



## SUSTAINABLE MANAGEMENT OF URBAN FACILITIES IN NEIGHBOURHOOD OF KHULNA CITY: A CASE STUDY OF KHULNA, BANGLADESH

Md. Tanvir Miah\*, Maria Sultana

*Urban and Rural Planning Discipline, Khulna University, Khulna 9208, Bangladesh*

KUS: ICSTEM4IR-22/0005

Manuscript submitted: June 28, 2022

Accepted: September 26, 2022

### Abstract

A sustainable neighborhood offers a distinctive physical and social reality that seems to have a profound influence mostly on the environment and the residents who live there. The main purpose of the study is to inspect the sustainable management of urban facilities in Khulna city on a neighborhood scale by considering social, economic, and environmental aspects. Moreover, this research is conducted to determine the connection between the underlying variables that contribute to the sustainability of the city. The study is conducted by using a qualitative approach. Landsat data, photographs, walkthrough analysis, and content analysis are used as analysis tools. From the outcomes, it's visible that in the case of neighborhood-scale, there are many diversities in sustainable management of urban facilities in Khulna city. It is identified that from the selected seven neighborhoods, mostly planned, higher and middle-income groups of neighborhoods (Sonadanga, Babukhan Road) are close to fulfilling sustainability principles. However, these neighborhoods also have many challenges. In contrast, unplanned and lower-income groups of neighborhoods (Lobonchora, Joragate, Khalishpur, Gollamari, Musolman Para) are completely detached from the characteristics of neighborhood sustainability. The challenges to achieving sustainability in different neighborhoods are highlighted in this study, and recommendations are suggested relevant to these issues. The results can provide a new view of the field of sustainable development and act as a benchmark for other studies. Policymakers and planners may apply this as a source of urban planning and urban management to achieve the goals of sustainable development.

**Keywords:** Urban Facilities Management, Urban Sustainability, Sustainable Neighborhood, Remote Sensing.

### Introduction

"Sustainable development" is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). It's a tool through which a city or community can interrelate with the environment without compromising the assets of coming times. This kind of development from "Sustainable cities," "Sustainable Communities," or "Sustainable neighborhoods,s" are places where individuals are willing to work and reside. These places differ in terms of scale, but all of them

\*Corresponding author: <tanvir180417@gmail.com>

DOI: <https://doi.org/10.53808/KUS.2022.ICSTEM4IR.0005-se>

meet the assorted necessities of human existence, increment personal satisfaction, reasonable for everybody, are appropriate for inhabitants, make the earth delicate, and guarantee the accessibility of essential utilities. We must take into account the sustainable development goals if we want any type of development to be sustainable. The SDG's 11th objective, "To make cities inclusive, safe, resilient, and sustainable," primarily covers neighborhood sustainability. To ensure sustainability, different aspects are responsible, but among them, social, economic, and environmental are the major. In order to develop a sustainable city or neighborhood, these three factors must intersect (Taguay et al., 2010). The environment becomes equitable when the social and economic spheres interact. At the same time, a livable location is created when the environment and social demands, which essentially pertain to the idea of the quality of life, are in harmony. Additionally, in order to establish a place that is feasible, economic growth must respect the environment's stable limits and avoid depleting non-renewable resources.

This study is focused on identifying the neighborhood sustainability scenario of Khulna city by considering social, economic, and environmental aspects. The outcome of this research can add a new dimension to the domain of sustainable development and serve as a guideline for future research. Additionally, this can provide a guide for policymakers and planners to achieve sustainable development goals.

### **Study Area**

Khulna is the third-largest city in Bangladesh. It is regarded as an industrial city and is located in the southern portion of Bangladesh on the bank of the Rupsha River. The city of Khulna covers 45.65 km<sup>2</sup> and has a population of 751,000 spread across 31 administrative wards and 184 neighborhoods. The city has continued to expand in terms of space and unplanned urbanization. There is a vast diversity in terms of social strata, environmental conditions, and economic structure in this metropolitan. This is why this city is chosen as the research area in the attempt to obtain an exceptional outcome in order to achieve sustainability.

