

Course No: URP 4272

Course Title: Participatory Planning Studio

A submission on

Study area selection for the PRA approaches in community

Submitted to:

Md. Esraz-Ul-Zannat

Assistant Professor, Department of Urban and Regional Planning.

&

Md. Nazmul Haque

Lecturer, Department of Urban and Regional Planning

Submitted by:

Anim Saha

Roll: 1617040

Date: June 16, 2021



**Department of Urban and Regional Planning.
Khulna University of Engineering & Technology,
Khulna- 9203**

Study area selection for the PRA approaches in community

1. Study Area:

Agrabad is a downtown commercial and financial area in Chittagong, the second largest city of Bangladesh. Located close to the city's harbor, it hosts numerous Bangladeshi and international businesses, banks, financial institutions, and the other commercial entities. The Chittagong Chamber of Commerce & Industry, the World Trade Center and Chittagong Stock Exchange are most prominent of them. The area forms part of the Double Mooring precinct and is directly connected to the Port of Chittagong. It is one of the posh areas of Chittagong city with important government areas (Table 1). Jamboree Park is the most visited stunning urban park located at SM Morshed Road at central Agrabad. The park offers a dazzling view at night with several hundred lamps on its pool-like body of water and walkways. Bangladesh Betar, Chittagong office is located in the study area.

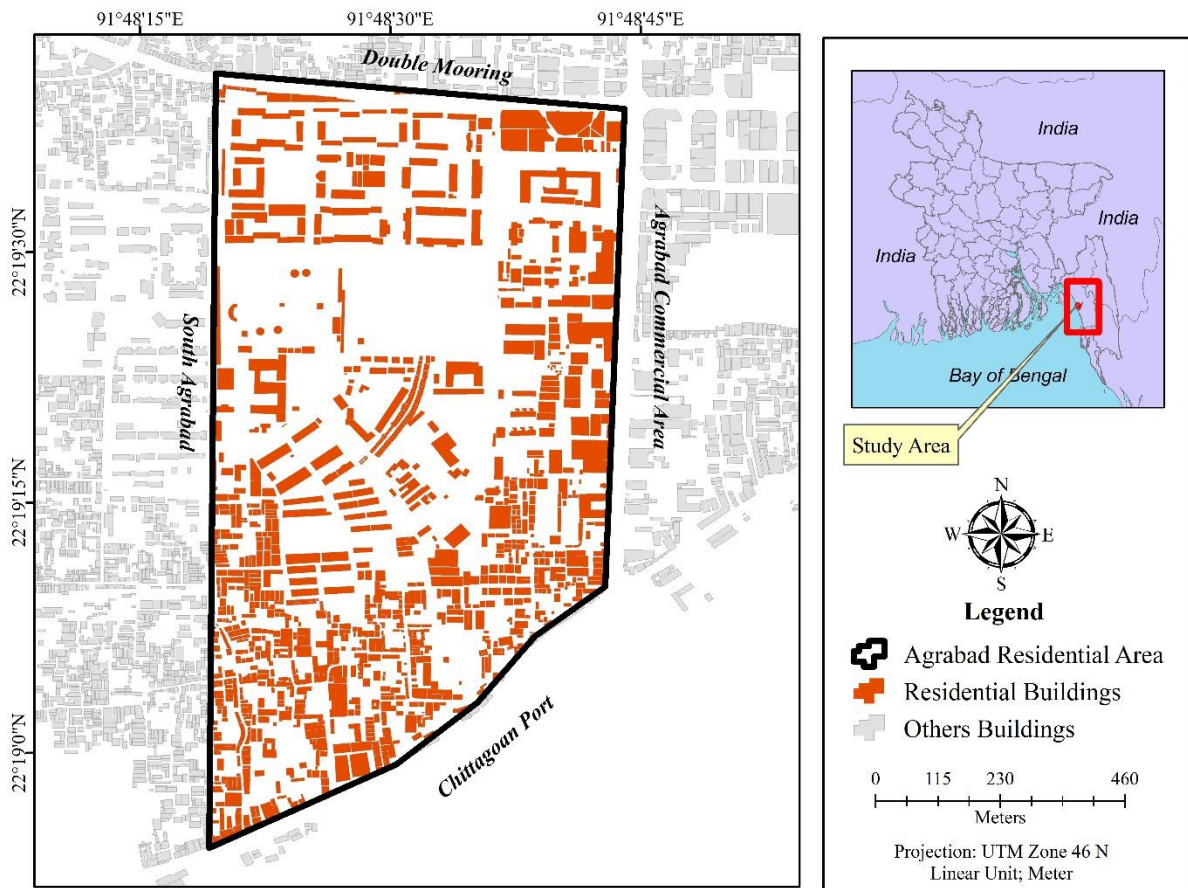


Figure 1: Study area map

Transport in Agrabad is similar to that of the city, Chittagong. Several roads are present throughout the area. There are various bus transport systems and taxi services, as well as smaller 'baby' or 'CNG' taxis, which are basically tricycle-structured motor vehicles. There are also traditional manual rickshaws, which are very common. The Agrabad Access road and Sheikh Mujib road are a major arterial road, is the main way to access the area by motor vehicle and otherwise. Those

are considered a very busy and populated road, and though are currently 2-lane road. It is one of the busiest city centers of the port city Chittagong. Though there are all kinds of urban service facilities in this area within in a walking distance, but the residents of this area suffer from some problems such as water logging, noise pollution and mosquito infestation. That's why we have considered Agrabad residential area as our study unit.

Table 1: Important features of Agrabad commercial area, Chittagong.

