



Geographical Growth and Environment of Private Housing in Dhaka City

PhD Thesis

by

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Candidate's Declaration

I hereby declare that this thesis has been prepared in fulfillment of the requirements for Degree of Doctor of Philosophy at the Selinus University, United Kingdom and has not been submitted anywhere else for any other degree.



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PREFETCH

I, ANM Safiqul Alam, conducting this research on Construction Industry in Dhaka Metropolis: Geographical growth and Environment of Private Housing in Dhaka City for my doctor of philosophy program in Selinus University, United Kingdom. Because of my involvement in this field, I've gathered a significant amount of knowledge on this field. Not only that, because of my working experience on various related field like Waste management, Drainage master plan, urban land use plan, socioeconomic aspects of city development, real estate etc. I felt the quest of conducting this kind of research. Housing sector is one of the most emerging sectors in Bangladesh. Due to in migration and rapid population growth, the city is under tremendous land crisis and the situation is getting worse day by day. Both public and private sector in Bangladesh is struggling to tackle the situation. In the midst of all this, private entrepreneurs also have to deal with various problems like unexpectedly unreasonable increase in the cost of construction materials at different times including various complications, harassment and procrastination to get the necessary clearance from the government department which is hindering the progress of developing housing business in this country. Although this sector has a significant contribution to the country's GDP, the industry is also making a huge contribution to the development of employment and various linkage industries. Three lakh people are being added to the population of the capital every year. Seventy thousand housing units are needed to meet the housing needs of these three-lakh people. This eleventh megacity in the world has a shortage of at least two million planned housing units. Housing units are not being built at the rate at which the pressure of people is increasing in Dhaka metropolis. On the other hands, environmental degradation is also taking place at the same pace as the rate of construction goes high. So, an optimum solution is required to handle the crisis in a sustainable manner so that both housing crisis and environmental degradation can be handled at the same time. This research focuses on specifying the problems related to this field, the reasons behind those and the extent of the problems. Finally, some planning recommendation has been prescribed as potential solutions.

Abstract

The housing situation in Bangladesh was not been satisfactory even a few years back. Dhaka, the capital of Bangladesh, currently has a population of about 8.906 million (BBS, 2011). The estimated population of Dhaka City Corporation (DCC) area of 2004 is 8.0 million and the number of holdings in the DCC area is 1,86,646 within 90 wards (DCC, N.D). The over-sized population of the city created a difficult-to-solve housing problem. To accommodate the increasing population growth, both public and private sectors participate in the housing market in Dhaka. People of all socio-economic backgrounds in Dhaka face housing problems although the nature and severity of the problem vary (Seraj and Alam, 1991). The massive presence of residents in Dhaka, the capital of Bangladesh, has created a housing problem that is difficult to solve. To accommodate the increasing population growth, both public and private sectors participate in the housing market in Dhaka. In Bangladesh, the widespread participation of private developers in the housing sector is a recent phenomenon, although these activities started sometime in 1964. According to the Bangladesh Real Estate and Housing Association (REHAB), there are currently around 460 developers and at least 420 of them are stationed in Dhaka. During the period, private sector apartments have seen many changes in various aspects such as the location of apartment projects, apartment size, plot size, client group, apartment price, etc. Certainly, certain forces are influencing these changes and these are carefully considered by private developers, who are essentially the decision-makers of private sector housing in the city.

Bangladesh is one of the most densely populated countries in the world. Dhaka is the core city of this country and has become known as one of the megacities of the world. According to a study by the Asian Development Bank, the population of the city of Dhaka estimated in 1995 was 7.8 million, classified as the 14th populous city in Asia. But now the megacity spans an area of 1,528 sq km, with a population of 10.7 million which is expected to rise to 25 million in 2025, ranking 4th in Asia. The area of the megacity of Dhaka had expanded by 17.88 times its size in 1951, and in the same period, the population had increased by 25.09 times (Islam, 2005).

Urbanization is the result of population growth and rural-to-urban migration. Dhaka is no exception in this regard; The rapid population growth in this city was the result of a high rate of internal migration, territorial expansion, and natural growth. Dhaka City refers to the area

under the authority of the Dhaka City Corporation (DCC). It has an area of only 125 square miles in 1974, which expanded to an area of about 155 square miles in 2008. The government has made several attempts to ensure the planned development of this city. In all development plans, special emphasis has been placed on the DCC region due to its immense importance as the core of business and management, also the home of a large share of the population.

The land-man ratio in this country is the lowest and is decreasing at an alarming rate (UNEP, 2001). Therefore, the rapid population growth is concentrated in the main cities and towns, especially in Dhaka. A huge population of the city is creating demand for housing because it is one of the basic needs of human beings. The housing shortage in 1991 was estimated at 3.10 million units, made up of 2.15 million units in rural areas and 0.95 million units in urban areas. The annual growth rate of the city's population is 4.34% and the average size of the household is 4.8 (BBS, 2001). So, you are generating the demand for 50,000 new homes a year. But the average production rate is only 20,000 units per year (Seraj & Arefin, 2003).

Considering the high rate of population growth and increasing land value in Dhaka, it is currently quite impossible to buy land in the city to build a house independently even for people of the top-income group. The increasing demands for housing are met mainly by multi-storied apartments, a greater percentage of which are provided by private developers. At present, the apartment projects carried out by private developers are not only concentrated in the planned locations in the city, but the development is now extended to unplanned areas as well. In such a context, this research is a study on the analysis of the trend of the construction of apartments by private developers in the area DCC to discover the key forces behind the changes in this sector.

A huge amount of construction material is required in urban areas for developing and maintaining buildings and infrastructure. Ageing stocks, which were built during a period of rapid growth in Bangladesh (1985–2020), will cause a new waste flow in the near future. In order to assess urban metabolism with regard to building and infrastructure, it is necessary to understand change in its material accumulation both ‘spatially’ and ‘temporally’. In this analysis, material accumulation over time is elucidated using four-dimensional Geographical Information Systems (4d-GIS) data at an urban scale.

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1 Real Estate Development in Dhaka City

1.1 Introduction

Settlement is considered to be the first sign of the beginning of civilization. Exactly when and why people started building permanent settlements is not known. Construction began at the beginning of human habitation. From the beginning of civilization, people wanted to build houses. In the course of this construction aspiration of man, a science called ecology has emerged. In the light of this science, a house means not only four walls and a roof over one's head. Light, air, nature, environment, surroundings have been added to the living conditions of human habitation. Health, happiness, etc. have been involved. The ability and capability of human beings to get all these things together in one place also becomes a matter of consideration. Population growth, rapid growth of urbanization has made people's expectations and possibilities more difficult and reversible. Yet people hope, dream.

1.2 Construction

1.2.1 Type of construction

Housing is the first step for people to live socially. Later, roads, canals, ponds, etc. were constructed as per the need. Construction is generally considered to be the construction of any installation with all kinds of technical knowledge. In the beginning of civilization, people created cities. The main construction of this city is residential, commercial, administrative, travel facilities. Therefore, establishing this huge sector as an industry, it established the construction industry.

Types of general construction industry:

- (1) Housing
- (2) Construction of roads
- (3) Construction of commuting transport

In this case, we have identified the housing industry as the main subject of our research. Because housing is the first element of basic human needs. At present, there are many types of housing entrepreneurs, so the development and problems of this industry are also considered as the subject of real estate research in the private sector.

1.2.2 Commencement of construction in Dhaka metropolis

Considering the use of land, procedures and importance in the course of time...

1.2.3 Housing situation in Dhaka metropolis

Housing is one of the major problems in Dhaka city with a population of over one crore. Most of this huge population has no healthy housing facilities. In the housing sector, government or non-government activities are acting as a symbol of hope for the private sector in such a situation. In the midst of all this, private entrepreneurs also have to deal with various problems. Unexpectedly unreasonable increase in the cost of construction materials at different times including various complications, harassment and procrastination to get the necessary clearance from the government department is hindering the progress of this industry. However, apart from making a significant contribution to the country's GDP, the industry is also making a huge contribution behind the development of employment and various linkage industries. As the population grows and the demand for human habitation in the country increases, so does the pressure on the country's land. As a result, there is no shortage of living space in this country of 56,000 square miles. New houses are being built all the time. Even then the crisis is not over. The image of the city is more terrible than the rural area. By 2010, the capital Dhaka will become one of the megacities in South Asia. In this multi-faceted problem, housing problems are becoming more and more widespread in Bangladesh due to lack of proper government policies and limited resources. In addition, unplanned housing construction of this growing population is inevitably polluting the whole environment. Just a little bit of an address, a constant search for a place to go. 82% of the total population of the country lives in rural areas. People are moving to cities due to floods, droughts, floods, river erosion, lack of social security, poverty and unemployment. 5-6,00,000 new people are being added in Dhaka city every year. These people have lost their living space in the rural area and the scattered people have gathered in the slums or sidewalks of the city. Thirty-five percent of the total population of the six city corporations live in slums, although they live on only 4 percent of the total land area of these cities. The total slum population in the cities was over 5.4 million, 63 per cent in Dhaka and the remaining 26 per cent in Chittagong. Most of the slums are located on 67% privately owned land. The way the population is growing in Dhaka, housing will be the main problem of this metropolis in the next century as well.

Middle class and lower-class people live in rented houses in different residential areas. Their lives are ruined by the pressure of renting a house. 80% of the income has to be spent on rent. Every year on various pretexts the house rent has increased unequally and at an unbearable

level. This crisis will become more evident in the next decade. According to a survey conducted by the Consumers Association of Bangladesh (CAB), the growth rate of house rent in the capital Dhaka was 25.79% in 1990, 21.75% in 1991, 13.43% in 1992 and 12.16% in 1993. After 3 years, it increased to 17.86% in 1996. It decreased slightly in 1996 to 15.3% and increased to 15% in 1996. In 2000, house rents increased by 15.8%. According to the available data, house rent has increased by 227.26% in the last 11 years. The last increase was in 2001 at 17.40%.

Table 1-1 House rent increase in 12 years from 1990 to 2001

Year	Growth Rate (%)
1990	25.79
1991	21.75
1992	13.43
1993	12.16
1994	16.44
1995	22.61
1996	17.86
1997	15.03
1998	14.09
1999	18.24
2000	15.08
2001	17.40
Total	295.02

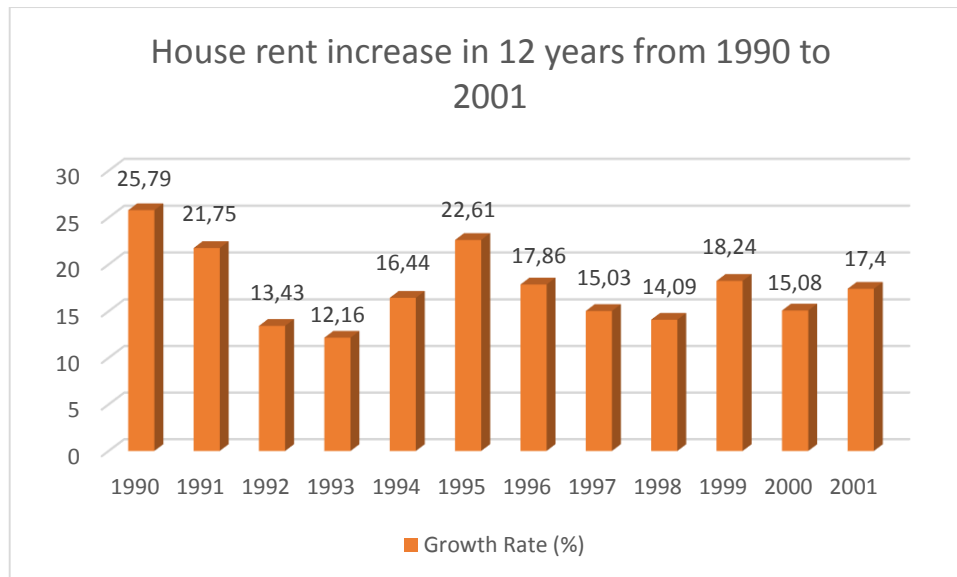


Figure 1-1 Increase of house rent in 12 years

The housing crisis in the capital Dhaka is very terrible. In this city of more than one crore people, only 15% have their own home. 18% of the people live in the colony allotted for employment. 38% of the people live in slums with misery. 38% of people live in rented accommodation. The remaining 20% are floating or homeless. Slum dwellers are deprived of any welfare benefits of the state.

At present, the demand for residential houses in Dhaka city averages 60,000 to 70,000 per year. No more than 15,000 to 20,000 houses are built by various government and non-government organizations and private enterprises. As a result, there is a shortage of 40,000 houses every year. It is a matter of fortune to own a piece of land in Dhaka. One of the reasons for this is the highlands of Buriganga and Shitalakshya basin. It is surrounded by deep wetlands. As a result, the house builders have no choice but to build the house by filling the soil. The construction cost for this is 12,00,000 to 15,00,000 BDT per bigha. In the eastern part of Dhaka, 60-80 feet of piling has to be done, so many landowners are not able to collect the construction cost and are constructing Tin shed temporary, semi-finished and unfinished houses at low cost which is pushing the creation of dense slums.

As the area of Dhaka metropolis is increasing rapidly, the price of land is increasing day by day. The lower and middle classes have gone beyond their purchasing power. At present most of the land buyers in Dhaka are expatriates, good businessmen and real estate businessmen. The value of habitable land in the center of Dhaka city is 50,00,000 to 150,00,000 BDT per katha.

Table 1-2 Price of land in Dhaka city

Area Name	Year 1972 (in BDT)	Year 2003 (in BDT)
Dhanmondi		2500000.00
Siddheswari		1800000.00
Shyamli		1200000.00
Mohammadpur		1500000.00
Green Road		1600000.00
Elephant Road		2000000.00
Lalmatia		1800000.00
Shantinagar		1800000.00
Uttara		1200000.00
Gulshan		2300000.00
Niketan		1400000.00
Baridhara		2200000.00
Banani		2200000.00
Mirpur		1200000.00
Segunbagicha		1600000.00

Rising land prices are undermining middle-class and middle-income people's desire for a home of their own. High land prices discourage high- and middle-class people from building their own houses. So, apartment culture is gaining popularity in Dhaka. Rising land prices discourage people from building their own homes.

1.2.4 Problems and possibilities of construction in Dhaka metropolis

Three lakh people are being added to the population of the capital every year. Seventy thousand housing units are needed to meet the housing needs of these three-lakh people. This eleventh megacity in the world has a shortage of at least two million planned housing units. Housing units are not being built at the rate at which the pressure of people is increasing in Dhaka metropolis. Until the early nineties, housing was built here at the individual and government level. The maximum height of individual enterprise accommodation was four or five stories. This was also the height limit of the houses built on the initiative of public works or other departments of the government. With the passage of time, new residential areas have been created in the capital, which have expanded around, and this type of housing has also been created. According to a private statistic, only 12 percent of the four-storied or above residential buildings in Dhaka were built in the eighties. It is clear from the statistics that only 12 percent of the buildings have not been able to meet the housing crisis in any way. On the other hand, no matter how much the perimeter of Dhaka metropolis grows, the amount of land suitable for building is not increasing. Recognizing this reality, the trend of constructing multi-storied residential buildings on the initiative of individuals and government has been seen since the early nineties. Apart from individual and government initiatives, the private sector has also been involved since this time. Since the beginning of the nineties, about 450 projects have been undertaken to build housing units on private initiative. Thousands of housing units built under these projects have already been handed over to the buyers. Seeing the success of private entrepreneurs in the multi-storied building sector, now the government has also taken up the project of building multi-storied housing. At the moment, besides building multi-storied housing, several multi-storied commercial buildings are also being constructed in the capital on public-private initiative.

Considering the usefulness of multi-storied buildings to meet the housing shortage, it is not possible to say what awkward arrangements are waiting for the entrepreneurs of multi-storied buildings. If someone comes to the town planners of RJAUK with any proposal of multi-storied building, they will first ask them to bring the environmental certificate of the Department of Environment. In some areas like RAJUK Dhanmondi and Banani, even if they have to construct a semi-commercial building, the builder has to go to the Department of Environment for an environmental certificate. When they go to the Department of Environment to ask for a certificate, they will hand over a long sheet to the manufacturer in the beginning.

Environmental clearances will be sought from 11 corporations such as City Corporation, Titas Gas, DESA, WASA, Civil Aviation and Fire Service.

Two decades ago, there were only two or three multi-storied buildings in Dhaka. During this time, RAJUK laid down building rules for a two-storied, three-storied building. At that time, in the language of RAJUK, a six-storied building was called a multi-storied building. And now from four-storied to 20-storied buildings are considered normal in Dhaka City. A three-storied building has also been constructed here. Urban planners, however, think that no matter how much Dhaka is spread around, there will be a shortage of land. To meet the land crisis, the expansion of Dhaka must be upward. According to one statistic, Dhaka is expanding exponentially at the rate of only one percent at the moment. On the other hand, it has expanded upwards at a rate of ten percent. In this reality, private developers and even various government agencies are now interested in building multi-storied buildings. But when it comes to building multi-storied buildings, all the builders have to face more or less the same experience. They have to get clearance from eleven organizations. RAJUK's current building construction rules were made in 1996. There are many limitations to this rule, it is acknowledged by most urban planners, architects and even RAJUK itself. If the rule had been made at the time of making - the height of the building would be determined in proportion to the size of the plot. Then multi-storied buildings would not stand as they are now. Not to mention anything clear in the rules, the construction of a building as high as a ten katha size plot is now built on a two and a half katha plot. Besides, there is only a ten-foot road in front of the multi-storied building which is supposed to have a thirty-foot road. The present multi-storied buildings have been constructed under the prevailing rules. RAJUK does not have the manpower to see if these buildings have followed the rules one hundred percent. Taking advantage of RAJUK's weakness, the builders have built multi-storied commercial buildings and hospitals in residential areas, avoiding the approved design. Many multi-storied buildings do not have adequate parking facilities.

