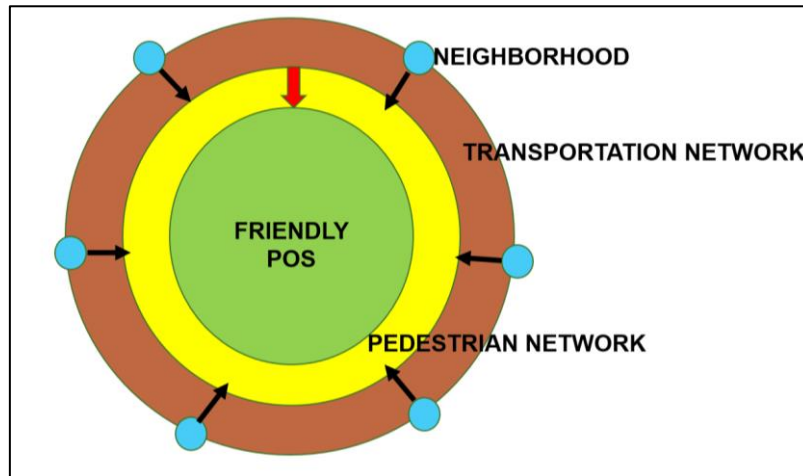


Figure 3 The scheme of public open spaces integration to settlement

2. Method

This study could adopt a mixed-methods approach, integrating both qualitative and quantitative techniques, which would offer a robust framework to address the research questions. The qualitative component would involve in-depth interviews with urban planners, architects, and local government officials, allowing for a deeper understanding of the planning and management processes of public open spaces. Additionally, the quantitative component could use surveys to assess public satisfaction, focusing on the accessibility, design, and usage of public spaces. The combination of these methods would provide both detailed personal insights and broad statistical evidence.

The study will focus on urban and suburban areas in North Sumatera, Indonesia, selected for their rapid population growth and the limited urban infrastructure. This region is particularly suitable for exploring the integration of public spaces in developing countries, offering a unique context for the research. Stratified random sampling should be used to select participants from different urban and neighborhood-level public open spaces to ensure diversity. In total, 400 residents and 20 urban planners will be interviewed or surveyed, ensuring a representative sample that reflects various socioeconomic backgrounds. For data collection, structured surveys will include both closed and open-ended questions to assess satisfaction levels with public open space attributes such as accessibility, design, and management. The interviews will follow a semi-structured format, exploring key topics such as urban design practices, government policies, and community engagement in maintaining these spaces. This approach will help ensure that both objective data and subjective experiences are captured comprehensively.

In terms of data analysis, quantitative data will be analyzed using descriptive statistics (e.g., frequency distributions and means) and inferential statistics (e.g., regression analysis) to examine relationships between the features of public spaces and public satisfaction. The qualitative data from interviews will be analyzed thematically, with coding procedures to identify recurring themes related to the use, design, and satisfaction with public spaces. The research will also adhere to ethical considerations, ensuring that all participants provide informed consent, with guaranteed confidentiality and anonymity. Ethical approval will be sought from the university's research ethics committee to ensure the study meets ethical standards. However, there are potential

limitations to be acknowledged. These include the geographic scope of the study, which may limit the generalizability of the findings to other regions in Indonesia, and challenges in conducting interviews and surveys during the COVID-19 pandemic, which may affect accessibility and participation rates. Despite these challenges, the study's findings will contribute valuable insights into the integration of public open spaces in developing countries and the role they play in enhancing urban life.

3. Results and Discussion

The results of this study demonstrate a significant relationship between the design, accessibility, and usage of public open spaces (POS) in North Sumatra, Indonesia, and the quality of life perceived by residents. Data collected through surveys, field observations, and interviews highlighted key issues and benefits associated with the integration of POS into urban settlements, particularly in Medan and smaller towns within the province.

One of the major findings from this research was the relatively low design quality of POS in North Sumatra, particularly in urban and neighborhood-scale public spaces. Despite having basic facilities such as picnic areas, playgrounds, and jogging tracks, the design of these spaces often lacked aesthetic appeal and functionality. For instance, public spaces like Rahmadsyah Square, located in an urban village, are poorly maintained, with minimal features such as benches or fountains. Nevertheless, these spaces were used intensively by the community, highlighting a crucial contradiction: although the quality of the design was suboptimal, the spaces remained highly utilized. This suggests a strong demand for public open spaces, even when facilities are not well-developed or well-maintained.