### **Literature Review**

Neighborhoods are as crucial to the urban system as any other component. Yet intriguingly, this is not a new revelation, as planners have long been concerned with the sustainability of neighborhoods (C.L.Choguill, 2008). A sustainable urban settlement can be attained by first constructing sustainable communities (Gildroy et al.; Al-Hagla, 2008). Hence, sustainable neighborhood development has gained the growing interest of the research community over the last two decades (Barton, 1998; Grant, 2005; Hills, 1994; Jabareen, 2006; Priemus & Kempen, 1999; Williams & Lindsay, 2007). In 2010, according to Tanguay, a sustainable community or neighborhood was built by overlapping its social, economic, and environmental aspects. The author added that these aspects do not exist separately but co-exist and then it creates a viable, equitable, and livable neighborhood. By enabling citizens to engage in society, the availability of various services and goods enhances economic and social sustainability (Hine, J. et al., 2012). However, the absence of these options compromises environmental sustainability by causing pollution and climate change (Jabareen, 2006). Adequate space for streets and an effective street network, high density, diverse land-use, social mix, and limited land-use specialization are among UN-suggested Habitat's five sustainability planning principles (UN-HABITAT, 2011). On the other hand, in other research, the development of a set of sustainable neighborhood plans took into account a wide range of variables, including "population density, alternative transportation options, community agriculture, water conservation methods, and green building practices" (Engel-Yan, J. et al. 2005). But there, no set of rules or principles exists specifically to assess or identify sustainability. Different authors used a variety of dimensions, principles, and indicators in their research (Petrikova, 2009; C.Luederitz et al., 2013 & A. Dehghanmoghaddadi et al., 2014). The main premise underlying these principles is that following particular qualities or guiding concepts would promote sustainability, either in technological or behavioral terms or would concurrently contribute to both (Williams & Dair, 2007).

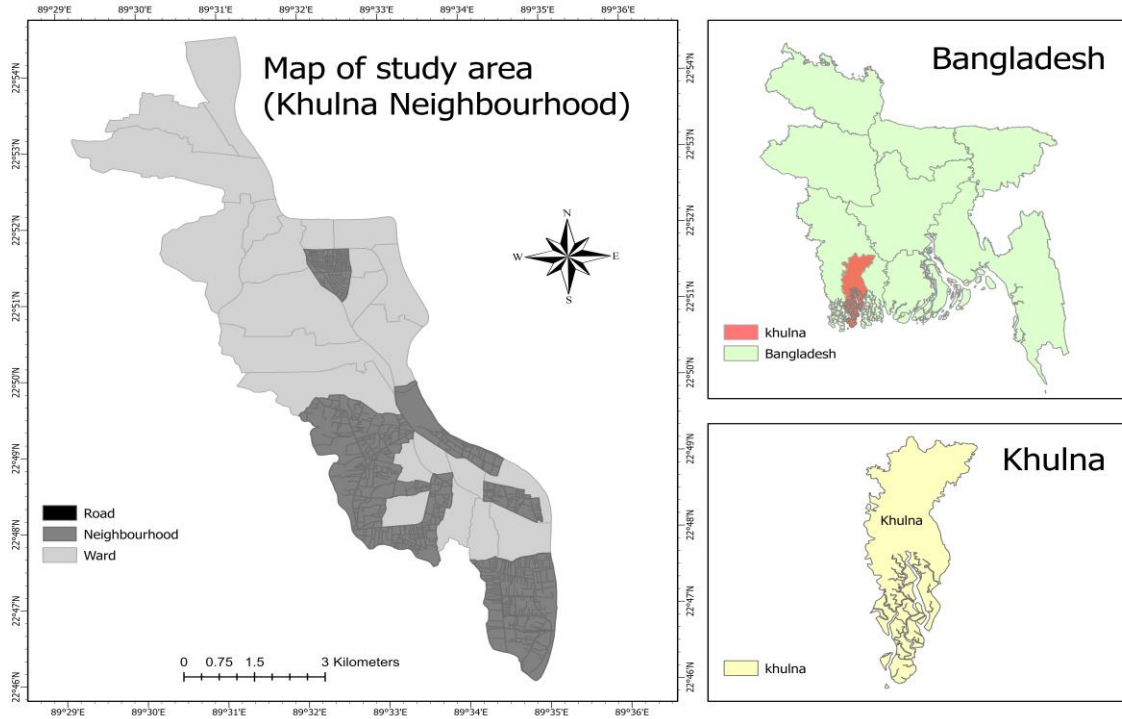


Figure 1. Study area map.

## Materials and Methods

This research is conducted by using a qualitative method. The study area was divided into seven neighborhoods, namely: Sonadanga, Babukhan road, Lobonchora, Jhoragate, Gollamari, Musolman Para, and Khalishpur. Interviews were done to learn about the viewpoints of community members and leaders on how and why sustainable development is a major topic in Khulna. Data was gathered mostly through in-depth interviews. A large number of the interviewee (70) were interviewed. Each respondent received a copy of an informed consent statement, which they read over the phone, and was assured that their replies would be kept secret and that they may choose whether or not to answer any questions. All of the interviews were taped and lasted 10 to 15 minutes. During the interview, there was a small group discussion and a focus group discussion. On the other hand, to conduct this research, Landsat 8 satellite image was also used to detect the changes in land uses in Khulna city for effective outcomes.