The Public Works Department has taken the initiative to make another new rule without saving all the energy to take care of its own state. The title of the rule is 'Dhaka Metropolitan Multi-storied Building Construction Rules'. Architects and city planners say there was no need for separate rules for multi-storied buildings. It is possible to control the construction of multi-storied and low-rise buildings only by updating the 1996 rules for construction of buildings. But instead of updating the previous rule, the new proposed rule has widened the path of misery for the public works department builders. While many private sector companies are providing 'one window' or 'one stop' services all over the world and even in Bangladesh, the traditional

bad practice of public works department could not be eliminated even in 2003. RAJUK has only five planners and six authorized officers to see if the building has been constructed as per the rules. How realistic is it for only six authorized officers to supervise a building constructed or under construction in 22 Thana areas of Dhaka metropolis? RAJUK officials approve the design of an average of 100 buildings every month. But after the approval, RAJUK officials do not have time to test whether the buildings have been constructed at all, how durable their structure is, even whether those will be constructed at all in near future. There have also been incidents of some buildings collapsing after approval. Why did RAJUK accept the structure design of those buildings for so long if no official who had approved the design had to face the law for this collapse? But the builders of all classes think that if there was a system of accountability of the RAJUK officials who approved the design, unplanned construction of small or multi-storied buildings in the city could have been prevented. Private construction companies are claiming that RAJUK has failed to control urban development, their outlook is not positive. The main reason for this is the lack of necessary professionals. Their demand is that legislation should be enacted with clear explanations about the activities of the Urban Development Regulatory Authority and the number, quality and working methods of the executive professionals. They also say that eminent professionals in the country should be involved in development control activities. Create a bureaucracy and corruption free environment by ensuring the use of modern technology in urban development management.

Many builders are now suffering from the fear of earthquakes while constructing multi-storied buildings. In particular, everyone in the high-risk and low-risk zones (directed by the Bangladesh Earth-Quake Society) is concerned about the sustainability of their own buildings under construction. How well a building can withstand an earthquake depends on the quality of the soil on which the building stands. If the extended Dhaka metropolis is brought, only one third of the old soil can be seen. The remaining two-thirds of the land has been created by filling the lowlands. There are also questions about the method of filling these soils.

Beels or ponds are being filled in the same way as low lands are being filled. It has been seen that multi-storied buildings are being created only after filling the bill with sand. Again, the low-lying areas are using organic waste a lot of the time to fill up. High-rise buildings are also being built on land filled with waste. Earthquake experts now say that if the land is not filled with soil that is good in a proper and qualitative way, there is a big risk of building collapse. As a first step in construction the building, all the builders tested the soil. But there is no one to see how qualified the institutions engaged in soil testing are. They do not have any

accountability system if there is any discrepancy in the soil test report. After constructing the building relying on incorrect soil test, there is no chance of seeking compensation from these institutions if the quality of soil is found to be faulty. Architects and builders believe that those involved in soil testing work must come under the control of a company and must have compensation arrangements for manipulating soil test results.

Similarly, there is a lot of skepticism among the manufacturers about the quality of the materials used in the construction work in Bangladesh. Quality and testing of Bangladesh Standards and Testing Institute (BSTI). But no company is subject to BSTI after the quality has been tested before the product is monetized. Again, BSTI is not usually seen to take measures to test the quality of building materials in self-initiative. Besides, the building materials market is jam-packed with various products. Buyers are likely to call everyone who looks appropriate, if there are only a few. Because they can't be sure about the value of either. Many manufacturers have been deceived into using materials like cement, rods, tiles, paints, electric wires. In this situation, the manufacturers demand that at least an internationally recognized building materials laboratory be set up in Dhaka. Architects and construction engineers think that using tested materials and providing supplier's credentials can help preventing many accidents in earthquakes.

The issue of fire prevention has been given importance in the proposed building regulations. Those planning to build new multi-storied buildings are also being warned and asked to go to the fire service authorities for clearance. But the reality Bangladesh Fire Service and Civil Defense do not have the equipment to put out fires on buildings above the sixth floor. The architects think that there is no problem in constructing a three-storied building, in fact, there is a weakness in the fire service department of the country. The fire service department has not been modernized in the last thirty years. Firefighters are still battling firefighting technology using stairs. Architects believe that in addition to updating building regulations, companies related to multi-storied buildings also need to be modernized.

The Bangladesh National Building Code (BNBC) has been asked to follow the proposed multi-storied building rules at every step. The purpose of creating BNBC was to provide a guideline for architects and engineers in design and building construction. But it has been seen that the Public Works Department has completed its responsibility by creating BNBC. Architects did not take any steps to popularize BNBC among engineers. BNBC was formed in 1994. Much of the trend of building construction across the country, including the capital, has changed over

the past decade. Urban planners and architects think that many aspects of BNBC need to be modernized. Therefore, the revised version of BNBC should be included in the building rules.

However, none of them want to be in the role of RAJUK authorities, who have had to be reminded of RAJUK once or twice. According to them, since RAJUK itself is involved in plot development and construction of flats, it cannot have the authority to take care of other builders. All classes of builders and construction professionals believe that the responsibility for enforcing and supervising construction rules should be handed over to an impartial authority that will not be involved in any construction work. According to them, if the responsibility is not handed over to a neutral authority, there may be room for bias in the application of the rules.

1.2.5 Privately Owned Sector in Dhaka Metropolitan Construction

The journey of private housing construction in the late seventies was only five companies in the country at that time, but it increased to forty-two in 1988 and at the end of 2003 it was around 250, now it is around 2000. Not only has the number of entrepreneurs increased, but the housing business has also contributed to the realization of the housing crisis during this period, and housing has added new dimensions to different contexts. Basically, the housing project has ensured concerted investment in housing, opening up new horizons in the construction sector, increasing prosperity of the urban style, etc.

1.2.6 Content

In the seventies, the real estate sector in Bangladesh began to expand at a slow pace. It was confined to the heart of Dhaka. For political and economic reasons

1.2.7 The rationale for research

1.2.8 Literature Review

To meet the goals and objectives of this research work.....

2 Research methodology

A number of sequential approaches have been adopted to meet the goals and objectives of this research work. After first observing the housing problem, quantitative and descriptive methods are imposed to solve the problem. The steps of the data research method are described below:

2.1.1 Book Review:

Various books at national and international level have been reviewed to determine the problem. In addition, experience and various approaches have been adopted to determine the problems of such research. The relevant government policies have also been reviewed to examine the gap between the real picture and policy making.

2.1.2 Survey Area Selection:

There are several features of housing in Dhaka city. There is a lot of housing here and it is increasing day by day. With the passage of time, the size of Dhaka city is increasing. Land development is going on in the Dhaka metropolitan area of 590 sq km, beyond 360 sq km area and construction work is progressing at a fast pace. Therefore, the housing of 1530 sq km Dhaka city surrounded by RAJUK border has been selected as the subject of this study.

2.1.3 Data collection:

The data used in this study are taken from primary and secondary data. The data collection processes are mentioned below.

2.1.3.1 Preliminary data collection:

Preliminary data have been collected from two main sources. The first is through questionnaire surveys and direct observation from those who live in apartments and the second is from architectural construction businessmen who are in the survey area.

2.1.3.2 Phase II Data Collection:

Secondary data is a reliable and powerful tool in any study. Different types of secondary data have been used in this study. Which have been collected from various government, autonomous, agencies and other institutions.

2.1.4 Map collection:

Maps of mouzas and mahallas of the survey area (Dhaka city) have been collected from which data on the location of the survey area and land use for housing has been obtained. Map of Dhaka city has been collected from Dhaka City Corporation.

2.1.5 Housing Survey:

Housing data has been collected from the BBS census. Moreover, data on housing has been collected from various published books, journals, magazines, newspapers and some reports.

2.1.6 Field Survey:

Field level survey work has been conducted to get information about the location and development of housing and architectural construction industry. Within 1024 REHAB enlisted members, 100 companies were surveyed for the study which is 10% of the total members. Sample selection technique was simple random sampling.

2.1.7 Interview Survey:

Personal interviews have been conducted at the administrative level of housing. The administrative perspective on the cost of housing in the survey area is appropriately mentioned here.

2.1.8 Mapping:

Following the field survey, Geographic Information System (GIS) has been used to show the current land use and housing ownership type of the survey area.

2.1.9 Data processing and analysis:

After collecting primary and secondary data, the data has been verified and corrected. In this way, the necessary components of the research have been analyzed and implemented. Data processing has been done in two ways, simple and automated. The data collected in the final stage has been done through statistical and GIS method.

2.1.10 Limitations:

The scope of this study is limited due to various constraints such as lack of time, manpower, financial crisis, etc. while working at the field level.

There are limitations to the collection of written material for the purpose of the study.

- (1) Very little published and unpublished information is available about the location of housing and construction industry in our country.

- (2) It is almost difficult to get reliable data on the current type of housing and construction industries in Dhaka city.
- (3) Due to the scarcity of secondary data, this research work has been performed on the basis of primary data.

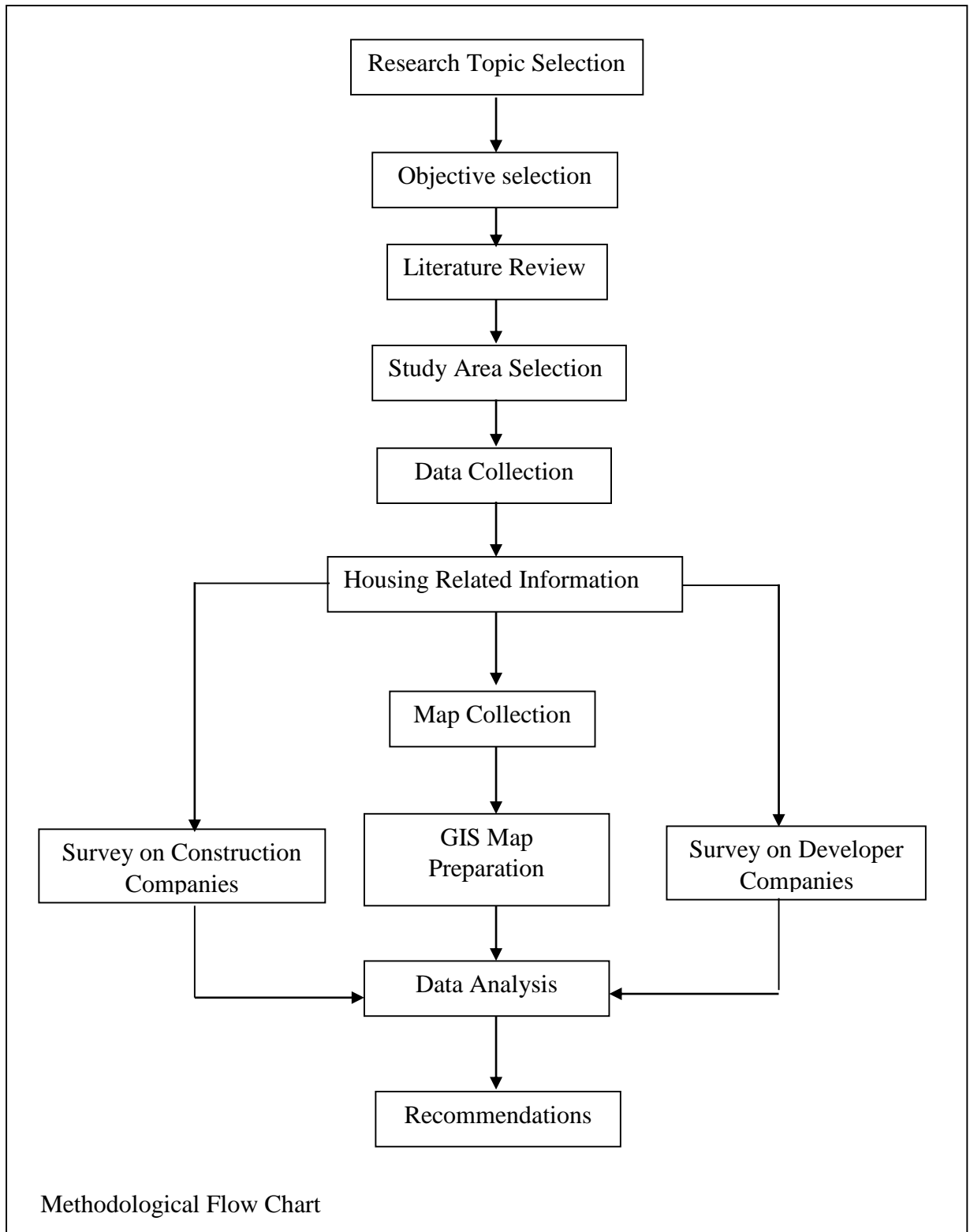


Figure 2-1 Methodological Flow Chart Study Area

3 Study Area

3.1 Introduction

Each socio-economic research work requires a general description of the geophysical and human activities of the study area. Because natural and human elements are integrally involved in the research work. The study area in this study is Dhaka city. Dhaka is a large city and capital of Bangladesh. The study area has been observed, surveyed and analyzed in this study.

3.2 Location:

Dhaka city is located between 23°45' north latitude and 90°18' east longitude. Geographically, Dhaka city is located in the middle of Bangladesh and on the banks of the river Buriganga. Turag river in the west, Buriganga river in the south, Balu river in the east and Tongi canal in the north.

3.3 Size:

The area of Dhaka city is 1560 sq km (including Gazipur, Savar, Tongi, Kerani Ganj, Demra). Dhaka is the largest city in Bangladesh in terms of size. Currently, the city is growing very fast.

3.4 Historical background:

During the Mughal period, when Islam Khan (1808-1813) was appointed as the ruler of Bengal in 1808, Dhaka was the first city to emerge and emerged as an important capital. During the reign of the 3rd ruler Ibrahim Khan, industry and trade started in Dhaka city. Many permanent buildings including administrative buildings were constructed on the banks of the river Buriganga (Ahmed, S, U).

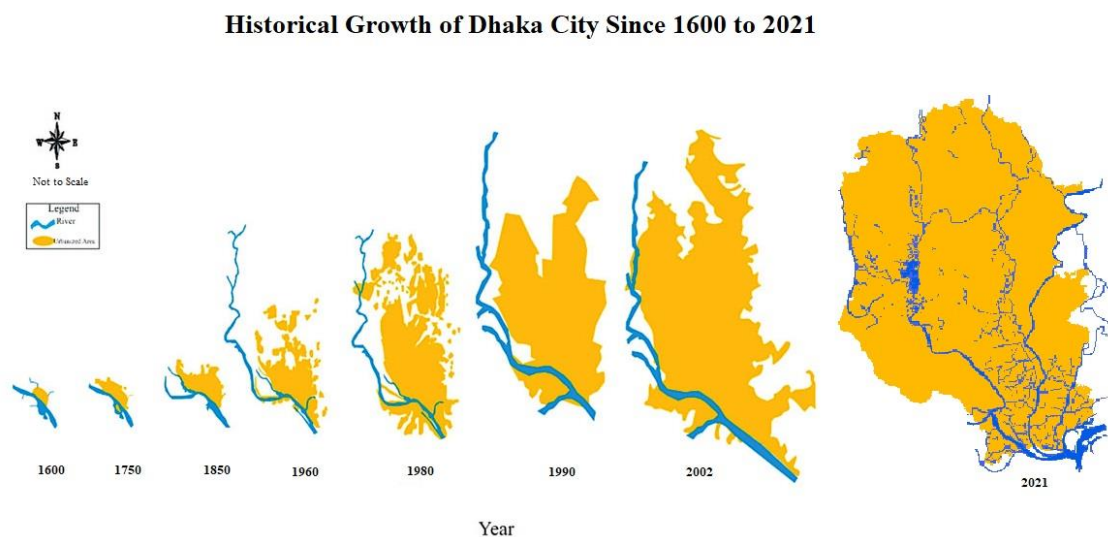
The importance of Dhaka city increased when Shaistha Khan (1663-1679) was appointed as the ruler. At that time was the golden age of Dhaka. Industry and trade also flourished during this time. People come in droves from the suburbs of Dhaka and the population of the city grows to the highest level. The population was said to be 900,000 at the time, and the city's infrastructure grew up to 12 miles along the river and 8 miles inland (Ahmed, S.U.).

Towards the end of the 17th century, the growth of Dhaka stopped. Dewan Morshedul Khan transferred all the equipment from Dhaka to Morshedabad.

The period of British rule (1757) is called the Golden Age. The East India Company took over Dhaka administratively in 1764. During the middle of the 19th century, some improvements were observed in Dhaka. Telecommunication with Calcutta was established in 1857. Dhaka Nagar Parishad was formed in 1864 and since then Dhaka has started growing again.

In 1906, the British government decided to form a separate province of East Bengal and Assam and Dhaka did not last long as provincial capitals again.

After the partition of India in 1947, Dhaka became the provincial capital of East Pakistan. Until 1947, Dhaka was a small town. After the partition of India, Dhaka began to grow rapidly again.



Map 3-1 Historical Growth of Dhaka City since 1600 to 2021 (Not to Scale).

Source: Reconstructed from Urban Planning Department, Dhaka City Corporation, 2007.

The Dhaka Development Fund (now RAJUK) was formed for the development of the city as per the 1956 plan. The first master's degree in Dhaka was made in 1959. There is a total area of 320 square miles including the main city and municipal area of Dhaka.

Since the establishment of Dhaka as the capital of the People's Republic of Bangladesh in 1971, the importance of this city has greatly increased.

3.5 Administrative unit:

There are 33 police stations and 90 wards in Dhaka city. Mirpur is the largest police station and Lalbagh is the smallest.