Government buildings	Other high-rises
BSTI Building Bidyut Bhaban BTCL Building BSCIC Building Chittagong Government Office Buildings (CGO)	Aziz Court Imperial Banani Complex C&F Tower Makkah Madina Trade Centre World Trade Center Chittagong Madina Tower 71
Government Colonies	Education
Agrabad CGS (Masjid) Colony, aka Chittagong Government Service Colony Agrabad Multi Storied Colony Agrabad Government C&B Colony Bangladesh Bank Colony Bahutola Colony Gazetted Officers' Colony Health Colony Postal Officers' Colony P. T. & T. Colony WASA Staff Colony	Private medical colleges Chattagram Maa-O-Shishu Hospital Medical College Colleges 1. Agrabad Mohila College 2. Government Commerce College Schools List of schools in Chittagong 1. Agrabad Balika Bidyalay[26] 2. Agrabad Government Colony High School 3. Bangladesh Bank Colony High School 4. Hatey Khari School & College 5. Khawja Ajmeri High School 6. Silver Bells Kindergarten & Girls' High School 7. T & T High School
Hotel & Restaurant	Shopping Complex
Hotel Agrabad Orchid Business Hotel Landmark Hotel Shangri-La Chinese Restaurant Silver Spoon Best Western Alliance Hotel	Akhtaruzzaman Center EBL (Eastern Bank Ltd) Street Market Lucky Plaza New Dubai IT Bhaban Southland Center Singapore Bangkok Market

2. Problem Identification:

2.1 Drainage system and water logging:

Agrabad residential area is one of the posh areas of Chittagong. The area is famous for government residential areas and for Ma o Shishu Hosptal and General Hospital. Most of the governmental/ administrative buildings are situated in the study area. There are parks, open-space, banks, markets, shopping malls, private offices, colleges, schools, high schools in the study unit beside residential areas. Though the road network condition in the study area is good, but due to poor drainage system, people of this area have to face water logging problem every year. Every year, the ground floor of Chattogram Ma Shishu O General Hospital, where the Paediatric Ward and Outdoor of the hospital is located, went under knee deep water forcing the authority to relocate the patients. Even in 2020, during the COVID pandemic situation, the patients suffered a lot during the rainy season. Moreover, during the rainy days, people suffer more due to the lack of vehicles. People and the patients wait more than 1 hours for rickshaw or other vehicles but could not manage. The public vehicles demand more than double of the regular fare during the rainy season.

There is no drainage system in the port city Chittagong. Despite the Master Plan of Chittagong Development Authority (CDA), no government authorities including CDA, WASA or City Corporation took initiatives to develop drainage system in Chittagong City for a long time. most of the drains in the city have already been damaged due to the unplanned construction and throwing the wastes to the drains by the city dwellers. As a result, the rainwater cannot flow to the rivers. According to the sources, water logging is the common phenomenon of the port city particularly during rainy season. Inundation of the low-lying areas of the city in the rainy season even in the normal rainfall is affecting the normal life of the city-dwellers.

All roads in Agrabad CDA Residential Area went under two to three feet water leaving the residents marooned during the high tide. Residents of this area sufferings know no bounds when the roads and ground floors of the buildings go under water damaging vehicles and other properties during high tide in every full moon. Around one lakh people living in CDA residential area, parts of 'L' Block of Halishahar Housing Estate, Chhotopole, Shantibag and Fakirhat have been suffering from the flooding situation during the high tide over the last few years.

A good number of schools, colleges, hospital, government offices are situated in this area. So alongside the residents, many students and service holders are forced to wade through knee-deep water when all the roads are inundated. The inundation takes place as the Mohesh Khal - a canal forming part of drainage system over a huge area, cannot make passage for drain water. Such inundation causes suffering for couple of days in a month and for eight months in the year. If anybody falls sick during high tide it becomes difficult to take him to hospital as no ambulance or vehicle are able to move through the water due to inundation. The whole area remained under knee-deep water for some 30 hours at a stretch for the first time at the end of last July indicating severe inundation in near future. Locals called for immediate measures to get rid of inundation. It



Figure 2: Water logging in Agrabad Chittagong.

may be mentioned that several lakh people are suffering for a temporary dam on Mohesh Canal which was constructed by the Chittagong Port authority. **Tk 50 billion project launched to end water-logging in Chittagong in 2018.**

2.2 Mosquito infestation

It is disheartening to see that the mosquito problem seems to have gotten worse in Chittagong. To some degree, this is attributable to the Covid-19 pandemic, which has taken up the city corporations' resources. However, it is dangerous to keep dropping the ball on the mosquito front whenever another crisis is present. The grim fact is, mosquitoes have been a major problem for the residents of Dhaka city for a long time, and in spite of lofty promises, this year it seems we are back to square one. The infestation of mosquitoes is making, once again, life very difficult. Due to the poor drainage problem in Agrabad area, mosquito born in the logged water and people are suffering badly by mosquito. Even in Ma o Shishu hospital, the problem is seen to be severe. The patients have to use coil to get rid of the mosquito. A few literatures shows that every year the situation is getting worse. But the city mayor is not taking any initiatives for this.

2.3 Noise pollution

As Agrabad is a highly commercial, administrative and residential area, thousands of people visit this area every day. As a result, the vehicular activities in this area are very high. The residents of this area suffer very much for the vehicular noise pollution problem. Every year, the vehicular pressure and population is increasing so as noise pollution, but government is not taking any steps for mitigating this phenomenon.