### *Site survey & photographs*

In qualitative research, an image is a useful tool. In order to illustrate the visual circumstances, a lot of photos have been taken in the research boundary. The image conveys a sense of place and is useful in analyzing all interview data points. Seven neighborhoods in the chosen study area are visited during the survey. After commencing the study, it has been seen that the inhabitants in every neighborhood have a distinct lifestyle pattern compared to those who live in others. Pictures of several sustainability challenges are captured that might be useful for understanding the research field.

### ***Walkthrough analysis***

The survey is conducted almost for 12 to 15 days by walking in different neighborhoods. The survey started from zero point and proceeded via the central routes, watching everything and filling in the blanks on the printed map until it arrived at the last stop, which was Khalishpur.

### ***Group interviews/focus group discussion***

Group interviews are conducted to explore the commonly held views of the residents. It is assumed that a group of people with common characteristics or experiences can provide an understanding of the 'shared knowledge' on a particular topic, as opposed to the unique views and experiences of an individual. Here, the assumption is that the collective view of a group on this topic reflects what is held to be common knowledge based on context.

### ***Data analysis & image categorization by using remote sensing***

USGS Earth Explorer is used to obtain Landsat images from the years 2000, 2010, and 2020. The maximum likelihood approach is used in the ERDAS IMAGINE 2015 to classify these images. The built-up area, which includes commercial, residential, road networks, urban features, and building sites, and the non-built-up area, which includes vegetation, agricultural land, and water bodies, are the two principal land-cover groups chosen for each year. The land use maps are shown in Figure 2. Finally, for data preparation and geographical analysis, each year's output file is created in ArcGIS 10.5.1.

### ***Indicators & theme selection***

In 2009, Petrikova recommended eight principles for assessing sustainable neighborhoods. (Petrikova, 2009). By conducting a pilot survey, themes and indicators are selected based on these principles, which felt appropriate for the study area.

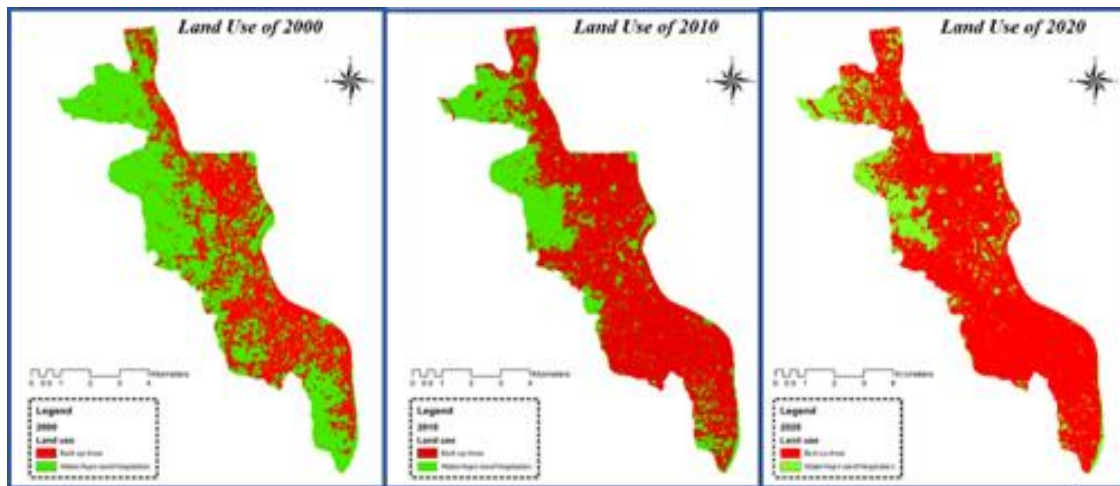


Figure 2. Land use map of KCC area in year 2000,2010 & 2020.

Table 1. Indicators and theme

Characteristics	Theme	Indicators
Active, inclusive & Safe	Social cohesion, Crime rate Community programs	Trust, Helpful behavior, sense of belonging, Antisocial behavior, Annual picnic
Well run (Governance)	Effective and inclusive participation, Representation, and leadership	Involvement in group activities, Participation in decision making Funds for development works (service providing, infrastructure development)
Well connected (Transport)	Transport services	Street designs & circulation patterns, Presence of bicycle lanes and pathways, Directionality, Distance from CBD, School, shopping mall, medical center, etc.
Well served (services)	Presence of public, private, community, and voluntary services	Local schools, Higher education institutions, availability of facilities (gymnasium, yoga center, hospital, playgrounds, etc.)
Environmentally sensitive	Cleaner, safer & greener environment, Reducing pollution	Opportunities for walking & cycling, Noise pollution, Quality of drainage, Maintenance of setback rule, Dustbin maintenance
Fair for everyone	Citizen participation in public affairs Accessibility in utilities provided in the neighborhood	Justice, equality, Involvement in decision-making, Access to all services and facilities
Thriving	Diverse & innovative local economy	Jobs & training opportunities, schools for older, Business facilities
Well-designed & build	Quality built and natural environment	Enough open spaces, Presence of playgrounds, Design of buildings, Presence of historical identity