3.6 Geography:

Dhaka is located in the southern part of Madhupur Garh. There are three main topographies observed-

3.6.1 Middle Part:

Madhupur is located in the middle of the city. The average elevation is 6.5 to 8.5 m above sea level. Generally, the topography is the same but irregular and there is no conventional type. The maximum height range is 8 m to 13 m. Most areas are below the maximum flood level.

3.6.2 Medium Elevation:

The middle elevation of Dhaka city is at the foot of Madhupur Garh and the average height is 3.5 to 8.5 m. Stays underwater for an average of four months each year.

3.6.3 Lowlands:

The rest of the region is relatively low-lying area with an average elevation of 2-3.5 m and about six months under water.

3.7 Climate:

The city of Dhaka belongs to the tropical climate. Seasonal, winter and summer - these three seasons can be clearly divided. The average annual temperature is 25 Degree Celsius. And an average annual rainfall of 200 cm.

Winter from November to February. In winter the temperature is 10 to 21 Degree Celsius. It fluctuates. At this time the sky is almost opaque.

Summer starts from March and lasts till April. Excessive heat falls and high temperatures are observed during this time. At this time, it rains with thunder.

3.8 Rivers and canals:

Dhaka city is surrounded by rivers and canals. There are three main rivers - Turag, Buriganga and Balu. The city is bounded on the west by the Turag river, on the south by the Buriganga river and on the east by the Balu river. Numerous canals and lakes can be seen in the city. Among the lakes Gulshan Lake, Dhanmondi Lake, Begunbari Canal and Dholai Canal are notable.

3.9 Population:

Dhaka is one of the big cities of Bangladesh. The population of this city is growing very fast. By 1800, the population of Dhaka city was 200,000. Later, the population of Dhaka city started declining and in 1838 it was 68038 and in 1876 it was only 51638 people.

Since the formation of Dhaka Municipal Council, its population has been increasing. At that time the population increased to 79076 in 1882 and 128857 in 1901.

After the partition of India, the number of people moving to Dhaka from India and rural areas increased. Then Dhaka city started growing towards the north. In 1951, the population of Dhaka increased to 335,926 and in 1961 it was 55,6812.

Since the emergence of Dhaka as the capital of the People's Republic of Bangladesh in 1971, the importance of Dhaka has increased unprecedentedly. The population growth rate of Dhaka in 1960 was very fast (6% per year) and this rate increased further after 1971.

From 1981 to 1991, the population growth rate of Dhaka city was 5.5% and from 2.8 million people in 1987 to 4.6 million in 1991 (Source, BBS, 1991). At present the population of Dhaka city is 4.8 million and in its adjoining suburbs Savar, Tongi, Narayanganj, Keraniganj with 2.2 million more people the total population of Dhaka stands at 7.0 million.

3.10 Land use:

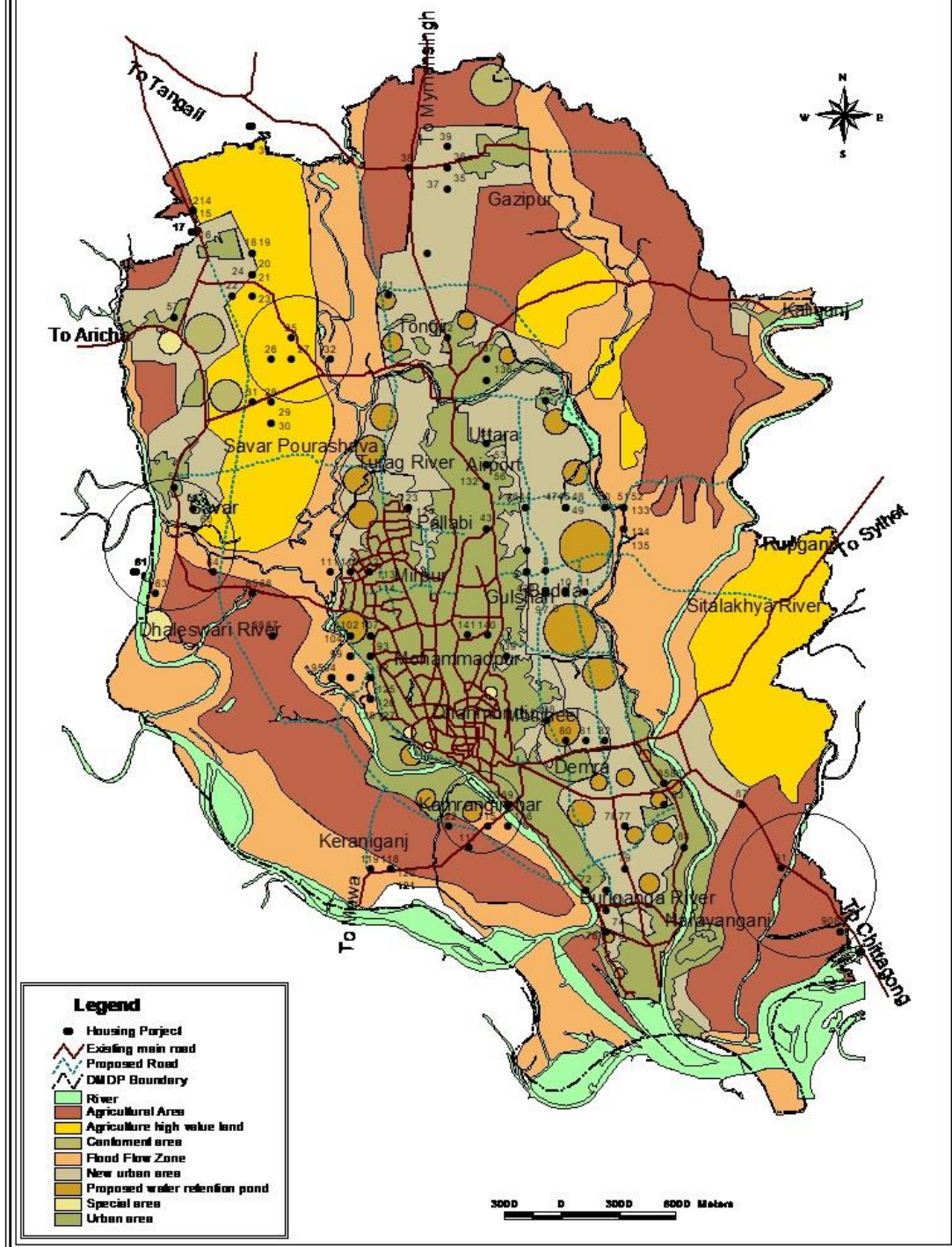
The city of Dhaka is a hotbed of rapid change in land use, mainly because of its mixed history of land use.

Irregular infrastructural development of Dhaka, commercial housing, growth of industries and other industries can be attributed to the growth of new infrastructure.

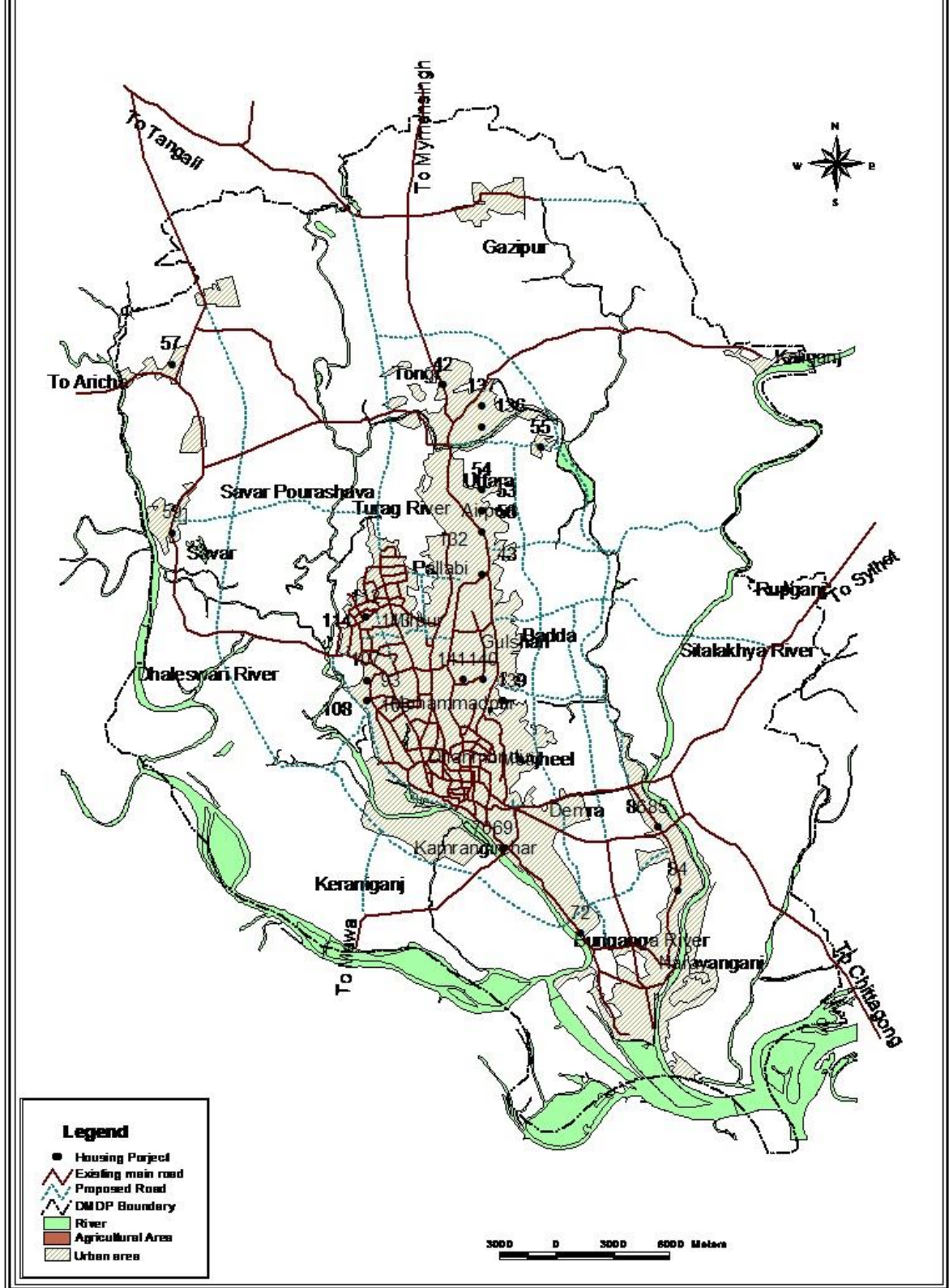
Due to rapid population growth and spatial growth, the infrastructural growth of Dhaka is currently fast. There are several main reasons behind the intensity of land use in different sectors, changes in land use and the hierarchy and hierarchy of land use.

The three main types of land use, residential, commercial and artistic, are found in Dhaka city.

Location of Housing Project in the DMDP Composite Policy Map



Location of Housing Project in Urban Area



3.10.1 Industrial land use:

In 1950, there was no other factory in Dhaka except a single glass factory and a pharmaceutical factory. All the others were small and cottage industries.

3.10.2 Commercial land use:

During the Mughal period, Chawkbazar in Dhaka was the central commercial area which later became a wholesale market. Retail markets developed in Islampur and Nawabpur areas. Towards the end of the British rule, Banglabazar also developed as a retail market. Chawkbazar, Mitford and Farasganj became wholesale markets. The retail market area shifted from Islampur, Patoakhali, Banglabazar and Nawabpur Road to Jinnah Avenue which became the commercial hub of Dhaka city.

The permanent retail outlets and private service centers (haircuts, beauty parlors, video shops, tailoring) etc. that have sprung up in the middle- and upper-class residential areas have turned into temporary commercial land use. At present, medium to large commercial buildings are developed in middle class residential areas.

In the last few years, the formal private sector has not been able to adequately meet the needs of employment, housing, communication, education, health and others, resulting in increased demand as well as the informal sector has grown rapidly.

At present, it is seen that commercial activities are slowly gaining ground in residential areas. Areas like Dhanmondi, Gulshan, Banani are being affected by shops, offices and other non-residential activities.

3.10.3 Residential land use

Full of this long history of settlement of Dhaka city; Due to administrative changes, the use of residential land has changed. With the change in the political, economic and social landscape, different types of housing are available in Dhaka.

The residential area of Dhaka city can be divided into four types.

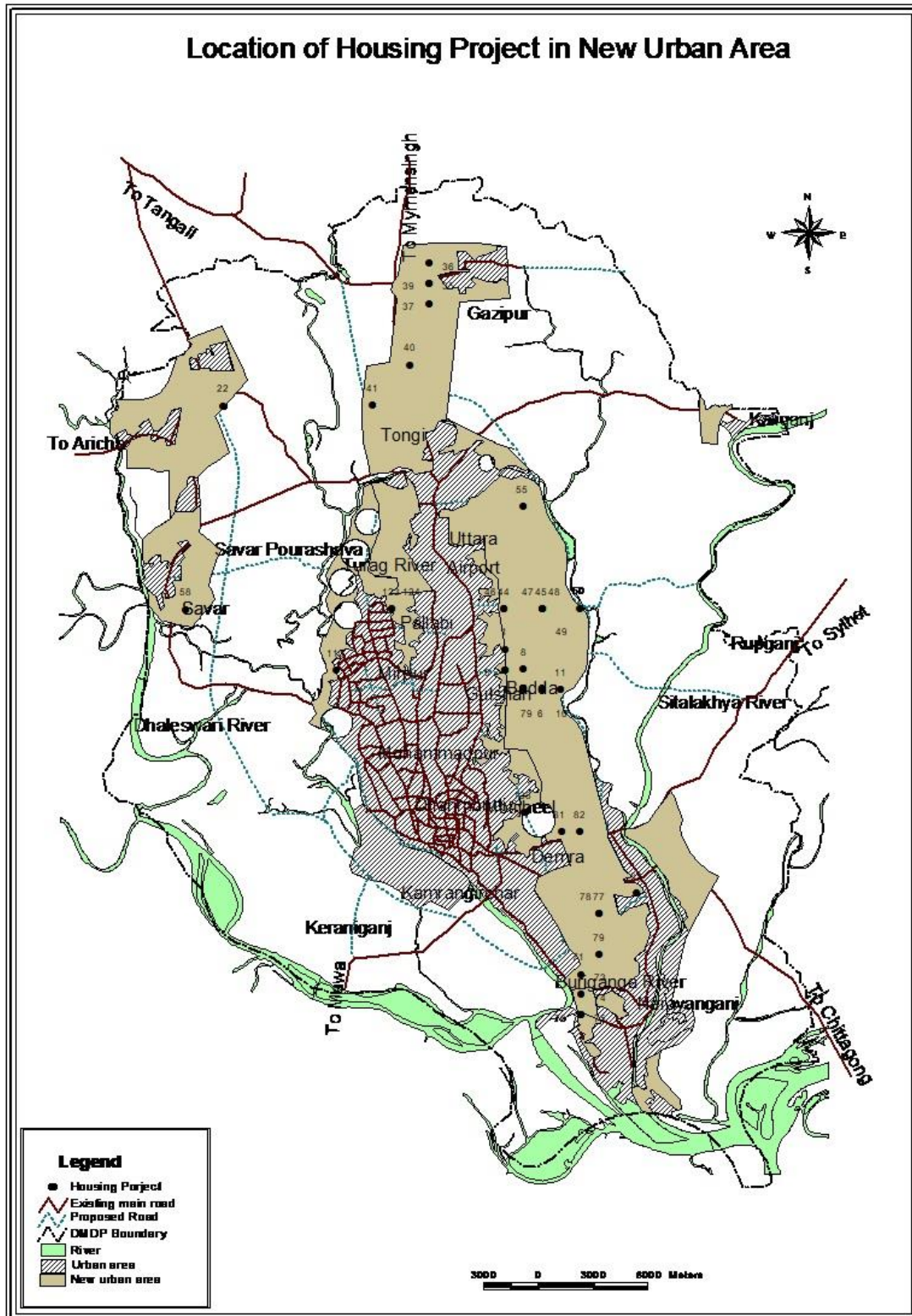
- (1) High Income
- (2) Middle Income
- (3) Low income
- (4) Extremely poor

3.10.3.1 High economy area

The upper castes of Dhaka city started establishing houses during the Mughal rule. They built eye-catching palaces on the banks of the river Buriganga for the Nawabs, Amirs and other high-ranking rulers of their dynasty. These buildings and palaces were founded linearly along the Buriganga 5-6 km west of Chhota Katra. The tidal currents of the Buriganga and the convenience of the only means of transportation waterways and the need to protect themselves make their official staff accommodation half a mile north of the banks of the Buriganga. Ahsan Manzil, Lalbagh Kela, Chhota Katra, Bara Katra, Nabruk Hall, etc. bear witness to the aristocratic buildings of the time.

Later, towards the end of Mughal and Nawab rule, the business communities of British, France, Armenia and Portugal preferred the banks of the Buriganga for their residence and started settling. During the British rule, Mughal-era installations were used by high-ranking British officials. Later they went to Gandaria, Wari. It extends to Narinda, Purana Paltan, Segun Bagicha, Ramna, Eskaton and Magbazar areas. In the post-British period, the city gradually expanded to the north. During the rule of Pakistan, a revolutionary change took place in Dhaka and the size of the upper class increased. Such as - Dhanmondi, Lalmatia, some parts of Mohammadpur, Gulshan etc.

During Bangladesh, Banani, Baridhara, DOHS, Uttara, Nikunj etc. became known as aristocratic residential areas. At present, the government and some private real estate companies are increasing the size of more affluent areas. As such Uttara is being further enhanced. Nikunj 2, Purbachal, and Jhilmil residential areas, Uttara now extends to Ashulia Reri Dam and Tongi in the north. Nikunj-2, Cantonment and Johar Sahara have expanded with DOHS. On the eastern bank of the Purbachal Balu river, on the outskirts of Dhaka city. Jhilmil, Keraniganj, Bashundhara, 4 to 1 km east of Baridhara residential area has been developed and its size has increased up to Balu river. This is how the aristocratic residential area of Dhaka city has grown.