3. Fishbone Diagram:

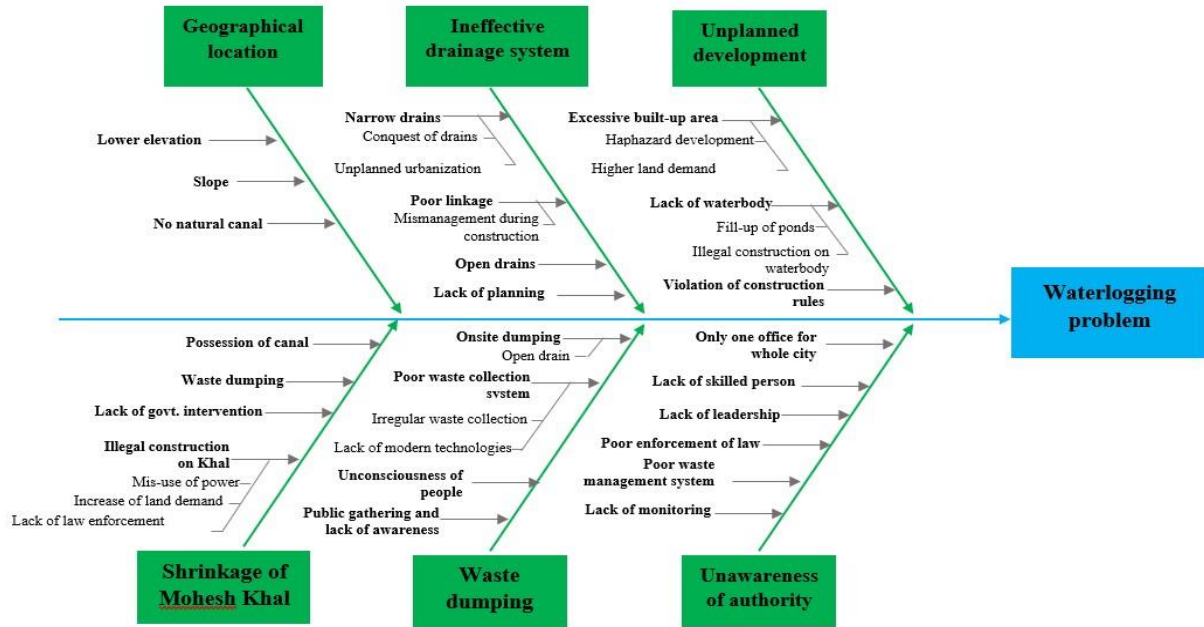


Figure 3: Fishbone diagram of the existing problems of Agrabad Residential area

3.1 Water Logging

Chattogram is located in the tropical zone, where high temperature and heavy rainfall with high humidity is a general characteristic of the summer season. However, such climate has been there for centuries, while water logging is a comparatively recent phenomenon. In the last decade or so, this problem has been increasing due to population growth, economic agglomeration with unplanned urbanization, illegal refilling of natural water channels, and encroachment of drains. Our study area ‘Agrabad Residential Area’ is part of one of the CBD in Chattogram City Corporation area but despite the fact it is an important area people living in the residential area have been facing a problem for nearly one decade with water logging throughout the year and it becomes excessive in the rainy season. People who live here always have to check the tide schedules. Because during the high tide, businesses come to a grinding halt while students attend classes sitting on high benches as the ground floors of schools go under knee-deep water.

3.1.1 Shrinkage of Mohesh Khal

As the Chattogram city is established beside the river Karnaphuli and Agrabad is connected to the Karnaphuli river with ‘Mohesh khal’ the elevation of this area is lower than the other part of the city. In the last decade, the canal was filled with waste and the authority didn’t clear it and now it has become one of the main reasons for river water comes to the city during high tides because the canal is overflowed due to waste dispose in the canal bed. The problem becomes more excessive during the rainy season and only 2-3 hours raining flooded the whole area leaving the people helpless.

3.1.2 Narrow Drains

Most of the drainages in the residential area are obstructed by building structures, that have overtaken the natural gravitational drainage systems of the city, which were organized enough to cope with the natural rainfall. Chattogram City Corporation mainly deals with the drainages

besides houses, roads and small scale, unstructured rainwater runoffs. But Agrabad residential area is under the authority of Chattogram Development Authority (CDA) who mainly deals with primary and larger canals and they blame CCC not solving drainage problem in the CDA area.

3.1.3 Drainage Blockings

With the increasing number of people and buildings the volume of waste is also increasing but there is no proper waste disposal system is introduced till this day in this large residential area. And as a result, the people are disposing their waste in the roadside which go the drains during water logging and not only block the narrow drainage system but also filling the Mohesh khal with waste.

3.1.4 Excessive Built-Up Area

Agrabad residential area is one of the first proper housing colony in Chattogram. In the last 30 years, the expansion of the residential area has increased in a large number and people coming from the village for make a living and also city's different part and they bought the land here and make buildings disrupting the natural phenomenon like filling the waterbodies, cutting down the greeneries and increases of air pollution with the increasing number of vehicles. All these things didn't happen in one day and the authority permitted the people to do these things and the people are facing the nature's revenge created by themselves.

3.2 Improper Waste Disposal

The increasing volume and complexity of waste associated with the modern economy is posing a serious risk to ecosystems and human health. Every year a tone of solid waste is being collected by the authorities from a residential area. The waste management and waste collection system of Agrabad residential area is not properly organized. As the area is a residential area, the solid waste is mainly generated from domestic consumptions like; food and vegetables waste, waste paper, plastic, poly bags, metals, glass and wooden materials.

3.2.1 Poor Waste Collection System

In Agrabad residential area waste collection is one of the vital problems faced by the residence. The number of waste collection bins and manpower is not sufficient to collect all the domestic waste that is being produced every day. The residence is bounded to put their waste beside open street, open place as well as beside the residential buildings due to fewer waste collection bins.

3.2.1 Improper Waste Sorting

The waste that are being collected from the residence mixed with organic and non-organic waste and being dumped on the open street, open place sometime into the waterbodies (canal, lake, ponds and drain). This activity is accelerating the water and air pollution along with ecological imbalance.

3.2.2 Mismanagement in Waste Collection

According to the guidelines of the authorities the waste must be collected from households on a regular basis but in Agrabad residential area the waste-collecting man comes to collect the waste two days a week. For this reason, the waste is dumped into vacant land, open streets, canals, drains, ponds, and lakes illegally. The lack of proper mentioning of the waste

management system the residence of the Agrabad area is faced massive environmental and health risk.