### **Findings of the Research**

As a qualitative research method is applied, fieldwork tools such as semi-structured questionnaires for conducting interviews, photographs of existing scenarios, walkthrough analysis for developing perceptions of the study area, and content analysis of previous research articles have been used to prepare the final outcome.

#### ***Changes in built-up area of Khulna city***

An indicative issue is that almost every neighborhood's built-up area has been changed, which means that the Khulna city corporation area's overall built-up area is changing gradually. In Figure 3, It is visible that the built-up area in the year 2000 is less in maximum areas than in 2011. From the Land use map in Figure 2, it is visible that built-up areas are increasing rapidly. But 2010 to 2020, there was no notable change in built-up areas.

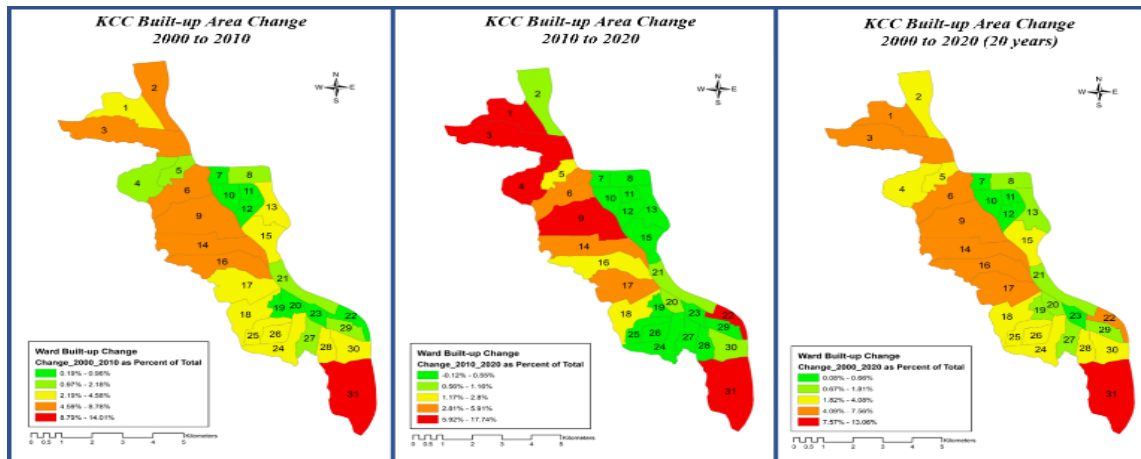


Figure 3. Percentage of built-up area change from 2000 to 2020.

### Neighborhood sustainability assessment

#### *Active, Inclusive & Safe:*

By interviewing the people of each area, it's revealed that people here are mostly involved with their own life and barely interfere in other's life. They get help from the acquainted ones rather than other residents. People accept others' choices and do not harm each other, but they don't get any special attention or help either. In some neighborhoods, people said that they do annual or occasional picnics in their own buildings. In rare cases, respondents mentioned a picnic in the neighborhood. Like in Sonadanga solar park, every year, they arrange a picnic for the whole community. In the case of crime rates, Sonadanga, Khalishpur, and Babukhan road areas have lower crime rates than other areas. There are no severe incidents of stealing, abusing, murder, or drug addiction-related issues in maximum neighborhoods. One respondent said, "People come forward to help each other in times of danger. There is a committee here which had assigned guards to this area, and there are well-developed systems to signal us if there are any burglars or thieves." No religious riot has been informed, which indicates a tolerant and inclusive society. No significant political clash or less critical violence against women has been recorded in the study areas. Among all neighborhoods, Sonadanga is mostly safe and secured. This is how one respondent replied, "This area is quite secure; I never faced any harassment. In the past, there were some criminal activities that occurred as I can remember. But nowadays, I've not heard about any issue which I can mention right now."