Map 3-2 Location of Housing Projects in new urban area

3.10.3.2 Middle class residential areas:

In the early nineteenth century, the middle-class rich class emerged in the city of Dhaka. They held various positions in the administration and the business community was considered as middle class. Middle class housing developed in Bakshi Bazar, Dewanganj, Nawabkatra, Agasadek Road, Begum Bazar, Armani Tola, Bangla Bazar, Lakshibazar, Gopibagh etc.

Later, during the Mughal period, the upper-class areas of Gandaria, Narinda and Wari Purana Paltan were considered as middle-class areas.

At present the middle-class area is expanding with the growth of Dhaka. With the exception of the present upper-class area of Dhaka, middle class housing has developed in almost all places.

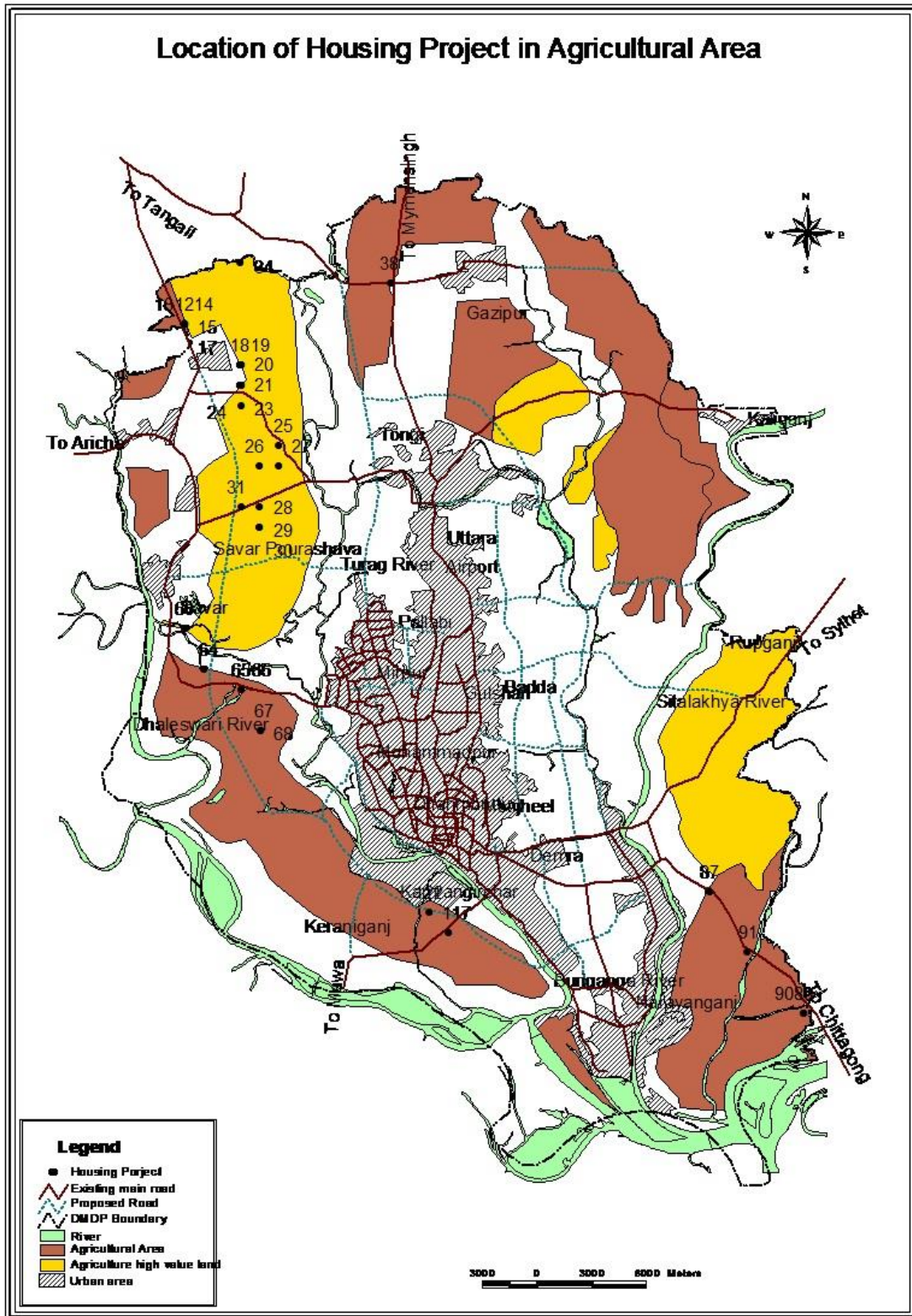
3.10.3.3 Lower middle-class areas:

After the development of Dhaka as a business, commercial and administrative center. Low-income people enter the social services and daily activities of the people and in the pursuit of work, their land is developed and adjacent to the upper- and middle-class housing areas. Firstly, the accommodation of two centers is set up in Chawkbazar of Dhaka, another in Banglabazar and its adjoining areas like Shakhari Bazar, Kumartuli, Patuatuli, Sutrapur, Tongibazar, Baninnagar, Churihatta, etc. Permanent settlements of artisans and laborers of different professions were established. A separate lower class residential zone is also formed around the upper-class area depending on the type of work and class division of services. Peelkhana, Mahuttuli, Becharamdeuri, Agasadek Deuri, Ali Naki Deuri, Amanat Khan Deuri.

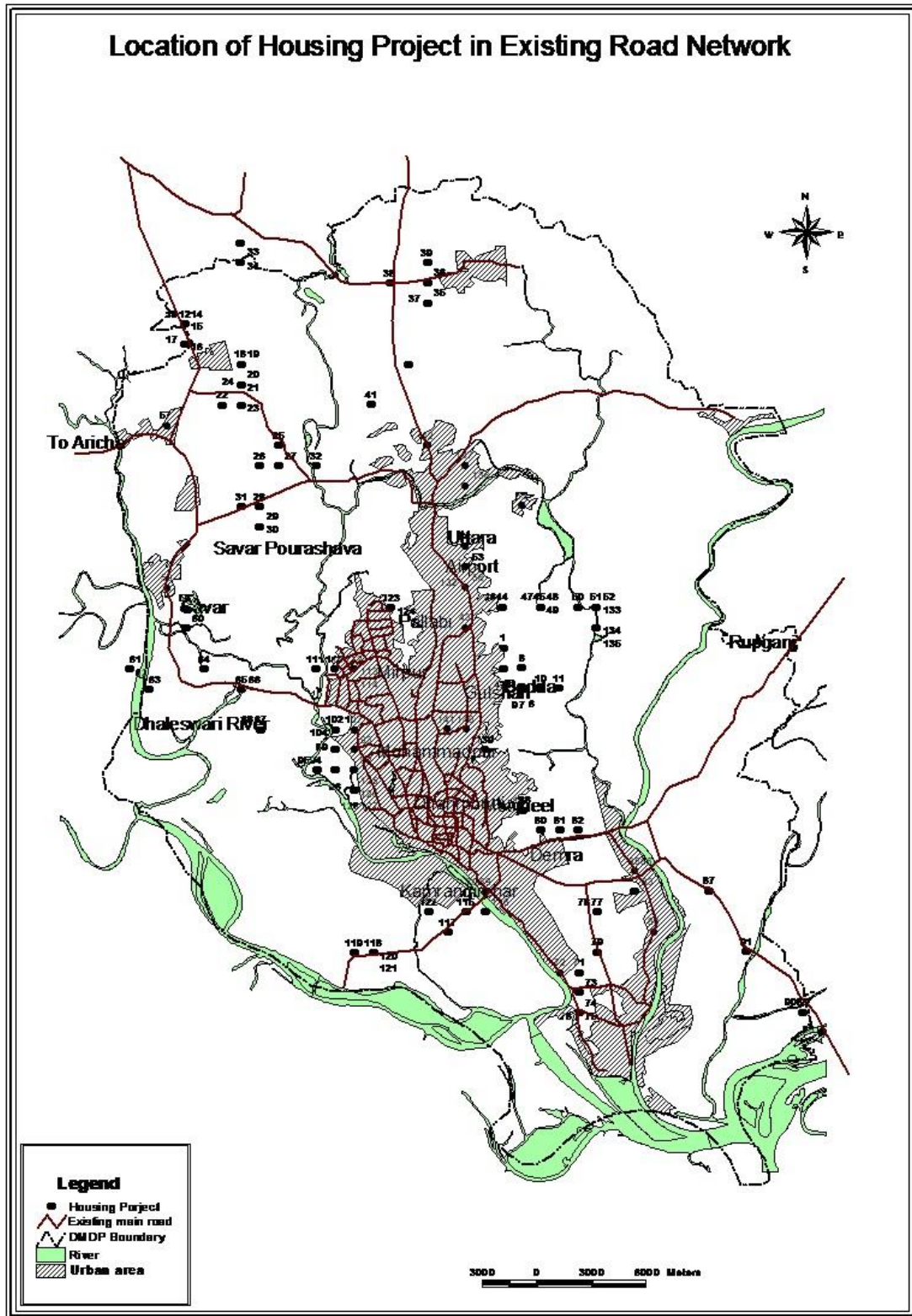
The neo-liberal class infiltrated during the British rule. The zamindars of different areas, the feudal merchants built their establishments around Dhaka and with the increase in the number of lower classes their abodes increased. During the rule of Pakistan, Mirpur, Mohammadpur, Jatrabari, Demra, Postagola, Hazaribagh etc. areas of Dhaka developed into low-class residential areas. In the post-independence period, Dhaka had the largest population in the history of Bangladesh. The poor people of the rural area come to Dhaka for employment and business. They settle in the outskirts of Dhaka in the form of satellite cities such as Khilgaon, Rampura, Agargaon, Mirpur, Jurain, Mugdapara, Badda, Basabo etc.

3.10.3.4 Extremely poor or slum areas:

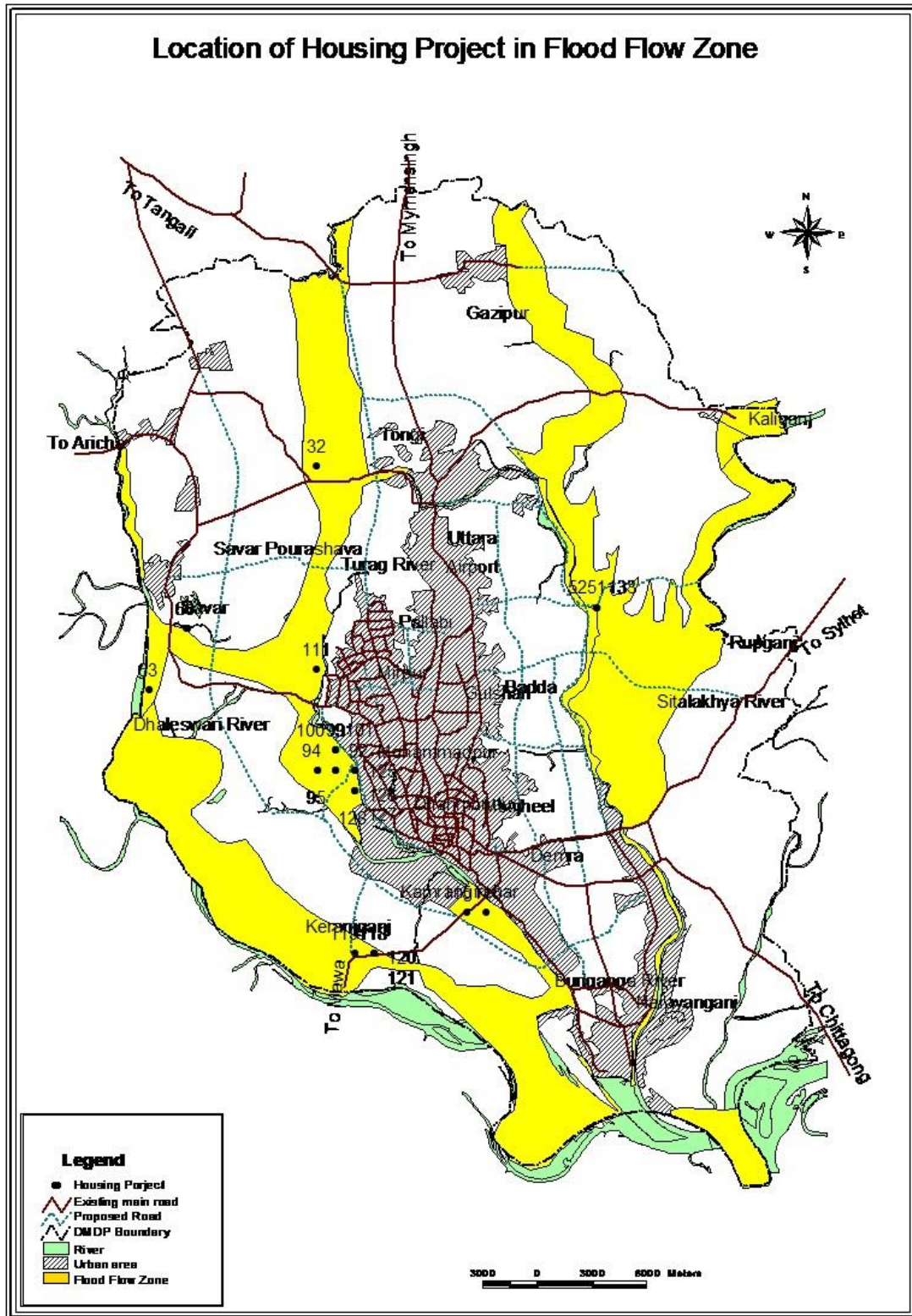
As a result of inter-approach on the basis of food scarcity, famine, population disintegration, etc., the population increased overnight due to the emergence of Dhaka as the new capital of Bangladesh. These poor people build temporary shelters along the railway line known as slums. Their residential area is established from Gandaria station to Tejgaon railway station. The post-independence Mujib government arranged specific places for them such as: Bahantech, Baunia Dam, Narayanganj and Tongi areas. But later on, the number of extremely poor people increased rapidly and wherever there were vacancies, there was a shortage of needy people.



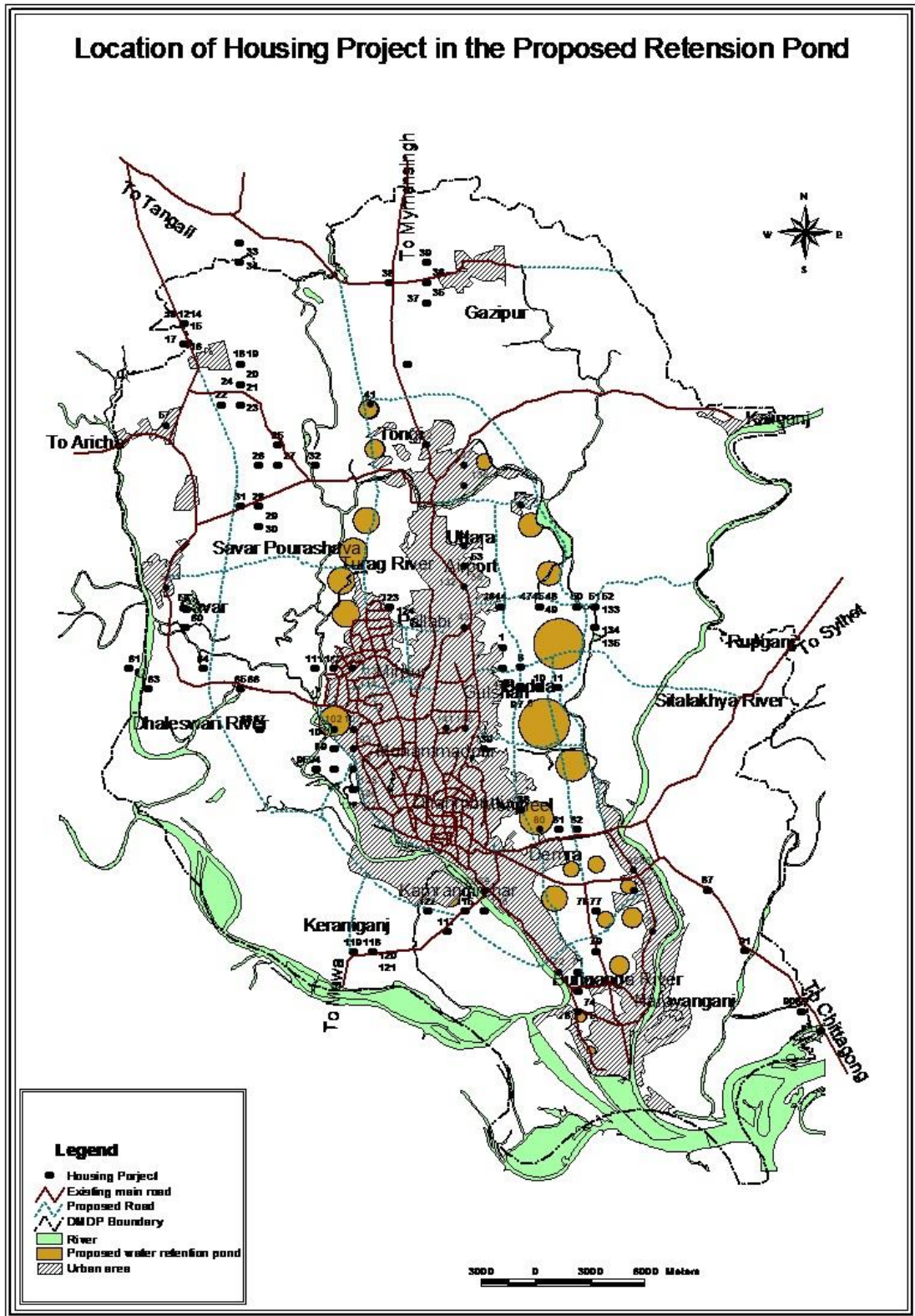
Map 3-3 Location of Housing Project in Agricultural Area