In contrast, larger urban-scale POS, such as those found in Medan, generally featured more comprehensive amenities. However, users expressed dissatisfaction with accessibility, particularly with the transportation infrastructure surrounding these spaces. Accessibility scores were the lowest among all the aspects surveyed, with over 50% of visitors using motorbikes to access the POS, contributing to road congestion and informal parking practices around the spaces. These findings underscore the need for better pedestrian-friendly designs and integration of POS with transportation networks.

The study also examined the intensity and diversity of activities within these public spaces. Observations revealed that POS in both urban and neighborhood settings were heavily used for various recreational, social, and even economic activities. In neighborhood-scale spaces, people participated in activities ranging from informal sports to social gatherings. Interestingly, lower-income groups were the most frequent users of these spaces, which supports the notion that public spaces serve as critical outlets for socialization and recreation in urban settlements where private amenities may be limited. One notable observation came from gated communities in Medan, such as Cemara Asri, where POS were open to the public but were less frequently used by the residents themselves. This indicates a paradox where public open spaces in private developments can become a resource for non-residents, further emphasizing the need for policies that integrate these spaces into the broader urban fabric.

The COVID-19 pandemic provided an additional layer of analysis. Public open spaces in Medan, such as Lapangan Merdeka and Teladan Park, experienced significant changes in usage patterns during the pandemic, particularly due to government-imposed restrictions. At the height of the restrictions, Lapangan Merdeka saw reduced visitor numbers, whereas Teladan Park remained crowded, suggesting that POS may serve as vital communal spaces, even under stressful conditions like a pandemic. Despite 78% of visitors expressing concern about potential infection, many felt that visiting these spaces contributed positively to their health and well-being. 79% of visitors reported feeling healthier and fresher after visiting these spaces, underscoring the mental and physical health benefits of public open spaces, especially during times of crisis.

One of the most significant issues identified was the poor management of POS. The absence of dedicated management agencies led to inconsistent maintenance and lack of security, with many spaces not being cleaned or managed properly. As a result, these spaces often failed to meet the expectations of residents, despite their frequent use. The lack of well-maintained facilities further detracted from the overall quality of life that POS

could provide. The findings revealed that community-based planning and management could be key strategies for improving POS in North Sumatra. By incorporating local knowledge and needs into the design and management of these spaces, it may be possible to increase user satisfaction and ensure more sustainable usage patterns.

Moreover, the integration of POS with residential environments remains a challenge. Many of the public spaces in the region were physically isolated by roads and lacked pedestrian connectivity, making it difficult for people to access them on foot. Urban design solutions, such as pedestrian-friendly paths and better circulation, are necessary to create a more integrated urban landscape. Public spaces should be seen as connected networks, not isolated “islands,” to ensure that residents can easily move between residential areas and communal spaces.

To address these challenges, this study proposes several strategies. First, urban design principles must be applied more rigorously in North Sumatra to ensure that POS are integrated into the overall urban fabric. This includes the creation of pedestrian-friendly paths and the consideration of public spaces as interconnected elements within the larger city structure. Second, the development of community-based management systems for POS could help overcome the lack of resources and government support. By involving local residents in the planning and upkeep of these spaces, there is a greater chance of improving their sustainability and functionality. Finally, more neighborhood-scale POS should be developed to ensure that all residents, regardless of income level, have access to quality open spaces within walking distance of their homes.

4. Conclusion

Public open spaces in North Sumatra have several different characters from public open spaces in various cities in the world, especially in terms of physical appearance, accessibility and management. This difference also provides several similarities, including intensive use and the activities carried out by city residents of various age groups are vary. This shows the high need of city residents for public open space, no matter how bad the physical quality is. To make public open space part of a friendly city space, it must be well connected with other spaces, in a mass transportation and an adequate pedestrian path network. By the attention to the activities of local communities, especially from the aspect of the small and medium scale economy, and traditional and religious traditions, public open spaces can play a more optimal role in maintaining and improving the quality of life of city residents.

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6. Conflict of Interest

The authors, Achmad Delianur Nasution and Wahyuni Zahrah, declare that there is no conflict of interest related to the research, findings, or publication of this study. The research presented in this paper was conducted independently, and the authors have no financial, personal, or professional relationships that could have influenced the content or outcomes of the study. Furthermore, the authors have not received any funding or support from organizations that may benefit from the results of this research. All opinions, conclusions, and recommendations in the manuscript are based solely on the data collected and analyzed during the study.

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