#### *Well Run:*

In neighborhoods with higher income classes, maximum people are well aware, so they are involved or participate in the decision-making of different activities. Our respondent said, "If we face any problem, we consult with the local authority. Sometimes the ward commissioner comes, and he's very helpful." Whereas in other areas, mostly in Joragate and Lobonchora areas, people barely show interest in participating. Relevant responses like, "I've never participated in any decision making, and I don't think so any acquainted one has." By considering these experiences, it is felt that higher-income class portions of the neighborhoods are mostly conscious of their rights. In some neighborhoods, women's participation in cultural and community activities and decision makings are limited because of the conservative behaviors toward women. Community members are mostly busy with their individual activities, so they're not that willing to participate in group activities. A noticeable scenario is that people who have connections with political leaders are mostly influenced and

participate in decision makings. But there are also some significant opportunities for the young generation who seems conscious of community activities and social interactions. They have developed community clubs, namely "Musolman Para Jubo Songho, Jhora Gate Jubo Songho, etc., consisting of the young people of the community, where young members from different religions are equally welcomed and treated. In Sonadanga phase 2, there's a community organization named "Kallayan Samiti." Development work within the planned residential portion within the Sonadanga neighborhood, such as tree plantation, infrastructure reconstruction, security, etc., is arranged by this organization. They've good communication with KCC and KDA.

*Well Connected:*

Most of the neighborhoods are close to CBD, so the central city facilities are reachable. Khalishpur and Gollamari areas are comparatively far from the CBD, but no evidence has been found in terms of reaching basic facilities. Both areas are self-sufficient. Mostly Sonadanga and some portions of Khalishpur have planned more directionality than other neighborhoods. Grid pattern roads are seen in the planned portions, whereas irregular pattern roads have been found in unplanned portions. Most of the broad roads are pedestrian-friendly. Whereas some narrow roads were also found. But inspecting the overall condition, we've concluded that most of the neighborhoods are partially well connected.

*Well Served:*

According to the interviews, practically all of these neighborhoods have sufficient kindergarten and primary schools. But the number of qualified primary and secondary schools is not sufficient. There are a few numbers of primary schools in maximum neighborhoods, but there are limited government schools or colleges. So, the students have to go outside their neighborhoods to get a quality education. Almost every respondent talked about the lacking of public space and playgrounds. It is a common problem, especially a very concerning issue for the parents. A respondent mentioned, "A few days ago, an accident of a child happened during playing on the street due to colliding with vehicles." There are a few reputable private medical clinics in the neighborhood that are easily accessible to the public. Medical centers such as 'City Medical Hospital,' 'Khulna Life Care Hospital,' 'Doctors clinic,' 'Unique Diagnostic center,' 'Khulna CT clinic, Abu Naser Hospital, Khulna Medical College Hospital' and many others are within 20-30 minutes walking distance from most of the neighborhoods in average. Apart from this, there are several local pharmacies and homeopathic pharmacies within maximum



Figure 4. Transport services.



Figure 5. Directionality.

areas. There are sufficient mosques in every neighborhood, but barely any other religious institutions exist. Most of the neighborhood is not self-sufficient with all the services and facilities required to live a quality life. Recreational and educational facilities are poor. Some services exist in the higher-income portions like Sonadanga or Nirala, which are absent on other sides. As a result, it shows that most of the neighborhood has failed to provide sufficient quality facilities in their own neighborhood. In order to get these services, people need to go outside.



Figure 6. Neighborhood services.

*Environmentally sensitive.*

Maximum drains are broad, but most of them are clogged and dirty. According to dwellers, there are fewer waterlogging scenarios that exist in some portions of Sonadanga and Khalishpur than in other areas. The drainage condition is very poor in maximum neighborhoods. Again, the drain cleaning process is not good and safe enough for surrounding people. The waste of the drain dump on the road beside the drain during cleaning, and it keeps there for a long time, which creates bad odors and air pollution in the neighborhood. A respondent said, "Some careless neighbors dump their daily household wastes in the drain." Waste, after being cleared from the drains, is kept on the streets for a few days before the garbage truck comes, which results in

air pollution. From the overall discussion, it's finalized that most of the neighborhoods are not environmentally sustainable in Khulna city.



Figure 7. Drainage condition & maintenance system.



Figure 8. Waste collection system.

The solid waste disposal procedure in the Sonadanga residential, Musolman Para, and Khalishpur areas are fairly efficient. Some communities have their own waste disposal system. Like in Sonadanga, "Kallyan Samiti" is in charge of waste disposal or trash maintenance. They perform an important role in keeping the environment clean and safe. However, the local government oversees this procedure in many portions of the neighborhoods. If the garbage truck does not arrive on schedule, this might be an issue for them. On the other hand, due to a lack of regular plants and poor upkeep of existing ones, the majority of the neighborhood has just 10 to 15 % greenery. The majority of the greenery is located around the mosque-madrassa complex. Residents have blamed the lack of green areas on the excessive heat in the area.