Map 3-4 Location of Housing Project in existing road network



Map 3-5 Location of Housing Project in Flood Flow zone



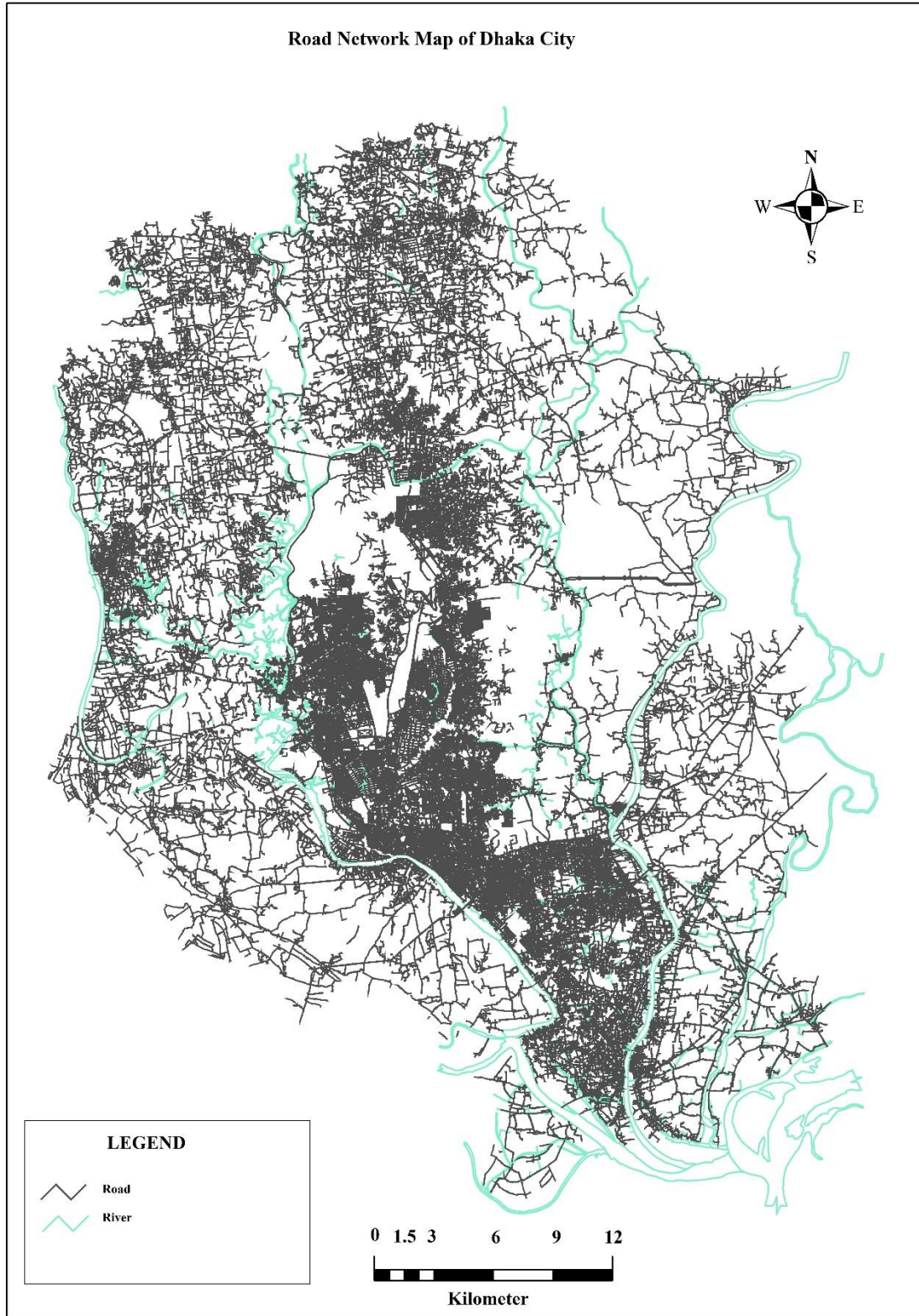
Map 3-7 Location of Housing Project in proposed retention ponds

3.10.4 Road:

Due to Dhaka being the administrative center of Bangladesh, there were connections with different countries by river. There was even a ship with Kolkata. During the British rule there was communication with Dhaka by rail and road. Later, the capital Dhaka was connected with other districts of the country by water, road and rail. Dhaka Aricha, Dhaka Chittagong, Dhaka Mawa, Antzela Road Besides, after the establishment of Jamuna Bridge, Dhaka North Bengal Antzela communication was established.

During the Mughal period, the roads in Dhaka were mostly paved. Elephant and horse carriages used to move in the upper-class areas. The road was very narrow. There were shops and houses on both sides of the road. There were two canals in Dhaka for transporting goods and people, sailing boats and jewelry boats abounded.

With the historical, political, economic and social changes in the city of Dhaka, the internal communication system improved. It is very inadequate in the current context. The history of the development of Dhaka city has happened in the case of unplanned city of fragile nature as well as in the case of roads. People are almost restless due to constant traffic. Now the only means of transportation in Dhaka is by road. It is not possible to travel within Dhaka by marine boat or rail.



Map 3-8 Road Network of Dhaka City

4 Construction Industry in Dhaka city, Bangladesh:

Housing is the first step for people to live socially. Later, roads, canals, ponds, etc. were constructed as per the need. Construction is generally considered to be the construction of any installation with all kinds of technical knowledge. In the beginning of civilization, people created cities. The main construction of this city is residential, commercial, administrative, travel facilities. Therefore, establishing this huge sector as an industry, it established the construction industry.

Types of general construction industry:

- (1) Housing
- (2) Construction of road
- (3) Construction of commuting transport

In this case, we have identified the home building industry as the main subject of our research. Because housing is the first element of basic human needs. At present, there are many types of housing entrepreneurs, so the development and problems of this industry are also considered as the subject of real estate research in the private sector.

4.1 Solving Dhaka's housing problem through real estate development in the private sector

Rapid urbanization is taking place as a result of population growth and the trend of people moving from villages to cities. This picture is no different in Bangladesh. In urbanized as well as in developed and developing countries, rapid urbanization is taking place due to scarcity of land, and proper planning and proper use of land. The demand for housing is increasing due to population growth. The right to housing is a fundamental right guaranteed by the United Nations Charter and the Constitution of Bangladesh. But it is not possible for the government of developing countries to ensure housing for all. Since the public sector has failed to ensure this right, the people are ensuring their housing on their own initiative. The government as well as real estate companies are working in our country to fulfill the growing aspirations of the

people. Compared to other cities in the country, the capital Dhaka is facing severe housing problems.

Attempts have been made to show how private developers and real estate companies are playing their role in solving the housing problem in urban areas of Bangladesh, especially in Dhaka, and some suggestions have been made for the ongoing development of the sector.

4.2 Why the real estate sector?

The rate of urbanization in Bangladesh is very high as a result of high population intelligence and rapid shift from rural to urban areas. At present the trend of citizen development in this country is 5 to 6% per year. This will change and increase the demand for settlement in Bangladesh. Currently, 28% of the population lives in urban areas of Bangladesh, which will be 34% in 2015. At present, the estimated population of Dhaka is over one crore and the annual growth rate is about 4.7%. All these people need accommodation. To cope with this additional pressure on housing demand, Dhaka needs to take initiatives to grow vertically. For this, the real estate sector is needed. Private developers have been playing an important role in housing the upper, middle and lower classes for the last twenty years.

4.3 Real Estate Development:

In our country, real estate business started in Dhaka in the late 70's. Islam Group's Eastern Housing is a pioneer in this business. In the 70's, less than five companies were involved in this business in Bangladesh. In 1988, 42 such developer companies were operating in Dhaka and now in 2003, about 250 companies are involved in this business. The business has been booming since the early 80's and reached its peak in the 90's. The sector is improving again in the year 2000. To strengthen the role of the real estate sector, some of the leading real estate companies formed an association called Rehab in 1991. It currently has 112 members.

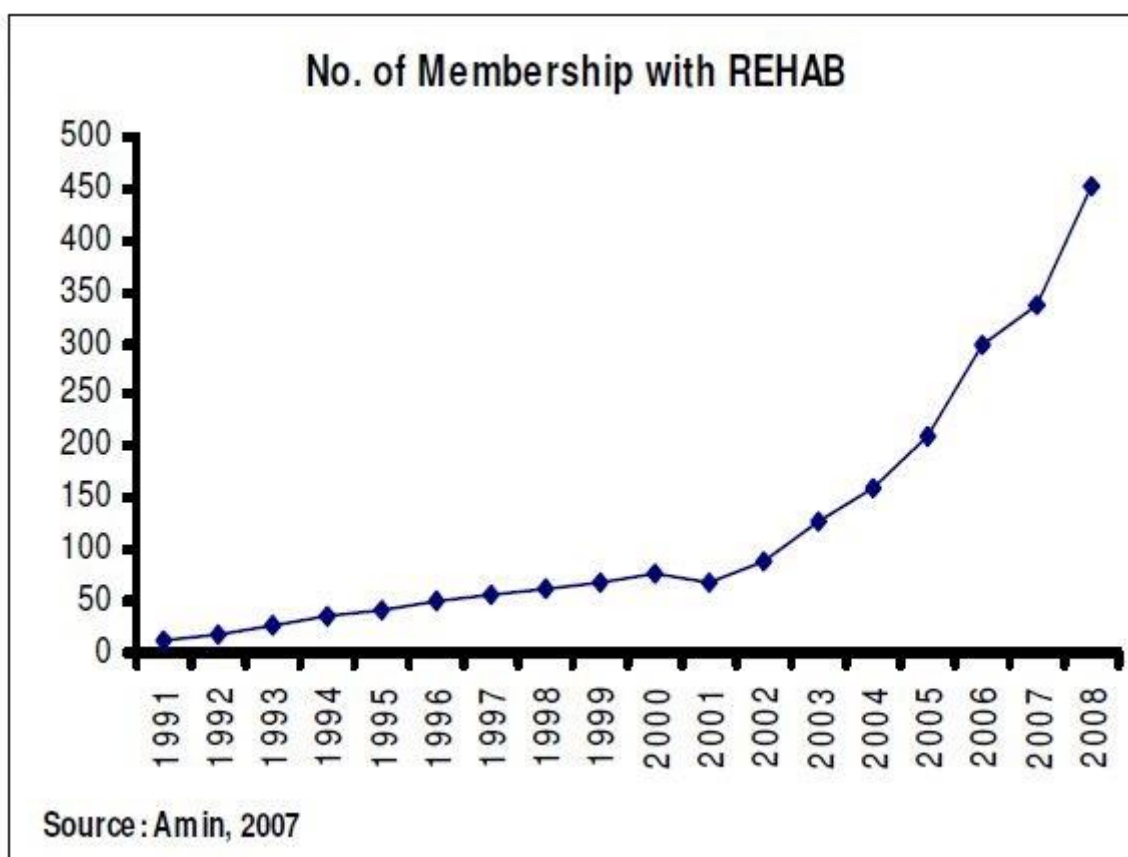


Figure 4-1 Membership with REHAB

Real estate is one of the most attractive investment sectors now in Bangladesh. Rapid urbanization has become a serious problem for the country. The urbanization rate is estimated to be 5-6% per year for Bangladesh (REHAB, 2004). Approximately 25% of the population of Bangladesh now live-in urban areas and 34% will live in 2015 (REHAB, 2004) and 50% in 2025 (Singha D., 2001). There is an acute shortage of housing supply in all urban areas and it is increasing with the current demand of 600,000 to 800,000 units across the country. Particularly in Dhaka, this demand is estimated at 60,000 real estate apartment units combined with 200,000 replacement units plus delays (REHAB, 2004). Dhaka is currently growing very fast compared to other cities in Bangladesh.

Hence, there is a great demand for plots of land and residential units. This huge and unrealized demand is very attractive to investors. The Real Estate and Housing Association of Bangladesh (REHAB) is the only organization for real estate agents, developers and builders. It had over 450 registered members in 2009. Moreover, there are about 350 unregistered real estate developers working in this sector (Amin S., 2008). According to REHAB, they currently only provide around 8,000 to 10,000 housing units against the massive demand mentioned above. The approximate turnover in the real estate sector was Tk. You cost 20 billion a contribution

in revenue of about. \$ 2 billion annually to the government. Real estate developers and builders have already supplied nearly 60,000 units to this segment's market in the past 20 years. The sector now employs about 2 million people, and is made up of architects, engineers, management officials, and direct and indirect workers.

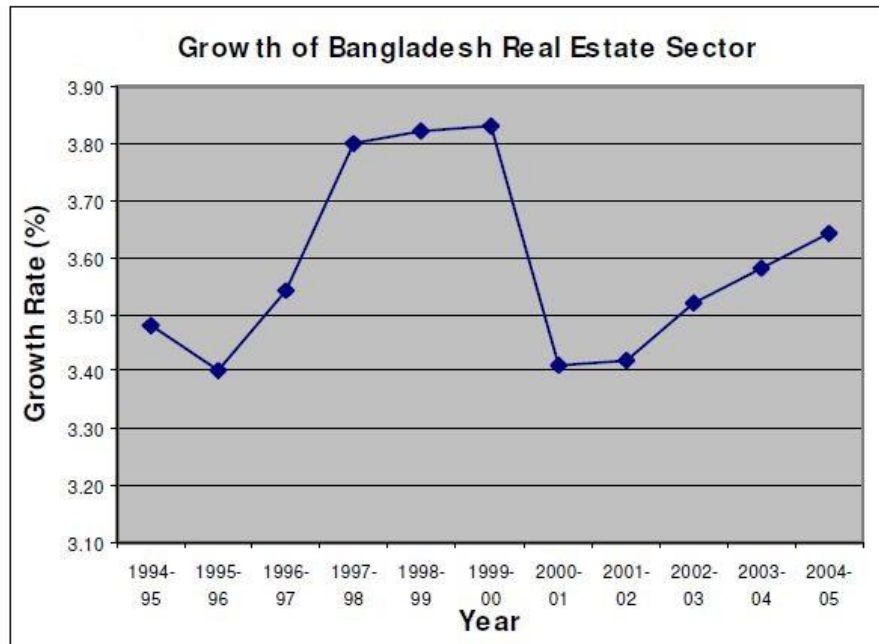


Figure 4-2 Growth in real estate sector **Source: Barua et. al., 2010**

REHAB members are currently supplying 5,000-6,000 units of apartments and 4,000-5,000 units of land on average annually against the massive housing demand. In the past 20 years, REHAB members have offered nearly 50,000 apartments, which is well below the market demand. The high, partially unmet, demand is being met by property developers who are not members of REHAB. REHAB can only supply 6000 against a request from 8000-10000 which is nearly 10% of a demand. Thus 90% of the demand is provided by indie developers and consumers. That is why it is expected that there is a great opportunity to sell apartments and land plots in the market. It offers an increasingly attractive scenario for players in the market. REHAB expects an additional 20,000 to 25,000 housing units to be created next year if all environments are favorable. Currently, according to REHAB statistics, Dhaka City has 2,240 housing units under construction, including 49,703 apartments. Outside of Dhaka, there are around 80 projects currently under construction, which can provide only 2,663 housing units (REHAB, 2004).

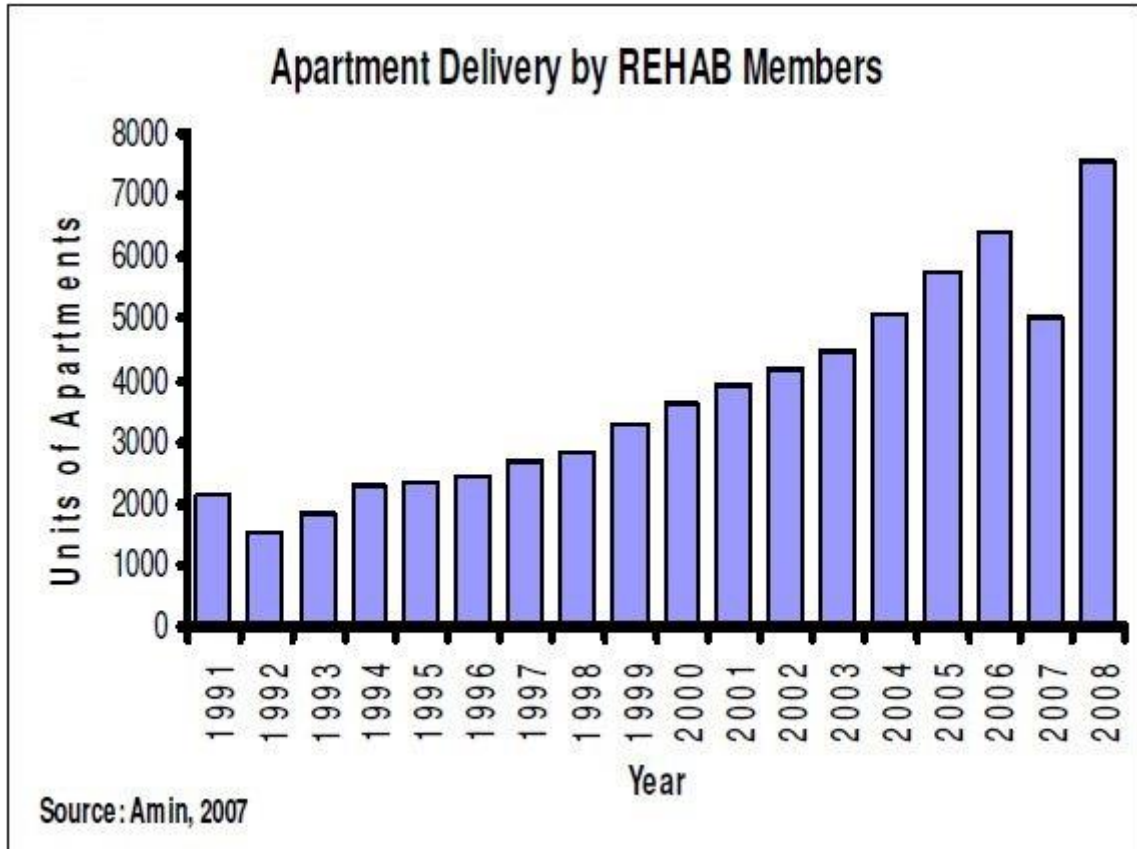


Figure 4-3 Delivery of Apartments by REHAB Members

4.4 Current Status of Housing in Dhaka:

4.4.1 Deficit:

Currently, the housing situation in urban areas of Bangladesh is very inadequate. In all metros, housing shortages are acute and construction deficits are growing. Inadequate living space for middle- and lower-class people and high house rents have been a major obstacle to housing for the citizens of Dhaka.