3.3. Ineffective Drainage System

The road network of the Agrabad residential area is very good condition and well-constructed but the drains system is not good at all. The drainage condition in the study area is very poor. Most of the drains are katcha and a very few are pucca as well as narrow. Many drains are open with no slab on it. As a result, people throw solid wastes in the drain illegally which leads to drain blockage.

3.3.1 Narrow Drains

The drainage system of the Agrabad residential area is very poor. Most of the drains are narrow and below standard. Due to this problem, the wastewater that comes from the households cannot flow smoothly to the river or nearest canal. In case of small amount of rainfall, the drain's water gets blocked and creates water logging in the residential area.

3.3.2 Waste Dumping in Drains and Open Drains

Most of the drains of the Agrabad residential area are damaged and blocked due to illegal construction activities and the dumping of household and commercial waste into the drain. No repair activities have been taken by the authority for long time to improve the drainage condition of the residential area. People use to throw waste into the drains because the drains have no slab over it.

3.3.3 Poor Linkage

Most of the drains of the study region are dead end drains, therefore the drain water and rainfall water can't flow from surface to river or canal. For this reason, drain water are blocked on surface for long time and helps to grow mosquito infestation.

3.4. Crisis of Waterbodies

3.4.1 Excessive built-up area:

During the 36-year time frame, the developed region around Chattogram city has extended by 618 %, with a normal yearly pace of increment of 17.5 %. Because of quick urbanization, the vegetated slopes close to metropolitan advancement regions face genuine dangers of further infringement and debasement. 25,000 ha representing 56 % of the all-out land territory has gone through change during the examination time frame. During this time, the developed region expanded by 618 %, with a yearly pace of increment of 17.17 %, from 1309.68 ha in 1977 to 9401.85 ha in 2013. The pace of development was generally emotional in the city company territory where the rate of metropolitan increment arrived at 14 % each year. This quick metropolitan development has come about in the debasement of farming area, woods, and vegetated territories, and wetlands and water bodies across the entire locale.

Table 2: LULC change trends of the study regions

Category	1989 (area in ha)	2001(area in ha)	2010(area in ha)	2014(area in ha)
Build up area	6674	6965	8208	8842
vegetation	2985	2557	2532	2517
Agriculture	2339	2878	3503	3084
waterbody	479	462	468	460

(Hussain, Paul, & Islam,2016)

3.4.2 Unplanned development:

The quick urbanization has required a spontaneous and tumultuous extension of metropolitan foundation, during the time spent which filling of marshes, cutting of slopes, deforestation and the annihilation of arable horticultural land have brought about uncountable misfortunes of characteristic assets and huge ecological harm the nation over. The investigation territory for this work, Chattogram, is the second biggest metropolitan city in Bangladesh, sharing 19.7 % of the country's metropolitan populace and contributing 30 % of the public GDP (BBS 2011). Because of the expanding populace and accessibility of occupations during the most recent forty years, the city has extended every which way, generally in impromptu furthermore, turbulent ways. Commonly, extension in fringe territories happens without forward arranging, and lodging projects are started, both with and without endorsement, in agrarian swamps and bumpy regions, prompting unpredictable filling, smoothing, development, and deal of plots without any norms for arrangement of foundation or conveniences. The investigation territory is likewise a focal point of biodiversity and is arranged at the convergence of numerous biogeographic divisions. The investigation region has effectively endured and will keep on enduring all the more intensely later on, from financial and ecological issues identified with significant development of ghettos, slope cutting, ground water contamination, infringement into the Karnaphuli River, unregulated boat breaking exercises and generally speaking impromptu metropolitan turn of events. (Hassan & Nazem, 2015)

3.4.3 Excessive land demand:

The excessive land demand is booming, demand is soaring, and shaping of industry is very fast. As per the demonstration, Housing and settlement heading (HSD) and agent Commissioner Settlement (DCS) office have been canceled furthermore, another association NHA has been shaped by blending these two associations. The National Lodging Authority Act 2000 has been executed on the fifteenth July, 2001 through the public authority warning." So, the site of National Housing Authority appears to be not to be refreshed with current request and supply of lodging units in Bangladesh.

The housing policy cannot agree to provide excessive land for Agrabad, Chattogram and this demand of excessive land is the main reason of cutting down the trees and cleaning the agricultural sector.

3.4.4 Higher population density:

The dynamic phenomenon of urban growth could be understood with population density profile, land use change analyses.

Table 3 : Population statistics of the study regions

year	% of urban population of the total population
2000	23.6
2005	25.7
2010	28.1
2015	30.8
2020	33.9

Data source: World Urbanization Prospects, 2009 and Prepared by authors, 2015]

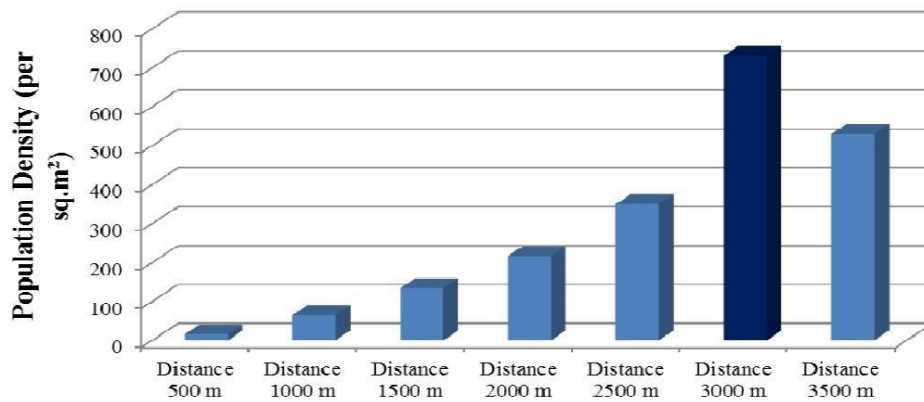


Figure 4: Population density profile for CBD Agrabad (Samad, Chisty, & Rahman, 2015)

3.5 Noise Pollution:

We have seen noise pollution problem in the study area due to some reasons which are described below

- 3.5.1 **Excessive vehicular activities:** As there are many banks, private, government, commercial and non-commercial buildings and offices located in Agrabad, the vehicular activities are relatively higher in the study area which is the major source of noise pollution.
- 3.5.2 **No buffer between roads and buildings:** There are no buffers between roads and buildings, people directly suffer from roads vehicular noise pollution.
- 3.5.3 **Construction activities:** Different construction activities are also a source of noise pollution in the study area.
- 3.5.4 **Shopping centers:** There are four shopping malls in Agrabad Residential area. Due to which many vehicles are seen gathering in the study area which is the major source of noise pollution in the study area.