Violation of the setback rules is a regular phenomenon in most neighborhoods. But in some neighborhoods like Sonadanga and some portions of other neighborhoods, if anyone does so, then people complain to the local authority. But in Lobonchora, Jhoragate, Gollamari, and Musolman Para areas, landowners violate set back rules than in other neighborhoods. Some of them maintain it from the front but

break in the back and on both sides of the building. Violation of the setback rule stops air circulation and sunlight from coming, which creates an unfriendly natural environment and degrades the quality of life.

*Fair for everyone:*

In every neighborhood, there's segregation for different income classes people, which is conflicting for ensuring equality to obtain quality service facilities. In the Sonadanga area, most people are rich and well-educated, so it's not easy for fewer-income people to survive there. Similar response as follows, "People of this area are solvent and quite smart, even you can say the people of high society belong here, so there is no question about equality and injustice. Everyone is cautious about their rights." But in other neighborhoods, it's found that many people have complained about the transparency of the authority. Some of them said, "Even if we try to complain about our problems, the authority never pays attention unless some elites or political leaders are involved in it." Women's participation in community decision-making is increasing as socio-cultural enlightenment is being achieved over time in many neighborhoods. There's no religious barrier has found. Every respondent said that people of all religions are warmly welcomed, and they don't feel any deprivation because of this.

*Thriving:*

There is economic diversity in every neighborhood. Enough retail shops are found everywhere. Each neighborhood has its own characteristics, and according to this, people are engaged in different activities to earn their livelihood. Such as: In Sonadanga, most of the residents are govt. Job holders or solvent businessmen. Whereas in the Khalishpur area, most of the people's work is somehow related to the existing mills. Women in many neighborhoods are engaging in different activities in their own territory, like opening yoga centers, working in stitching or craft shops, homemade food delivery, etc. On the other hand, there's no notable training or job opportunities for youths on the neighborhood scale. Additionally, in the survey period, no significant initiative for job or income of elderly or retired has been found. From the overall discussion, it is visible that most of the neighborhoods are far away from the characteristics of thriving for becoming sustainable neighborhoods.

*Well designed & built environment:*

There's barely any sufficient place for playing has been found in most of the neighborhoods which are solely designed for playing purposes. Whereas in surrounding areas, from the walk thorough analysis, it's seen that some empty plots are used as a playground. Moreover, due to the lack of a playground, children are often seen playing on the street or in the community school playground. Some community parks like solar parks or Nirala residential park, etc., are found, which are the only source for recreation in some neighborhoods, but there is a lack of maintenance and safety there. According to a female respondent, "These places are not safe enough for young girls because the environment of these places is not good. Girls are often victimized by eve-teasing." A



Figure 9. Violation of setback rule.

well-designed neighborhood it's expected to have organized trees to make a cool and aesthetic environment. Areas like Sonadanga, Khalishpur, and Nirala, have been identified as other areas. Sitting arrangements for a passerby or high-quality infrastructures for beauty purposes are barely found. Thus, the overall status for reaching the principle of a well-designed and built environment neighborhood is missing.

### **Discussion & Recommendations**

The main challenges of sustainable development are poverty and exclusion, unemployment, climate change, violence, and humanitarian relief. Others include developing peaceful and inclusive communities, strong institutions of government, and promoting the rule of law. There is a range of challenges that must be tackled in order to ensure sustainable growth in Khulna City's neighborhoods. The outcomes previously mentioned are grounded on the eight principles and associated indicators. The following scenarios and recommendations are considered as the overall outcome of the research:

#### ***Sustainable neighborhood in policies & plans***

There is hardly any acknowledgment of sustainable neighborhoods in any administrative documents. Basic maintenance in Khulna city is primarily the responsibility of KDA and KCC. The city is divided into 31 wards to enable politically elected representatives to operate, regulate, and provide services relevant to each ward. Generally, all the requirements for fulfilling sustainable development goals are practiced on the city scale. However, each neighborhood has unique needs and characteristics. It is tricky to create a sustainable society without taking this into account. The entire city will attain self-sufficiency after every neighborhood has accomplished so. That's why it's expected to promote neighborhood sustainability in the city plans and policies.

#### ***Ensure affordable and sustainable transport***

Within the city, there is no reliable public transportation, special bus route, and proper pedestrian-friendly walkway in most of the neighborhoods. Along with this, maximum roads have a lack of directionality which can make the passerby feel lost. It's the basic requirement for any neighborhood to create an affordable and user-friendly transport system by at least providing large footpath and directionality elements.

#### ***Effects of natural disasters***

Flooding and cyclones are massive issues in Khulna since this area is prone to natural disasters. Water logging is a critical concern in basically every locality, especially in low-lying areas. This is largely caused by poor drainage systems and erratic waste disposal across most of the neighborhoods. Therefore, close oversight of these concerns should continue.