4.4.2 House Rent:

In the housing market system, house rent is a clear indicator of demand and supply. Rents are rising due to the shortage in supply. The current housing market is not consistent with demand. The following table will help in realizing this situation. The shortage of housing shows that the average rent is much higher for the lower class than for the middle class.

Table 4-1 House rent for different income group with housing space in Dhaka

Class		Low income			Middle Income		High Income
		Katcha	Semi Pucca	Pucca	Semi Pucca	Pucca	Pucca
Area Sq. ft.	Maximum	225	400	200	650	1200	3800
	Minimum	36	64	80	450	220	1452
	Average	100.38	208.31	173.14	552.25	661.22	2388.94
Rent (per sq. ft. in BDT)	Maximum	15.37	20.83	18.67	6.91	17.86	20.59
	Minimum	2.14	4.44	5.71	3.39	2.50	6.67
	Average	5.95	10.10	10.20	5.27	7.10	12.30

Source: 'Urban housing market-Towards a demand responsive supply' Nabi, (A. S. M. M. 2003)

4.5 Land value:

There is a clear problem in the residential sector of Dhaka due to shortage of land supply and unprecedented increase in land prices. Land prices in Dhaka have risen at a higher rate, mainly in the center, than the cost of living. The value of land in the main areas of Dhaka in 1974 is so low compared to 2003 that it can be easily ignored. At that time the maximum value of land per timber in Motijheel commercial area was BDT 50,000. Now the value of that land has increased 70 times to BDT 35 lakh per Katha. The value of the existing land in Dhanmondi is BDT 25 lakhs per katha, which is 100 times more than in 1974. It is seen that increase in land price is creating a lot of problems in the housing sector. The chart below clearly shows that the area-wise price difference was much more equitable in the 1990s. But now the price of land in 2003 is much higher in some areas than in other areas. This increase in land prices is reducing the aspirations of lower- and middle-income people to own a house. High land prices discourage upper- and middle-class people from building their own houses. So, apartment culture is gaining popularity in Dhaka. Reasons to discourage people from building their own houses. So, apartment culture is gaining popularity in Dhaka.

4.6 Selling price of the apartment:

Now real estate companies are building apartments on a joint venture with landowners and selling apartments to buyers. But the apartments that are due to the high cost of land and construction costs. What they are selling is beyond the reach of the lower middle class. The table below gives the price per square foot of land in the main area of Dhaka and the selling price per square foot of apartment.

Table 4-2 Price of land and average sale price of apartments in 2003 in some major areas of Dhaka

Area	Land Value	Apartment value
	BDT per sq. ft.	BDT per sq. ft.
Dhanmondi	3472	1850-2500
Siddheswari	2500	1400-1700
Shyamoli	1667	1300-1500
Mohammadpur	2083	1550-1750
Green Road	2222	1500-1700
Elephant Road	2778	1500-1700
Lalmatia	2500	1600-1800
Shantinagar	2500	1450-1550
Uttara	1667	1350-1500
Gulshan	3194	1850-2200
Niketan	1944	1350-1650
Baridhara	3056	1800-2100
Banani	3056	1700-2000
Mirpur	1667	1200-1350
Segunbagicha	2222	1500-1600

Source: Sheltech Survey, 2003

4.7 Contribution of real estate sector

4.7.1 Workplace creation

At present, this sector alone has created employment opportunities for one million direct and indirect workers in Dhaka city. About 500 architects and 5,000 undergraduate and diploma engineers are working in this sector.

4.7.2 Housing supply

The real estate sector has handed over more than 45,000 apartments in the last 15 years. An average of 2500 apartments have been handed over every year for the last 5 years. Now all real estate companies are trying to increase their apartment transfer rates.

4.7.3 Contribution to the economy

The contribution of the housing sector to the economy of Bangladesh is also increasing significantly. The real estate sector accounts for a very high share of GDP, accounting for 14 to 16% of total GDP. The annual income of this sector is about 500 crore rupees. The real estate sector is paying the government about Tk 50 crore a year in various ways such as VAT, registration fee, utility connection fee etc.

4.7.4 Connection industry

This sector has been playing a very strong role in the development of forward and backward connectivity industries such as furniture, ceramics, paint, cement, aluminum, consultancy and other sectors. This is the first step in creating large jobs and increasing government revenue. We do not know the exact amount of revenue that the government gets from these sectors.

4.7.5 Recommendations for the development of this sector

From the above discussion it is clear that the real estate sector is now playing a major role in solving the housing problem. Its contribution to the social and economic sectors of the country is also important. But the sector is suffering from a shortage of land for construction work, high land prices, lack of appropriate and acceptable strategies in direction, lack of existing law enforcement and inadequate funding. The government should be given direction for the smooth development of this sector. In this case the following recommendations can be considered.

A. Supremacy about existing laws and regulations

- (1) In order to bring order in the complete development of this sector, mainly private housing policy is needed.
- (2) Since there is a shortage of land for housing here, Dhaka will expand upwards. So, the government needs to realize the demands of multi-storied buildings and real estate companies. The government should enact an acceptable multi-storied building construction law and make provision for its proper implementation.
- (3) Detailed design of different areas has to be completed very quickly as per DMDP 1995 and there has to be accurate regional design to guide the development of Dhaka. For different areas there should be mention of Floor Area Ratio (FAR).
- (4) National Housing Policy 1993 and Bangladesh National Building Code 1993 must be properly implemented.
- (5) In the present context, the Building Construction Act 1996 and other policies of RAJUK have become inefficient and inappropriate. So, all these laws and policies have to be modernized and its fairness has to be ensured.
- (6) A modern, efficient and effective tax policy needs to be formulated for the land of Dhaka.
- (7) In order to stop speculation on land, tax should be levied on vacant land inside the city.

B. Recommendations for government and other concerned organizations

- (1) At present, a developer has to go to various authorities like WASA, DESA, DOE, etc. for permission to construct a multi-storied building, which is time consuming and costly. It also increases the time in a project. RAJUK should provide "one window service" to solve this problem.
- (2) RAJUK should play the role of a skilled observer and regulator in the housing sector. So RAJUK needs to increase its manpower and increase their skills through regular training.
- (3) The government has to control the price of land in the city and through this method the price of land can be reduced.
- (4) The government should subsidize real estate developers in the following public housing.
- (5) By reducing the registration cost, the government can encourage people to register on time and this will increase the government's revenue.

- (6) While government revenue assistance for the connectivity industry can reduce the cost of raw materials, it will also reduce construction costs. This will also reduce the price of the apartment.
- (7) Developers and apartment buyers should be given low interest rate loans from government, autonomous and non-government financing institutions.
- (8) In collaboration with the housing sector, infrastructure companies such as WASA, DESA, Titas, T&T, etc. should increase the level of their existing cooperation.
- (9) The role of rehab needs to be strengthened. Rehab membership should be made mandatory for developers. Every member must be accountable to Rehab.

It is clear that the real estate sector is also playing a significant role in the housing sector. This sector is also cooperating a lot in solving the housing problem. Therefore, for the full development of the real estate industry, the development of the real estate sector must be ensured. The recommendations mentioned here can be taken as a guideline. Neither the government nor real estate developers can solve the country's housing problem alone. So, they should co-operate with each other. Their mutual close cooperation can ensure housing for all.

4.8 Private sector housing project

The journey of private housing construction in the late seventies. At that time only five companies were engaged in this business in the whole country but in 1988 it increased to forty-two and at the end of 2003 it is now around two hundred and fifty. Not only has the number of entrepreneurs increased, but the housing business has also contributed to the housing crisis during this period, adding new dimensions to the housing sector in different contexts. Mainly through housing projects, combined investment in housing, unveiling new horizons in the construction sector, increasing prosperity of urban style, etc. have been ensured.

Although such activities started in the eighties, the nineties were the golden age of the housing industry. This lucrative business gradually leads to more crowds of investors. As a result, the industry developed to its full potential on the eve of the 21st century. According to the Real Estate and Housing Association of Bangladesh (REHAB), an association of companies engaged in the real estate business, a comparative picture of the growth trend of housing projects in the last decade is included here. The figure shows that the number of projects is increasing every year. The number of projects undertaken in 1986-1990 has almost doubled from 1996-2000. Although there has been a slight decline since 2000, recent research has shown that by 2000-2005, the total will have surpassed the previous 1996-2000.

So much for the project that has been completed so far. The deadline for handing over various housing projects, which has already started, shows that in 2003, it will exceed the total number of projects in the previous five years. The statistics of the promised housing project till 2006 are shown. The number of projects will increase in the coming years if we take all the projects awaiting approval.

Although the housing project was started in Bailey Road-Segunbagicha area, it later developed to Gulshan, Banani, Dhanmondi etc. The map shows the location of housing projects of Rehab member companies.

Since it is possible for the affluent section of the society to buy flats, all these projects have been developed mainly in places known as elite residential areas. However, in recent times, there is a growing trend of adopting housing projects on many lands in middle class areas.

Not only residential projects, but also shopping cum residential buildings have a tradition in Dhaka Shah. Construction of the multi-storied shopping center began in the late nineties. This trend is exacerbated by allowing the construction of commercially viable buildings in areas of a particular area considered to be formerly residential areas (such as Dhanmondi). If you want to understand the picture of such construction in the last five years, you can go from New Market on Mirpur Road to Asad Gate. Not only on Mirpur Road, but also in other parts of the capital, the construction of multi-storied buildings (shopping complex, shopping cum office, shopping cum residential etc.) around the main road has gained popularity.

When a six-storied OPO building is constructed in Bangladesh, it is considered as a multi-storied building. The figure below shows the percentage of shares per floor of the building. As can be seen from the picture, about 59 percent of the buildings built in the private sector in Dhaka city are six storied. In second place are seven- to nine-story buildings, with a share of 17 percent. Only 6 percent of the buildings are on the 15th floor. Multi-storied buildings in Dhaka city have an average of eight storied (according to the information provided by REHAB member companies).

An analysis of the total amount of land used for the projects shows that on an average, the projects are built on 12.68 kathas. The projects constructed so far have a maximum of 63 kathas and a minimum of 3 kathas. The comparative analysis of total land use of housing construction projects according to katha is shown in the figure. It can be seen that most of the projects are built on 6-10 katha land. Then there is the tendency to use 10-15 katha, 16-20 katha and 1-5 katha land. The tendency to implement projects on more land is quite low.

Housing projects have added new feathers to the architectural style for the city of Dhaka. In the past, no one considered the artistic aspect of the building except a few capable people. Many did not attach much importance to this issue in the case of low-rise residential buildings for economic reasons. But real estate companies are trying to institutionalize the architectural past by considering the architectural style. Although there is a lot of criticism about following and avoiding tradition, it can be said that the developers have made a significant contribution in changing the vision of Dhaka's skyline.

4.9 The king comes and the king goes, the fate does not return.

Housing construction is not just a house construction. But also, to ensure other services necessary for living. Housing construction is the name given to building a complete urban system with civic amenities such as water, gas, sewerage, drainage, roads, etc.

Although private companies build multi-storied houses through housing projects, it is the responsibility of government agencies to ensure other services. Although all these organizations increased the population of the city, they could not increase the scope and quality of services. Therefore, despite the ongoing private initiatives to build the necessary housing, housing has become a major problem in Dhaka city. The urban system is now under threat as RAJUK has failed to provide the necessary direction and development control for urbanization. As a result, besides the housing crisis, traffic jams, water crisis, mismanagement of waste disposal and low quality of services are plaguing Dhaka city. The housing crisis is also acute for the middle and lower middle class. The majority of the population is facing acute housing crisis due to unclear government policy and lack of necessary measures.

4.10 Real Estate Financing Market in Bangladesh

Dhaka is the primary market for housing finance. Recent estimates indicate that more than 70% of homes are rented in Dhaka and there are annual requirements for over 60,000 new homes. Financial intermediation in the housing sector is not found sufficiently due to high interest rates and limited sources of financing (Bhattacharya D., 2003). This is true for both developer and buyer financing. There are more than 16 private non-bank financial institutions including the private housing company Delta Brac. Bangladesh is still suffering from a weak financial system that impedes savings and investments and thus economic development. The housing sector, which relies heavily on financing, is particularly affected. An ambitious banking system cannot provide long-term wholesale or individual funds at an effective rate of housing finance for the lower end of the population (Hoek-Smit M. C., 1998). The following graph is showing the

progress financial investment progress according to Scheduled Banks Statistics (2001-1006) considering the data from all banks including Nationalized Commercial Banks, Private Commercial Banks, Foreign Commercial Banks, Specialized Banks, and Foreign Commercial Banks.

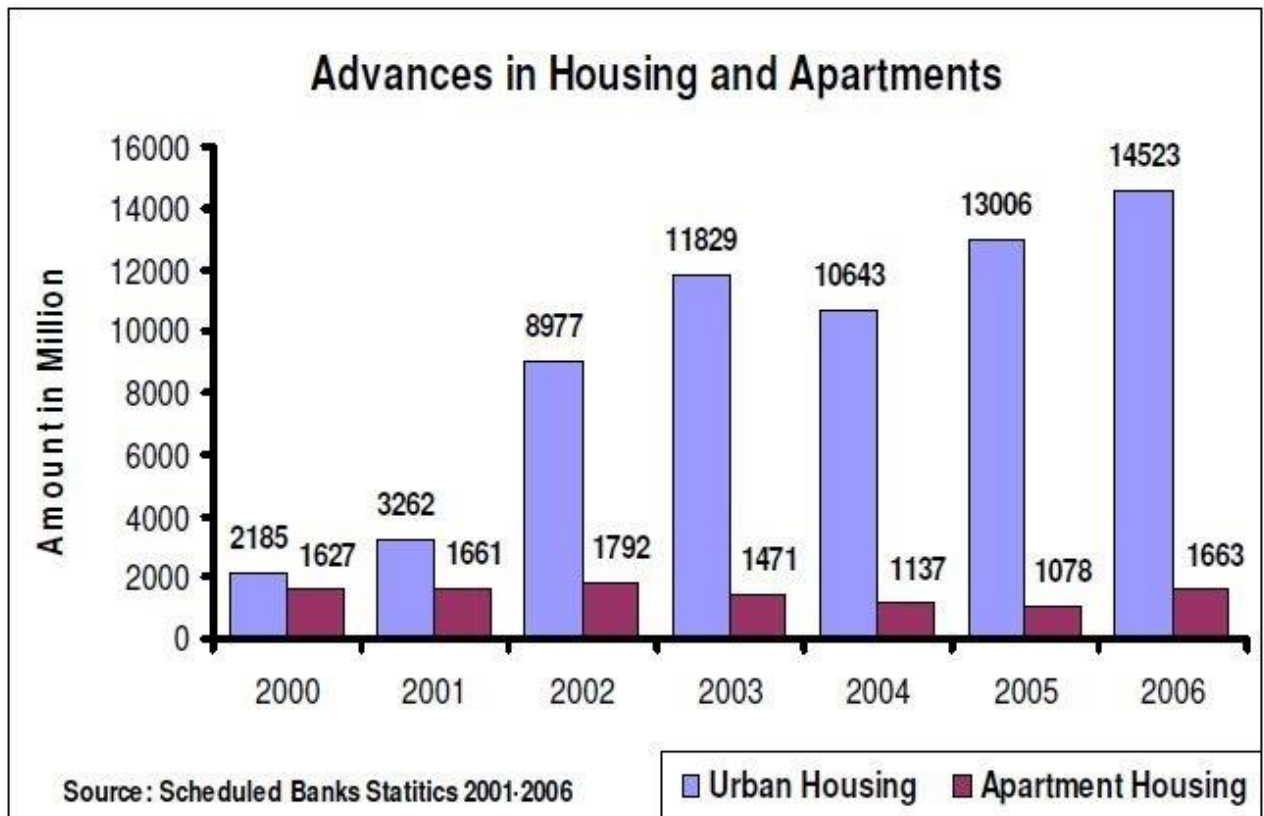


Figure 4-4 Advancement in investment in housing and apartment sector from 2001-2006

source: Barua et. al., 2010

Significant advancement has been observed over time which also indicates the ever-increasing demand for housing, and hence, loans to be availed by individuals and institutions. The growth rate of total urban advancements over the past seven years has been around 37%. Unfortunately, however, apartments have got a very low growth rate of only around 9% and this confirms once again that although the housing sector as a whole is getting the nod, property buyers and sellers are still in difficulty. Sufficient Funding Crisis (Barua et. al., 2010).