- 3.5.5 **Ambulance:** As there are hospitals in the study area, the siren of the ambulance is a common scenario. The excessive sounds of the siren cause noise pollution in the study area and people faces this problem for a long time.
- 3.5.6 **Mosquito Infestation:** In the study area “Agrabad Residential area” there are a lot of mosquitoes which causes seasonal diseases like Malaria, Dengue and the latest mosquitoborne disease Chikungunya. These problems are caused by different reasons
- 3.5.7 **Waste dumping in drains:** Due to open drainage system, people dump wastes in the drains and it causes blockage in drains. As a result, mosquito born here and spreads from here.
- 3.5.8 **Waterlogging:** Water logging also influences the infestation of mosquito. Due to lower elevation, water logged in the lower open spaces. Mosquito born in there and cause serious problems.
- 3.5.9 **Government unconsciousness:** There are governmental activities are seen to solve this problem. No insecticides are seen to be sprinkle. For this reason, the problem is going severe day by day.

4. Resource Map

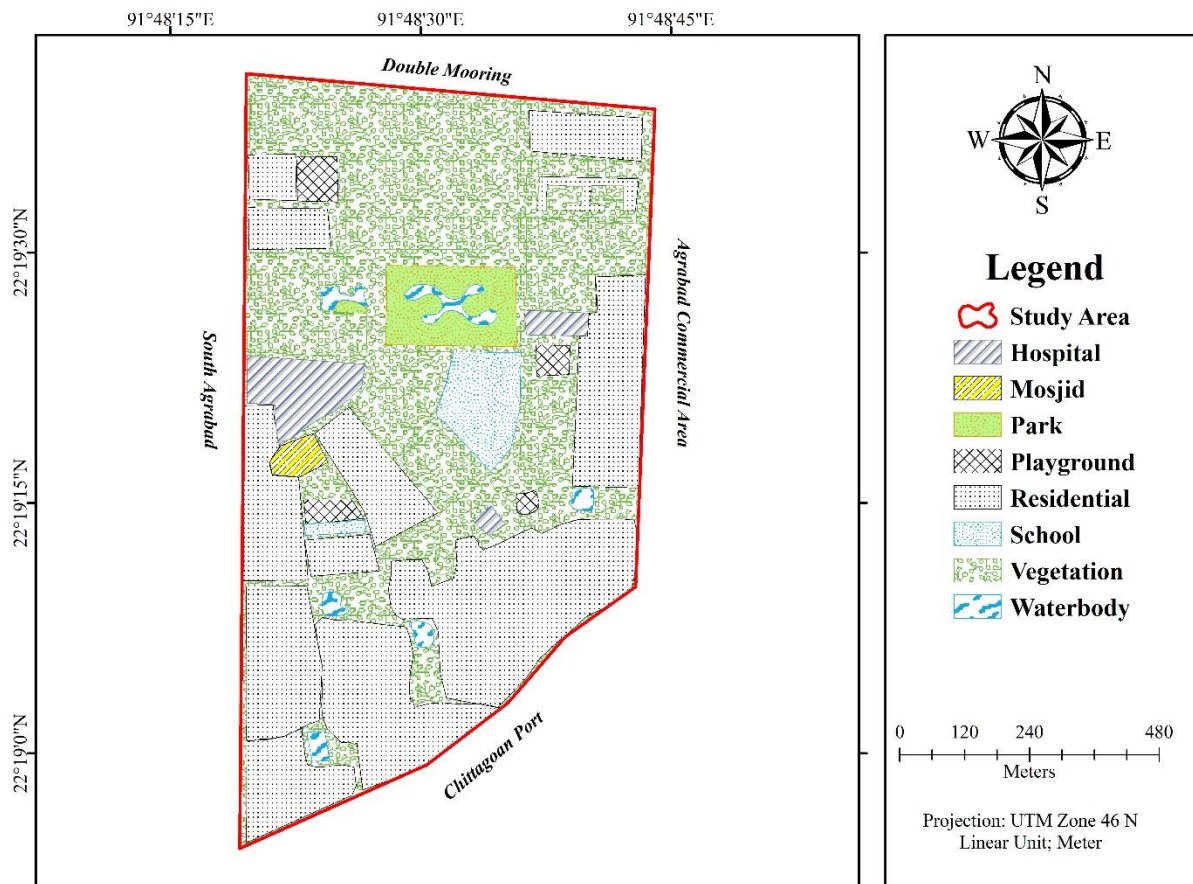


Figure 5: Resource map of the study area

5. Social Map

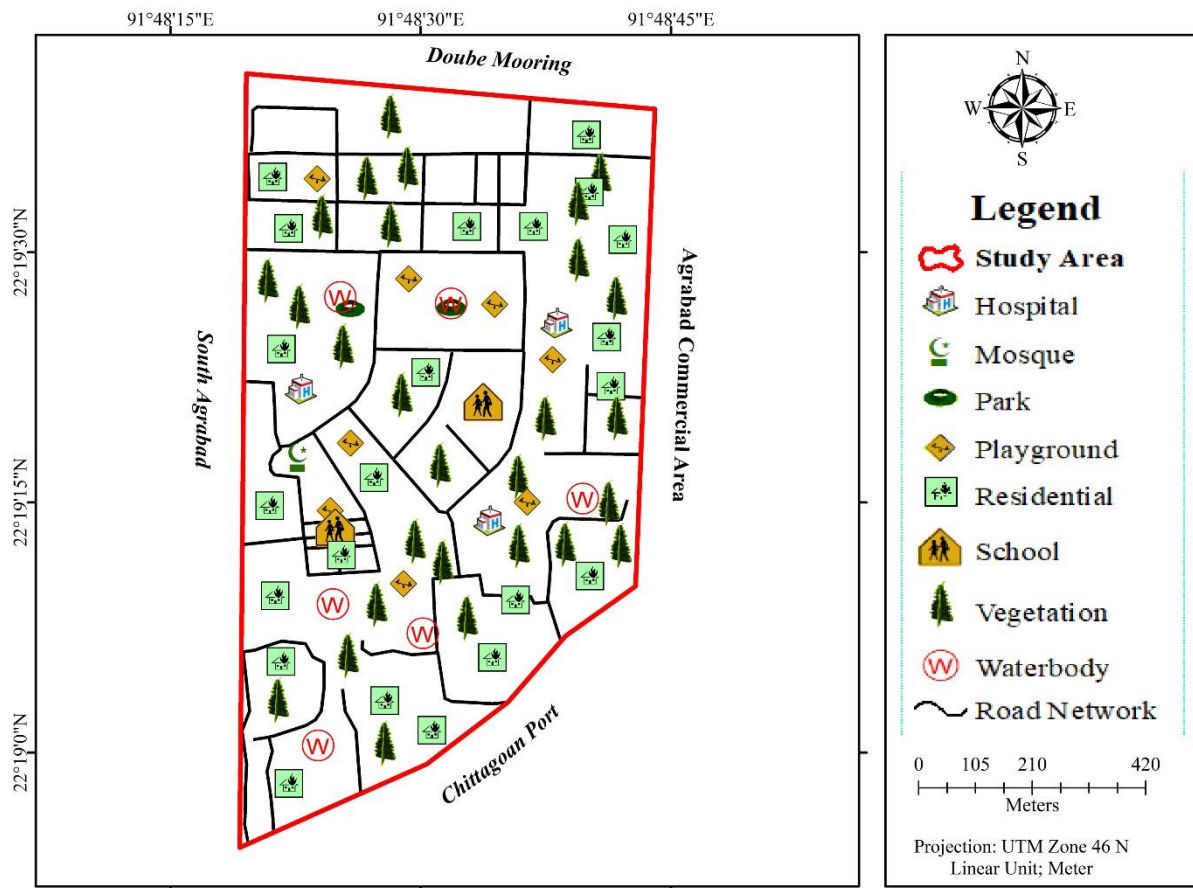


Figure 6: Social map of the study area

6. SWOT Analysis:

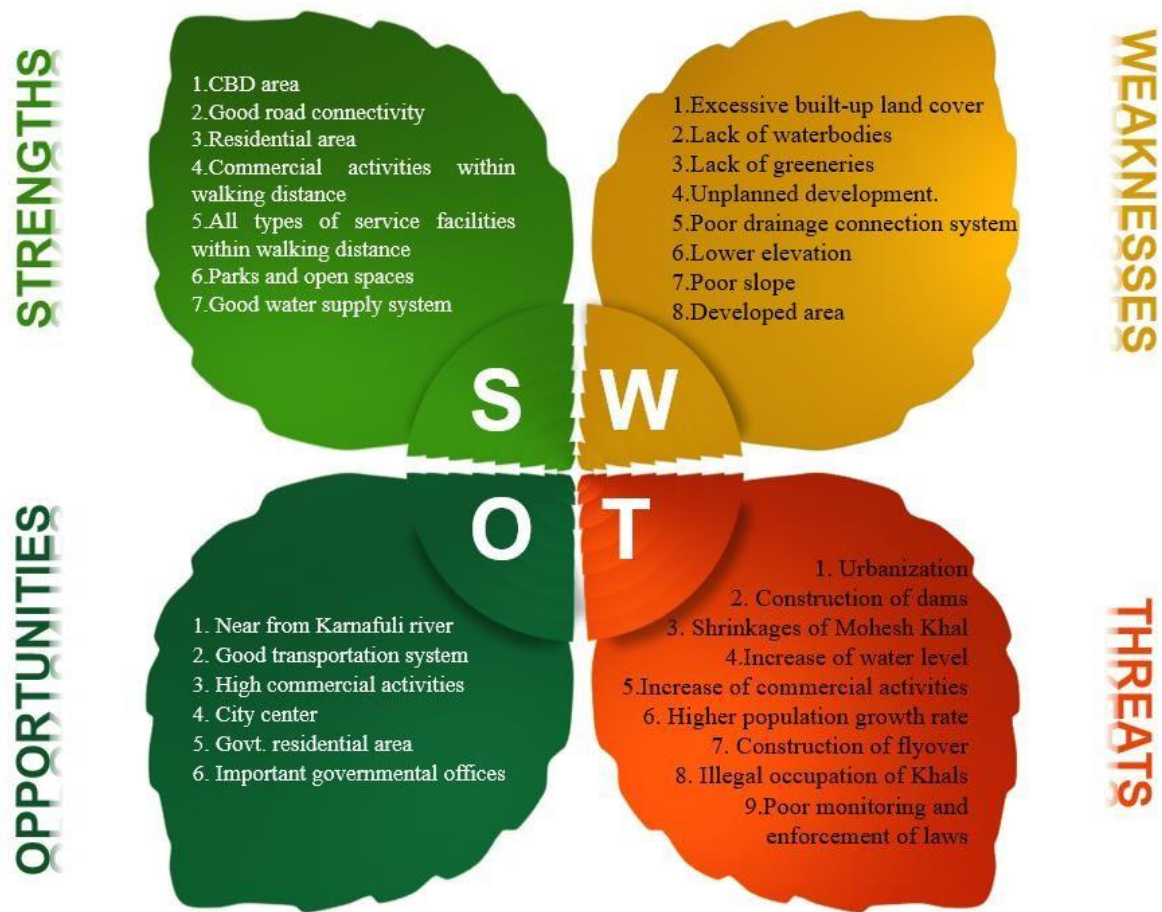


Figure 7: SWOT analysis diagram for Agrabad residential area

7. Problem Tree Diagram:

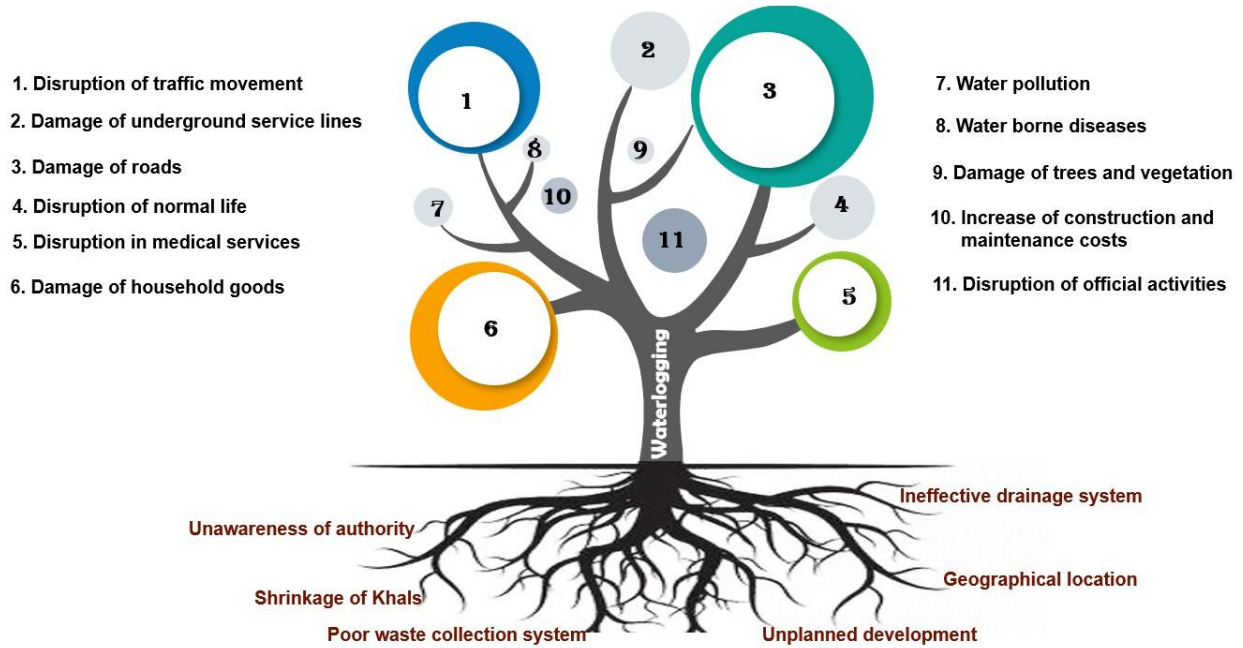