#### ***Equitable and fair neighborhood***

Most respondents indicated that they have access to all services and facilities. The positive aspect is that there are no religious conflicts and that all religions are honored equally. Although most people just aren't interested in participating decision makings. Some of them believe that those with connections to political power can impact choices; thus, they have no interest. In order to create an equitable society, it is crucial for the local government to maintain transparency and address these views. However, there is income segregation in all regions, and in this situation, the portions where most of the members originate from better social strata receive more infrastructure and maintenance resources. The rent for dwellings in Sonadanga is relatively pricey, yet we've noticed that compared to other neighborhoods, it adheres to numerous sustainability standards. Without affordable housing, individuals in this area struggle to exist. Every neighborhood experiences severe infrastructural segregation based on household income. More attractive buildings than other sections can be spotted in higher-income areas. In order to address these problems, the government must redistribute

resources and offer affordable housing in every neighborhood. It can be a great move to relocate a diversity of people from every economic status in each neighborhood.

### ***Environmental effects & inclusive green spaces***

Due to the higher number of concrete buildings, increasing vehicles, AC, and generator users in every neighborhood, the surrounding environment is affected negatively, and it is also responsible for increasing urban heat island effects and GHG emissions. The highly significant characteristics in the case of these neighborhoods are lack of environmental sensitivity in terms of sustainability due to proper dustbin and disposal point, uncovered drain, unawareness of responsible authority, lack of recycling management, and use of the eco-friendly product. Though the waste disposal issue is covered in many areas, several unnecessary disposal points have been captured. Violation of the setback rule is also visible, which is a barrier to air circulation and sunlight. As for rapid urbanization, some issues can't be undone. But the provision of inclusive green and public spaces can be a great solution for this. Additionally, maintenance of waste disposal and setback rules needs to monitor on a neighborhood scale so that the city central authority will have less burden and the activities will be done in an effective way. As there are a few numbers of safe and inclusive parks or open spaces available in neighborhoods, so the local authority needs to rethink this.

### ***Provision of a diverse and well-playing economy***

There's lacking local and innovative economic opportunities inside the neighborhoods. No training center for residents or special job opportunities for older citizens has been found in these neighborhoods, which is not suitable for economic flourishing. It has been observed that some neighborhood has their own clubs or groups. The local government can encourage the young people to start similar clubs in every neighborhood so that they can increase human capital while also providing a variety of lucrative economic possibilities.

By inspecting the overall condition of each neighborhood in Khulna city, it is observed that the city resides far away to fulfill the requirements of a sustainable neighborhood. Though some characteristics are supportive but maximum are missing. The overall inspection says most of the neighborhoods aren't viable, livable, and equitable in terms of sustainability. Therefore, it is important for the government and the designated authority to be more careful when recognizing and resolving the problems of the residents. The national plan should, above all, include goals and policies pertaining to sustainable neighborhoods.

### **Conclusion**

Khulna, as a city in the developing country of Bangladesh, is already trailing behind in terms of sustainable development. In the case of neighborhood-scale, there's huge diversity in Khulna city. This city is the 3<sup>rd</sup> largest metropolitan of Bangladesh and undoubtedly an important one. It is necessary to build sustainability in every city in order to achieve sustainable goals on a national scale. Similar to this, it's crucial to establish sustainability throughout every neighborhood to achieve sustainable development in a city. To put it another way, "Every neighborhood in every city must first be self-sustaining if we are to construct a sustainable nation."

This study is aimed to evaluate the sustainability scenario in the neighborhoods of Khulna city in terms of social, economic, and environmental sustainability. From the analysis, it's found that most of the neighborhoods are unable to fulfill the principles of sustainability, which will be a barrier to the achievement of SDG goals in Khulna city. Among seven neighborhoods in Sonadanga some portion and Babukhan road has fulfilled the requirements of some of the principles. These neighborhoods have better environmental quality, well transport services, and fairly enough facilities for living than other neighborhoods. The Lobonchora and Joragate neighborhood are in worst condition than others. But in general, all of the neighborhoods have lack of inclusive and safe environment and diverse opportunities for economic flourishing. The provision of services and facilities in terms of social strata is a major issue. A significant finding is that all plans are focused

on a city-scale, and when a development activity is taken into account, it's barely considered the characteristics of each neighborhood which leads to failure.

A well-connected city's primary goal is to provide an accessible and inexpensive transportation system in every location. The local government must maintain transparency and empower residents of each neighborhood in order to create an equitable and fair society. The government must redistribute resources and provide affordable housing in each community in order to address concerns associated with social strata. Having a diverse population from all socio-economic tiers in any neighborhood can be a great idea. The authority must preserve an inclusive and secure green and public space to provide sufficient sunlight and air circulation in order to ensure quality and healthy life. The local government can encourage neighborhood residents to establish community clubs in each neighborhood and offer training and employment possibilities through these clubs in order to achieve a vibrant economy.