4.11 Contribution of real estate sector in the economy

The development of real estate and housing business in the private sector in Bangladesh has opened up a new direction in the economy. The country's real estate, housing and construction sector growth. D. Dop. (H) Growth shows that the real estate and housing sector grew by 4.6 percent and the construction sector by 7.5 per cent during the period 1992-2002, where GDP

grew by 4.8 per cent. The contribution of these two sectors to the GDP in 2002 was significant, at 8.3 per cent and 8.0 per cent, respectively. The real estate and housing sectors, including employment, investment establishment, backward and forward linkages, have contributed to the country's economy. The real estate sector currently employs about one million people directly or indirectly. In 1999-2000, about 2.1 per cent of the total workforce was involved in construction, while in 1995-96 it was only 1.8 per cent. These range from brick-breaking laborers to architects, engineers and entrepreneurs. There are about five thousand engineers and six thousand management workers involved in this sector.

According to recent data, investment in the housing sector is growing at an alarming rate. Private investment in this sector has doubled during the Fourth Five Year Plan. In 1989-90, the total investment was BDT 700 crore, in 1994-95 it stood at BDT 1589 crore. In the first three years of the Fifth Five-Year Plan, the average investment in the housing and construction sector was BDT 7642 crore. The housing and construction sectors accounted for 47.3 per cent of the total private investment in 1997-1998 and 1998-1999, well above the pre-set target of 16.35 per cent. The share of housing and construction in the GDP has increased from 3.4 percent in 1997 to 4.1 percent in 1999.

The real estate and housing sectors are also contributing huge sums to the exchequer in terms of revenue. Various revenues such as VAT, registration fee, service connection fee etc. provide about Tk. 36 crore every year. Although the income tax of real estate companies cannot be calculated due to lack of information, the government also gets huge amount of revenue from real estate business in this sector.

The real estate sector has been building about 3,000 apartment units every year since the early 1990s. At present about 2000 units are being constructed. Although the recent downturn is due to the volatile foreign economy, deteriorating law and order in the country, and the emergence of new experimental emergency regulations in construction, the business is expected to return to normal soon.

4.12 Linkage

The real estate sector is also strengthening the backward and forward linkage sector in Bangladesh. The development of essential sectors like ceramics, aluminum, paints, furniture, consultancy etc. in the construction industry is making the domestic economy sustainable and strong. Now the industry of Bangladesh is meeting the ceramic demand of the country. Thai and Kai aluminum are being used to make door-window frames. The paint industry is also

developing in the country. Many are getting involved in supporting economic activities in the housing industry like furniture, interior design etc. As a result, many such industries are gaining international standards and creating opportunities for export abroad. At present the cement industry in the country has become self-sufficient. The expansion of the housing industry in the private sector is making a significant contribution to the economy of Bangladesh by playing an important role in the development of such ancillary industries.

4.13 Conclusion

Despite giving priority to housing in the private sector since the Second Five Year Plan of Bangladesh, the sector has not received much government support so far. No effective lending or financial benefits have yet been secured for this sector. Yet the sector has built forty-five thousand homes in the last fifteen years. Has completed several successful land development projects.

Although each plan mentions the formulation and implementation of specific policies, the government has not been able to provide adequate assistance to the sector. Eight to nine companies still have to accept construction clearances. Various agencies, including RAJUK, just took about a year to get the approval. Moreover, the companies have recently fallen into extreme frustration due to non-completion of Dhaka's detailed area plan. The sudden introduction of rules and the competition for the right to a company is undermining the healthy competition.

Since housing is a basic human need and the private sector is already spontaneously engaged in solving this problem, it is urgent for the government to take action to safeguard the interests of both consumers and sellers. It is necessary to regulate the urbanization of Dhaka through formulation of proper rules and regulations and its successful implementation. Not only in Dhaka city, but also in the district cities, this business should be developed and steps should be taken for sustainable development. In this case, it is necessary to ensure transparency and accountability with the goodwill of the government. Remember that any construction is our future. Therefore, public-private initiatives need to be coordinated to keep the future environment livable. Urban and regional planners must also be involved in building a prosperous and sustainable Bangladesh of the future. Only then will this country, this soil become habitable in the close connection of the green village and the modern city.

5 Research Background

From the seventies onwards, real estate companies in Bangladesh slowly started expanding their operations. At that time there was no city policy or housing policy. They roamed the heart of Dhaka. But due to political and economic reasons, the population of Dhaka city is increasing rapidly and its size is increasing. At the same time the demand for housing increases. Although the government or self-employed houses were able to meet the limited demand, the housing shortage became apparent in the nineties. That is why the private construction sector came forward in this industry. This may be the main topic of the study.

- (1) Review their activities based on area.
- (2) To determine the potential and scope of this industry.
- (3) To review its contribution to socio-economic development.

5.1 Rationality of research

The housing crisis has clearly affected the lives of the people of Dhaka. Many dreams of providing safe and peaceful housing for future generations. To fulfill that dream, they are buying a flat or a piece of land with hard earned money. Numerous developers and real estate companies are busy expanding rapidly to build high-rise buildings on abandoned land in Dhaka with the aim of attracting buyers and demand. But due to the wrong policy of the government, these activities are almost stopped. Under the Water Resources Act, the filling of water bodies around Dhaka is being stopped. Stopping ‘dream-fulfillment’ to be the glorious owner of a piece of land or a flat. Those who have an eye on the development and future of Dhaka must know very well what Dhaka is getting ready with the demand and reality. Then of course not. Due to this move of the government, the colorful dreams of thousands of people involved in this industry are going to disappear in despair. Not only has the real estate sector been affected, but other sectors have also been affected. Entrepreneurs in the housing industry are now having a hard time dealing with its business losses due to lack of sound policies. The government earns huge amount of revenue from this industry. Many educated people are involved in this industry. Employees abroad have invested their hard-earned money here. At present, the real estate sector in the world open market can play a good role in the development of Bangladesh. Besides, to build a house, one has to get permission from various government agencies, which is a very bitter experience. Nothing is observed here to say right or wrong. Money can be used

to understand the state of work. These aspects can be the subject of our research. Above all, there is a rationale for research on how to ensure a better place to meet people's needs. A house is a world to itself. That is, a small world in a big world.

As a result of the housing class arrangement, a livable city will be formed. A livable city means that the city will enjoy permanent civil rights without hindrance or competition, and infrastructural facilities will remain a long-term foundation. The balance of the environment will be maintained. The mindset of the people of a healthy and safe city will be sound. Skilled manpower will be created. The nation will move forward towards future development.

5.2 Document Review

The construction industry is a new chapter in the development of Dhaka city in terms of research. Very few students have done research in the construction of skyscrapers. Building construction is a huge problem in urban development. To solve this problem, construction industry was established on a large scale in the nineties. The rate at which building construction companies have grown has not been studied. The various quotations of those who have done research so far are presented below.

Ahmed S. M. (1992). His thesis shows that poverty is an obstacle to sustainable development and the poor state of building construction. He suggested that the industry could be a system for homeless people. Public and private entrepreneurs have to come forward in this regard. The government will have to exclude large housing projects and provide housing to the homeless in cities and villages.

Akhtar H; (1988), showed that the housing problem is increasing day by day and it is being solved according to the problem. But it is taking shape. His advice to the lower class is to help the lower class socially, economically and technically.

- (1) Arrangements should be made for the accommodation of evicted slum dwellers with minimum facilities.
- (2) They should be relocated to a place where they can come and work in Dhaka every day.
- (3) All these measures should be taken at the upazila level as well.

Aziz M. F. (1983) in his thesis "Urbanization of Bangladesh" shows that 50% of the people of Bangladesh live in houses with benefits while the rest live in some form deprived. In order to solve the housing problem in urbanization in the future, pre-planning has to be adopted.

The Housing Survey Report, (1993) reveals that unplanned land management creates unsatisfactory housing.

Islam m. S, (1986), in his research showed that the population of Dhaka city has increased five times and the housing system of Dhaka city has tripled. It is observed that most people combine new and old cities 29 b. What. Lives below and the slums are located in between. He advised to overcome this situation.

Corn V, A, (1973) in his book, The Quality and Cost of Housing. He has presented it in the light of Britain, America and the countries of Western Europe. He was amazed to go to these countries to do statistics and surveys on housing.

The quality and cost of a house varies from country to country. He has set the standard for houses in different countries based on the elements that are: "

- (1) Placement
- (2) Decoration
- (3) The cost of the house
- (4) Finish

Memin A, M, (1992) reveals that the construction industry in Bangladesh is not promising. Floods, cyclones and tornadoes hit us every year and technology and equipment are not enough. It is very difficult and costly for the people of our country to build houses with natural disasters in mind.

He highlights some of the major housing issues here. That is -

- (1) Concentrated asset management.
- (2) Excessive population pressure.
- (3) Frequent natural disasters.
- (4) Insufficiency of resources for housing.
- (5) Lack of housing law framework.

Here are some suggestions on how to look or get an appointment for antique items.

- (1) To distribute land to landless people on the basis of price.
- (2) To create work.
- (3) Introduce home loan system at nominal interest on easy terms.
- (4) To invent low-cost housing methods.

(5) Involve various developmental organizations in housing construction.

The National Housing Policy Report (1993) reveals that slums and unplanned housing are threatening our civilized civilization. According to the capacity of the people, the private sector should come forward to develop the physical infrastructure of the city. The poor are suffering due to the inadequacy and indifference of the housing industry and the shortsightedness of various development partners. It has found various obstacles in housing construction.

(1) Insufficiency of resources in the construction industry.

(2) B Insufficiency of land for housing in Bangladesh.

(3) C Housing materials are not modern.

(4) Lack of investment in the public sector.

Past, Present and Future Planning Report A, S, D, (1989), Ministry of Finance Challenges H, S, D H, S, D is a government institution. Unsurprisingly, it collects money from the government. They have a wide range of construction techniques. There are many mistakes in land administration and tax management. This report recommends to the chip engineer of H, S, D that coordination should be made between estimated expenditure and tax collection.

The Slum Problem Elimination Report (1989) reveals that about 3 lakh people live in 1125 slums in Dhaka city. Despite the population density, the rate is 1000-2000 per acre. In January 1975, 70,000 people were evacuated from Dhaka under the slum eviction project. This program could not succeed because of lack of revenue growth. Slum resettlement is not possible in our urban areas. Therefore, this committee is recommending to take up the slum development program.

6 Housing Summary

6.1 Introduction: -

The housing industry, like other industries, involves production, distribution, investment and management of land and houses. This industry is a little different from other industries and the amount of investment is much higher.

The foundations of the housing industry are open. In the home building industry, space is used only for living, working, and playing sports. He uses the space properly as the population needs it. Some use it for office, some use it. For the apartment, someone uses the clothing store. The job of the construction industry is to provide good housing to the people according to their needs. The quality of service in the construction industry needs to be further enhanced and the quality of products needs to be enhanced. Construction industry is related to land. After the land was developed, houses were built there. The housing industry is the systematic construction of land in a vacant lot. Its definition is short but the scope of this business is wide.

For example, after the development of the land, the building is constructed by investing money in it, later they have to be marketed and managed. The construction industry usually refers to the development of open spaces but it is extremely complex. Day after day, as a result of the labor and pursuit of many people, the construction industry developed in one place. But it's more complicated than other businesses.

6.2 Real Estate:

Real estate is a general term that expresses meaning.

First: The word real means truth. The word estate means the element of land. In other words, the word real estate means to determine the authenticity of natural land. But the only effort of all people is to develop the land.

Secondly, the word A is used commercially. In the language of commercial transactions, the term real estate is used to express the integrated meaning of housing construction.

6.3 Types of real estate business

Generally, real estate companies can be divided into three groups. Those are: -

- (1) Land developer.

- (2) Home developer.
- (3) Developer of both land and house.

6.3.1 Land development

This company buys land from landowners and develops the land. After development, it is divided into different plots and sold to the customer. Customers buy land, some in installments, some at full price. Such as: - Metro makers and developers.

6.3.2 Home development

These companies build buildings on their own land and sell them to the customer in the form of flats and apartments. Such as: - Advanced Development Technologies.

6.3.3 Development of both land and house

The company develops both land and houses and sells them to customers. Such as: - Eastern Housing Limited.

6.4 Determining real estate area.

How do we determine the real estate area? The general elements within the real estate area need to be judged. People inside the real estate area generally enjoy equal benefits in terms of services. Policy makers build this area with that in mind. The culture, security, facilities and communication of this area are hindered by the same thread. Equality is the first and foremost condition of the real estate sector. Determining the area is the key to the real estate business. The following are some of the elements that determine the real estate business area.

(A) Development: -

The end of the production of the real estate business is in development. The developers bring the customers within the purchasing power by combining land, labor and pond in production. Land development here means the creation of settlements. Fills the soil and increases the height of the land to make it habitable land. Housing companies are constructing buildings from a single-family livable building up to 37 floors in our country.

(B) Investors: -

In the real estate business, a class of people gain ownership through money and run this business.

He is said to be a neutral investor because he makes a profit by investing a certain amount of money but he does not have any responsibility or risk. The financier only pays and the manufacturer does everything from construction to development and sale. In exchange for the money, the neutral investor gets a share of the ownership of the building. Plots and flats are sold to the investors at low prices and later they are sold to the customers at higher prices. Neutral investment is taken help in bad and land situation.

(C) Debt: -

Usually, a single family builds a house through a loan. That is, purchases. 75% -80% of the purchase price is borrowed from various leasing companies. Later they repay the loan in installments. Leasing companies do the necessary paperwork for this. But if unable to pay the installment, the company can sell the property elsewhere through the courts.

6.5 Associate determinants in the real estate business are: -

(A) Marketing: - One of the most important services is provided by developers and marketed by neutral investors and lenders. Housing brokers do the sales work and they hire various sales representatives. Brokers and sales representatives usually work through commissions. That is, they deduct their commission from the sale price. The first task of the sales representative is to create buyers who are able to buy these assets through conditions.

(B) Pricing: -

The real estate business is priced in such a way that it is consistent with the market price. Pricing is done by an acquaintance or sometimes by a third party independently. Here the valuers take their fees.

At the time of pricing, the determinant checks the market. The real estate business is priced based on the market price of the flat or plot, construction costs, house rent, and area-based location.

Lenders lend to the buyer and the seller by setting a price based on the market price. Builders always plan how to finish the project keeping in mind the market price. Prices in the housing industry depend on a variety of opportunities.

(C) Consultant: -

If an organization wants to invest money in office building, it has to give a discount. Because they have to take help in economic research. After the need for legal advisor and tax advisor in

real estate companies. So, if a housing company builds an office building, it has to make a lot of concessions. Real estate companies require the advice of attorneys, auditors, market researchers, economists, valuers, brokers and other professionals.

The main task of councilors is to talk to the buyers and solve various problems by coordinating with the councilors of other organizations. Real estate business consulting is an important post. Much of the company depends on it.

(D) Asset management

Lack of management can lead to the collapse of the real estate business. Many times, it is seen that many big organizations are in financial crisis. This problem has to be solved through efficient management. The culmination of the home building business is inefficient management. It has been shown that many construction companies build very good residential buildings. But there is no survival only in the absence of inefficient management. Due to lack of management, no profit can be found before the sale. Good asset management is crucial for a real estate organization.

6.6 The need for basic ideas.

We can never play a game if we don't know the rules of the game. Similarly, if someone doesn't have a basic idea about the house building industry, then he can't improve in this business. He needs to realize how reasonable it is to set aside space to build a home-building industry. He should also be aware of the nature of the housing industry. Must have basic idea about housing law. The construction industry needs to have a thorough understanding of market taxes and the natural environment. The real estate industry will be built in a city that has a good idea about the city and a basic idea about the income of the people in the city. It will be easier for him to do this business if he has a clear idea about all the environments where the housing industry will be established.

6.7 Exterior of Real Estate:

By real estate we mean permanent housing in an area. It has to do with land. The natural structure of the land affects the external appearance of the housing construction area.

In fact, the housing industry can be divided into two parts. E.g.

(A) General natural features.

(B) Spatial features.

(A) General natural features.

Housing Some common natural features are growing. They can be seen in Dhaka city and also in the forest area Sundarbans. This character sets the housing industry apart from other industries. The features are discussed in the form of points below.

(1) Differences: -

In real estate, each piece has its own unique features. One of the two pieces is completely different from the other. Each piece is different from the positional side. Prices also vary due to their location as they are commercially produced. Due to natural, environmental and location reasons, the price of a plot varies from buyer to buyer. For all these reasons, buyers also pay different prices for each plot.

(2) Limited supply.

There are very few places in a city and its environs where empty space can be found. The amount of land there is more than required. Since a large number of people live in urban areas, it is very difficult to develop land there. People in urban areas want jobs, markets, entertainment, etc. in one place, so there is a lack of land. The price of land there is increasing day by day so multi-storied buildings are being constructed there to facilitate all the activities together. Many people think that more tall buildings need to be built to increase civic amenities.

We know that land prices are rising in the form of chains because everyone knows that developers need a lot of space for land development. It is an innate idea that its value is increasing due to the use of land.

(3) Immortal

The land will never be destroyed. You can do whatever you want with a piece of land. Sometimes the price of land may go down but it will not disappear.

(B) Location-based natural features of the land: -

The characteristics and similarities of plot-based land in the housing industry are almost the same but the characteristics of natural land based on space are different and there is no compatibility of one place with another.

In fact, the characteristics of a plot naturally are: - Spatial analysis, soil type, permeability, size and shape and abundance of use, etc. Land development has to be limited to natural constraints.

Below are the natural features of the land based on the location in the form of points.

(1) Geological features: -

Land resources or spatial details are given only in the upper part of the land. It is mountainous, flat or hilly. The spatial description of the land has a considerable effect on the upliftment of the land. This means that additional costs for seismicity, tidal wave and drainage systems have to be incurred if there is not enough knowledge about the topographic details.