Figure 8: Problem Tree Diagram for the study region

8. Venn diagram

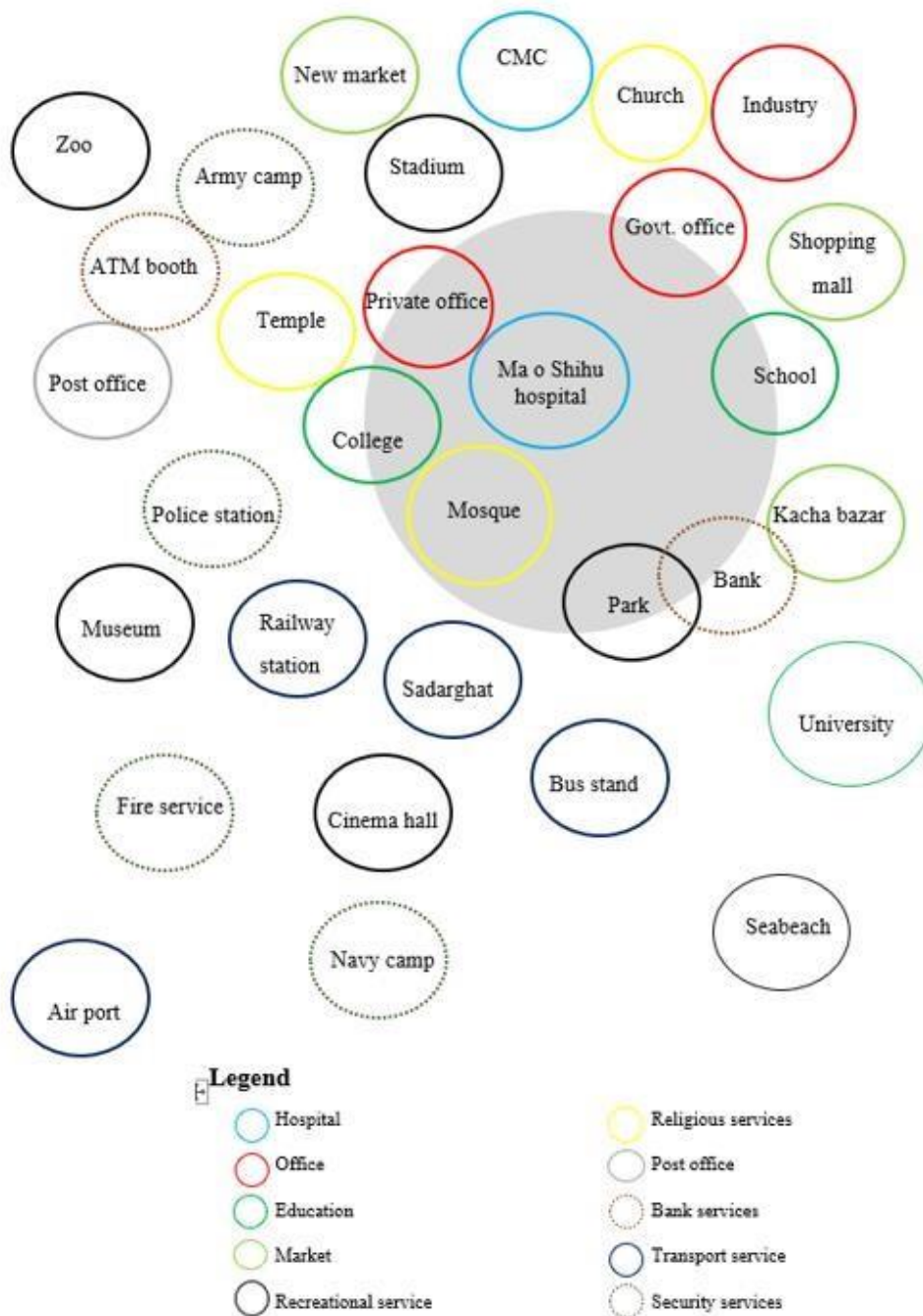


Figure 9: Venn diagram of the study area

9. Mobility mapping

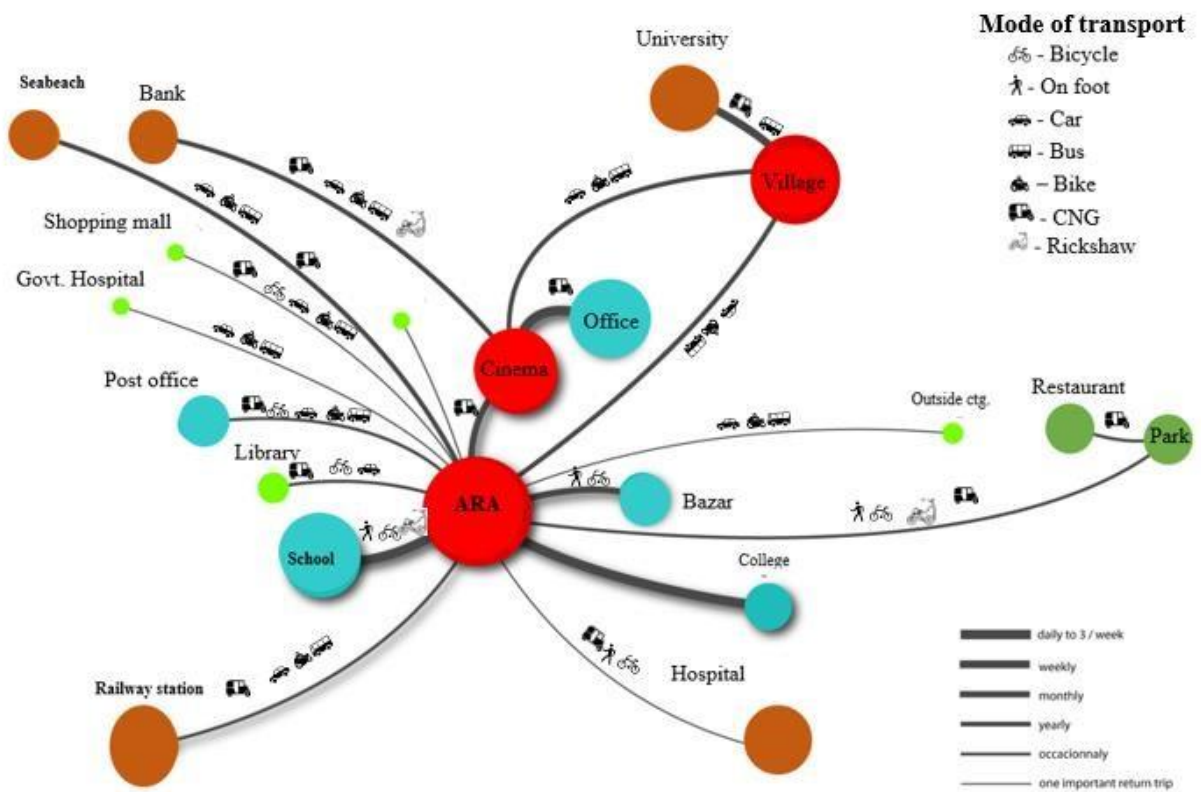


Figure 9: Mobility map of the respondents of Agrabad Residential Area



Figure 10: Recent Waterlogging Scenario of Agrabad residential area



Figure 11: Recent Waterlogging Scenario of Agrabad residential area

References

- Hassan, H. M., & Nazem, N. N. (2015). Examination of land use/land cover changes, urban growth dynamics, and environmental sustainability in Chittagong city, Bangladesh. *Environment, Development and Sustainability*.
- Samad, M. B., Chisty, K. U., & Rahman, A. (2015). Urbanization and Urban Growth Dynamics: A Study on Chittagong City. *Journal of Bangladesh Institute of Planners*.
- Hussain, M. R., Paul, A., & Islam, A. Z. (2016). SPATIO-TEMPORAL ANALYSIS OF LAND USE AND LAND COVER CHANGES IN CHITTAGONG CITY CORPORATION, BANGLADESH. *International Journal of Advancement in Remote Sensing, GIS and*.
- <https://dailyasianage.com/news/27654/water-logging-a-chronic-problem-in-chittagong>
- <https://thefinancialexpress.com.bd/economy/bangladesh/tk-50-billion-project-launched-to-end-water-logging-in-ctg-by-next-monsoon-1524909514>
- <https://www.thedailystar.net/frontpage/news/the-curse-agrabad-1649452>
- <https://www.thedailystar.net/city/why-ctg-waterlogging-never-ending-problem-1395127>
- https://www.adpc.net/igo/contents/iPrepare/iprepare-news_id.asp?ipid=237