In order to create sustainable neighborhoods, residents who are at the core of any development initiatives need to be included, and their expectations, aspirations, and opinions need to be taken into account. These responsible groups are able to recognize issues and address them one at a time in accordance with the established goals. Additionally, the first and foremost priority right this moment is to adapt the "Sustainable neighborhood" term in the national plan and policies to achieve sustainable development goals.

## References

- Dehghanmongabadi, A. (n.d.). Introduction to Achieve Sustainable Neighborhoods. *Nternational Journal of Arts and Commerce*, 3, 16–26.
- Alexander, C. (2008). Towards a sustainable neighborhood: The role of open spaces. *Architectural Research*, 2, 162-177.
- Barton, H. (1998). Eco-neighbourhoods: A review of projects. *Local Environment*, 3(2), 159–177. <https://doi.org/10.1080/13549839808725555>
- Choguill, C. L. (2008). Developing sustainable neighbourhoods. *Habitat International*, 32(1), 41–48. <https://doi.org/10.1016/j.habitatint.2007.06.007>
- Engel-Yan, J., Kennedy, C., Saiz, S., & Pressnail, K. (2005). Toward sustainable neighbourhoods: the need to consider infrastructure interactions. *Canadian Journal of Civil Engineering*, 32(1), 45-57. <https://doi.org/10.1139/104-116>
- Grant, J. (2005). *Planning the Good Community* (0 ed.). Routledge. <https://doi.org/10.4324/9780203479469>
- Hine, J., Kamruzzaman, M., & Blair, N. (2012). Weekly activity-travel behaviour in rural Northern Ireland: differences by context and socio-demographic. *Transportation*, 39(1),175-195.<https://doi.org/10.1007/s11116-0119322-4>
- Hills, P. (1994). Sustainable development and urban form. M.J. Breheny, (Ed.) (1992) 292pp. London, Pion Limited (European Research in Regional Science, No.2) ISBN 085086 160 8 £28.00 paperback. *Sustainable Development*, 2(1), 31–31. <https://doi.org/10.1002/sd.3460020106>
- Jabareen, Y. R. (2006). Sustainable Urban Forms: Their Typologies, Models, and Concepts. *Journal of Planning Education and Research*, 26(1), 38–52. <https://doi.org/10.1177/0739456X05285119>
- Kennedy, C., Miller, E., Shalaby, A., Maclean, H., & Coleman, J. (2005). The Four Pillars of Sustainable Urban Transportation. *Transport Reviews*, 25(4), 393–414. <https://doi.org/10.1080/01441640500115835>
- Luederitz, C., Lang, D. J., & Von Wehrden, H. (2013). A systematic review of guiding principles for sustainable urban neighborhood development. *Landscape and Urban Planning*, 118, 40–52. <https://doi.org/10.1016/j.landurbplan.2013.06.002>

- Miah, M. T. et al. (2022). Sustainable management of urban facilities in neighbourhood of khulna city: a case study of khulna, bangladesh. *Khulna University Studies*, Special Issue (ICSTEM4IR): 189-202.
- Petríková, D.,(2009). Crucial aspects of sustainability and environment protection in the case of brownfield regeneration. *Vysoká Škola Báňská-Technická Univerzita Ostrava Fakulta stavební. ROAD Bratislava*.
- Priemus, H., & Kempen, R. (1999). Policy and practice restructuring urban neighbourhoods in the Netherlands: Four birds with one stone. *Netherlands Journal of Housing and the Built Environment*, 14(4), 403–412. <https://doi.org/10.1007/BF02496765>
- Sharifi, A., & Murayama, A. (2015). Viability of using global standards for neighbourhood sustainability assessment: Insights from a comparative case study. *Journal of Environmental Planning and Management*, 58(1), 1–23. <https://doi.org/10.1080/09640568.2013.866077>
- Tanguay, G. A., Rajaonson, J., Lefebvre, J.-F., & Lanoie, P. (2010). Measuring the sustainability of cities: An analysis of the use of local indicators. *Ecological Indicators*, 10(2), 407–418. <https://doi.org/10.1016/j.ecolind.2009.07.013>
- UNDP. (n.d.). *Sustainable cities and communities*. The Global Goals.
- Williams, K., & Lindsay, M. (2007). The Extent and Nature of Sustainable Building in England: An Analysis of Progress. *Planning Theory & Practice*, 8(1), 31–49. <https://doi.org/10.1080/14649350601158113>