(2) Soil type: -

If one wants to develop an area through soil filling then make a decision based on the type of soil there. Soil type is important from different angles because the building has to be constructed based on weight bearing capacity, type of internal rock, soil absorption capacity, soil alkali etc. Some soils have a very high bearing capacity and some areas have no bearing at all. Also the piling depends on the rock inside the soil.

(3) Size and shape of land.

Developer companies are always looking for the right size of land. The correct size here means the required size. For example, it takes 30-50 acres of land to build a shopping mall with parking. Complications will arise if a shopping mall is built on less land there. So they are always looking for the right size land. The size and shape of the land indicates what needs to be built there. Developer companies never buy land in square feet and they never buy any triangular land. This shows the problem of planning. They buy land per acre and prefer and buy square shaped land. That is, the size and shape of the land affects the developer.

(4) Quality development: -

Developer companies improve the quality of land not only in terms of use and price but never have the ability to change its natural quality at all. External changes are brought about by human beings - use, sewerage system, provision of potable water, provision of natural gas, provision of electricity. Arranging storm water drainage. These are called proper development. All these facilities are not available in any land and these are provided by the developers. The above facilities enhance the beauty of the building and attract the attention of buyers. The land on which the shopping mall is built has the maximum use of land.

(5) Accessibility: -

Accessibility saves time and money to reach its reality. Usually for the low-income people, if he saves time and money, it is because his bounty and the value of the land are too high for him. A simple example - if a doctor working in a hospital rents a house near his place of work, he will rent a house even if he pays more because it will save him less time and money. As a result, he will be able to spend more time in the hospital and see more patients and this will increase his reputation and income. That means renting more than bad accessibility is much better. This rule also applies to land use. In the light of the above idea, we can say that development of more important areas comes first and development of less important areas comes later.

6.8 Undertaking

From the above discussion we can say that the housing industry is the use of land involved in economic activities and its resources are building development. An economist divides land based on its production, labor and investment. The National Association of Real Boards has remarkably stated that land is above all else, and that our civilization will evolve if land ownership can be wisely managed and unleashed.

7 Construction Site Waste Management and how it is practiced in Bangladesh

7.1 Background

Bangladesh is a fast-growing nation with a GDP growth of 7.9%. The population of Bangladesh is also growing at a fast pace with the economic growth. In their report, Bangladesh Bureau Statistics stated that the population of Dhaka the capital of Bangladesh was 6,487,459 in 1991 which increased to 14,543,124 in 2011 (Yasmin and Rahman, 2017). Because of the growing population, solid waste management has become a great challenge for the government to protect public health, safety, and the environment. The waste generation rate in Dhaka is quite higher than in the other cities of Bangladesh. In a study, Abedin & Jahiruddin (2015) stated that Dhaka, Chittagong, Khulna, Rajshahi, Barishal, and Sylhet contributes 69.7%, 17.1%, 6.7%, 2.2%, 1.6%, and 2.7% respectively of the total waste stream of the country. However, due to lack of motivation, awareness, proper selection of technology, and adequate financial provision, approximately 40-60% of the wastes are not sorted, collected, or disposed of.

The construction industry has become one of the most promising industries in Bangladesh at present which accounts for approximately 80% of the total investment (Mondal, 2003). This growth of the construction industry has become possible because of the reasonably priced skilled and unskilled labor availability. The labor force survey of Bangladesh Bureau Statistics (BBS) demonstrated that approximately 2 million workers are employed in the development business (Shourav et al., 2015). However, the construction industry is considered as one of the major contributors to the solid waste generation of Dhaka city. The construction industry produces a significant amount of waste. According to the Commonwealth Environment Protection Agency, construction waste was 15% of the total generated waste in 1992 (Mcdonald and Smithers 1998). Since then, that has been increased and become roughly 40% of the global waste generation (Fatemi, 2012). Construction site generates about four times more waste than in households (Hwang and Yeo, 2011). Studies also confirmed that 50% of the waste materials produced from the construction works are being dumped into the landfill (Nagapan et al., 2012). The construction industry is also alleged as one of the main contributors to environmental degradation because it consumes about 40% of previously unused raw material (Abarca-Guerrero et al., 2017). The amount of waste generation of a country varies

depending on its geographical location as well as economic condition. In a densely populated country like Bangladesh, it is hard to have the funds for waste management by landfilling (Chowdhury, 2016). In these circumstances, proper research is required to minimize construction waste generation and save the environment from further degradation.

7.2 Literature review

7.2.1 Construction Waste

‘Waste’ is defined as any undesirable or rejected material in solid, liquid or gaseous form which seemingly has no consumer value to the person disposing it (Oladiran, 2008). However, in some cases, waste is actually not considered waste at all but a valuable resource paved the way of ‘Waste’ is defined as any undesirable or rejected material in solid, liquid, or gaseous form which seemingly has no consumer value to the person disposing of it (Oladiran, 2008). However, in some cases, waste is not considered waste at all but a valuable resource that paved the way for generating an industry that manages and recycles waste (Kabir et al., 2013). Construction waste is defined as ‘any substances, matters or things that have been generated in line of construction work (Yuan et al., 2013). However, it is also considered as a combination of surplus materials generated from site maintenance, diggings, construction, restoration, renovation, demolition, and transportation. According to Laquatra and Pierce (2009), there are three general categories of construction waste which are: sluggish waste, decayable waste, and chemical waste.

- Sluggish waste: Sluggish waste is chemically stable which generally doesn’t decompose. For example, Bricks, masonry, and concrete.
- Decayable waste: Decayable waste contains organic matter and can easily get decomposed and produce gasses.
- Chemical waste: Chemical waste is those types of materials that may form contaminating leachate through chemical or physical processes (Laquatra and Pierce, 2009).



Photo 1 Construction waste

Source: Author

7.2.2 Construction Waste Management

Waste management involves collection, transferring, storage, treatment, recycling and disposal of waste and it can be defined as a wide-ranging, combined and comprehensible system approach involves maintenance of suitable environmental quality and support of sustainable development (Hwang et al., 2011). According to Poon et al. (2004), Waste Management Plan (WMP) involves visual representation of waste issue on the map, making it clear whether potential waste problem exist.



Photo 2 Construction Material and waste on footpath

Source: Author

7.2.3 Causes of Construction Waste:

Osmani et al. (2008) stated that construction waste used to generate throughout the project from initiation to completion. Hence, to minimize construction waste it's important to know the waste sources. According to Osmani et al. (2008), Patel et al. (2016) and Fatemi (2012) the origins of construction waste are as follows:

Table 7-1 Origin and sources of construction waste

Origins of waste	Causes of waste
1.Contractual	<ul style="list-style-type: none"> • Errors in contract documents • Contract documents incomplete at commencement of construction
2.Design	<ul style="list-style-type: none"> • Blueprint error • Design changes • Design and construction detail errors • Unclear/unsuitable specification

	<ul style="list-style-type: none"> • Poor co-ordination and communication
3.Procurement	<ul style="list-style-type: none"> • Shipping error • Ordering error • Over allowances • Supplier error
4.Transportation	<ul style="list-style-type: none"> • Damage during transportation • Difficulties for delivery vehicles accessing construction sites • Insufficient protection during unloading • Inefficient methods of unloading
5.On-site management & planning	<ul style="list-style-type: none"> • Lack of on-site waste management plans • Improper planning for required quantities • Delays in passing information on types and sizes of materials and components to be used • Lack of on-site material control • Lack of supervision
6.Material storage	<ul style="list-style-type: none"> • Inappropriate site storage space leading to damage or deterioration • Improper sorting methods • Materials stored far away from point of application
7.Material handling	<ul style="list-style-type: none"> • Materials supplied in loose form • On-site transportation methods from storage to the point of application • Inadequate material handling
8.Site operation	<ul style="list-style-type: none"> • Human error • Accidents due to negligence • Unused materials and products • Equipment malfunction • Poor craftsmanship • Use of wrong materials resulting in their disposal • Time pressure

	<ul style="list-style-type: none"> • Poor work ethics • Acts of God (catastrophes, accident and weather)
9.Residual	<ul style="list-style-type: none"> • Waste from application processes • Off-cuts from cutting materials to length • Waste from cutting uneconomical shapes • Leftover scrap • Irreclaimable non consumables
10.Others	<ul style="list-style-type: none"> • Weather • Vandalism • Theft

Source: Saba, 2019

7.2.4 Categories of Construction Waste

The construction waste is generally the result of construction, demolition and renovation of buildings, roads, bridges and buildings. According to Wu et al. (2014), construction waste can be divided into three categories according to the generation phase;

- Construction waste: generated during the construction phase
- Renovation waste: generated during the renovation phase
- Demolition waste: generated during the demolition phase



Figure 7-1 Categories of construction & demolition waste according to the generation phase (Wu et al., 2014)

Yuan et al. (2013), divided construction waste into four categories in terms of components;

- Domestic waste: Paper, plastics, aluminum bottles etc.
- Sluggish waste: Brick, masonry, concrete etc.

- Non-Sluggish waste: Bamboo, timber, packaging waste and other organic materials.
- Chemical waste: Asbestos, lead paint, PCB caulking, lamp ballasts, mercury switches etc. (Anon, n.d.).

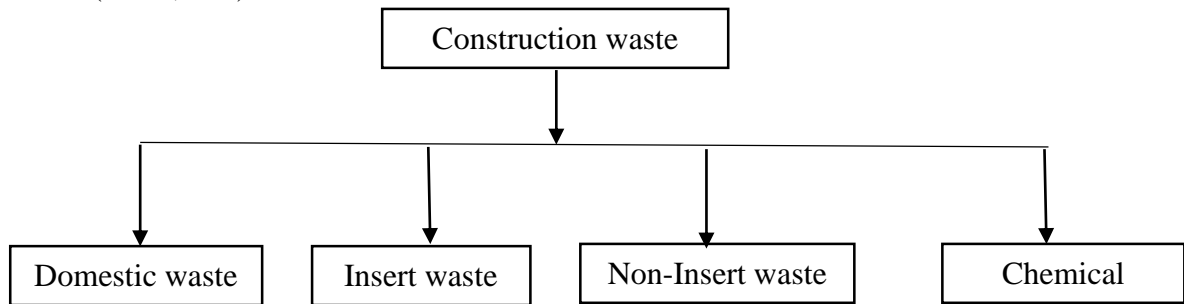


Figure 7-2 Categories of construction waste according to the components (Yuan et al., 2013)

In their study, Poon et al. (2004) has divided construction waste into main two categories;

- Structure waste: Concrete fragments, reinforcement bars, abandoned timber plates etc.
- Finishing waste: Surplus cement mortar, broken raw materials such as; mosaic, tiles, ceramics, paints etc.

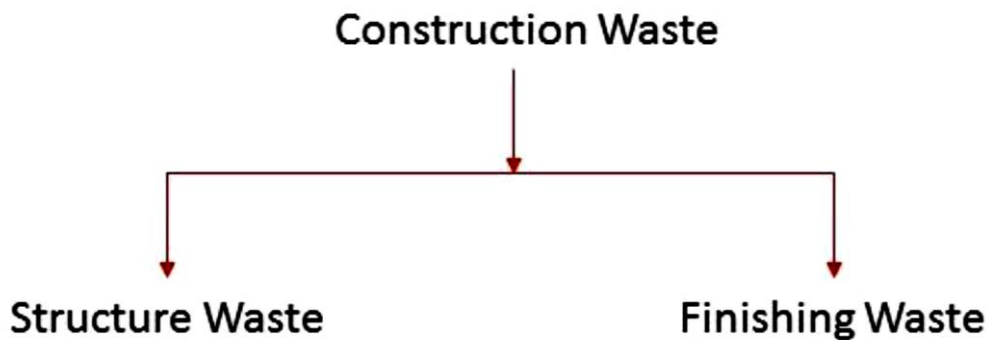


Figure 7-3 Categories of construction waste according to Poon et al. (2004)

In their study, Duan et al. (2015) has divided construction waste into three categories according to their usability;

- Reusable: Doors, windows etc.
- Recyclable: Steel, Aluminum scrap, copper from wire etc.
- Mixed C&D waste: Concrete debris, bricks etc.

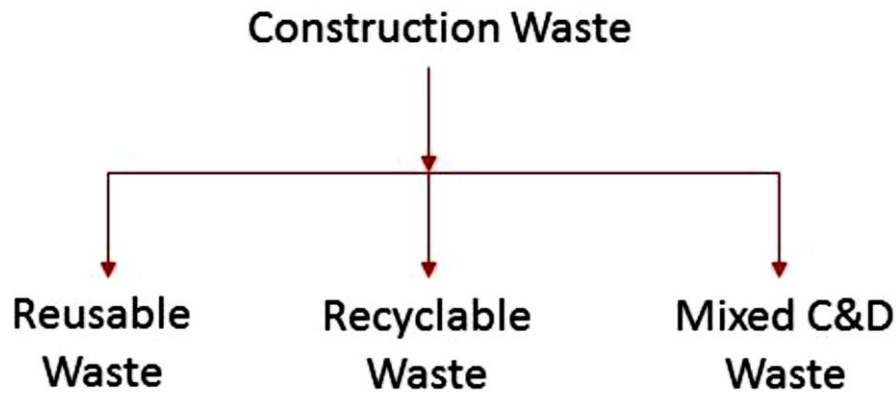


Figure 7-4 Categories of construction waste according to the usability (Duan et al., 2015)

Saba, (2019) in her paper summarized an overall waste category which is demonstrated below;

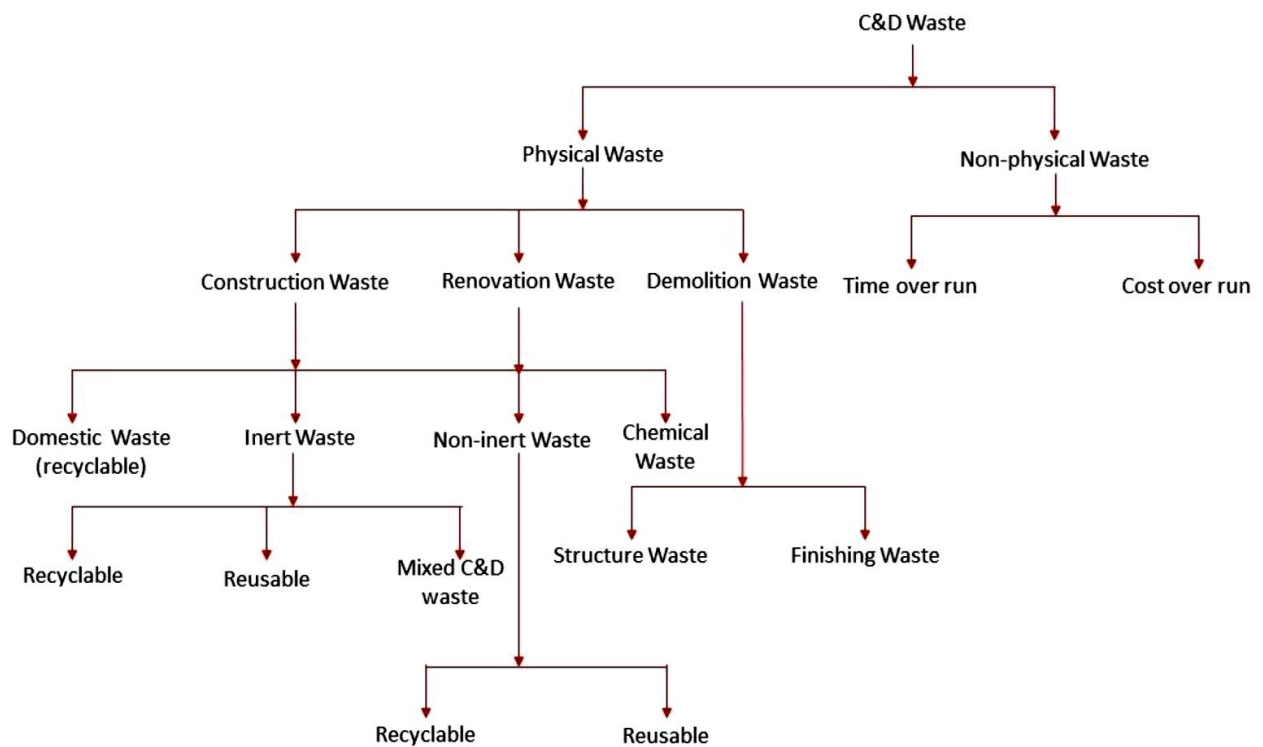


Figure 7-5 Categories of Construction waste according to the summary of Saba, (2019).

7.2.5 Construction Waste management system and Occupational Health & Safety

Shen et al., (2004) has analyzed six projects and mapped the waste management practices of those projects. These six projects clearly demonstrated six different waste handling procedures.

However, all the practices involve three basic elements, namely; waste generation, waste assembly and waste destination. In some stages serious health hazards have been identified by the researcher. These are as follows;

- Severe air and noise pollution due to collecting and delivering waste: In some cases, waste bags are thrown from very high which very dangerous and unsafe and also it creates serious air and noise pollution.
- Unsafe practice by allowing more labors to collect wastes on site: In some cases, there were higher chance of safety accident as more people were involved to travel and collect waste materials on the site.
- Unsafe operation on handling waste: There are no proper waste collecting Lorries or advanced technical support to handle waste which is unsafe and dangerous for the workers.

7.2.6 Sustainable 3R principle for CWM

A development that meets the need of the present without compromising the ability of future generations to meet their own needs can be defined as sustainable development (Cosmi et al., 1999). The concept of sustainable development synthesizes the integration between economic development and environmental protection. Peng et al. (1997), in their research stated that recycling is recognized today as a solid waste management strategy that is preferable to landfilling or incineration and environmentally more desirable. Based on the two pillars of sustainability in construction, Peng et al. (1997) has developed a hierarchy of disposal option which is illustrated in following figure.

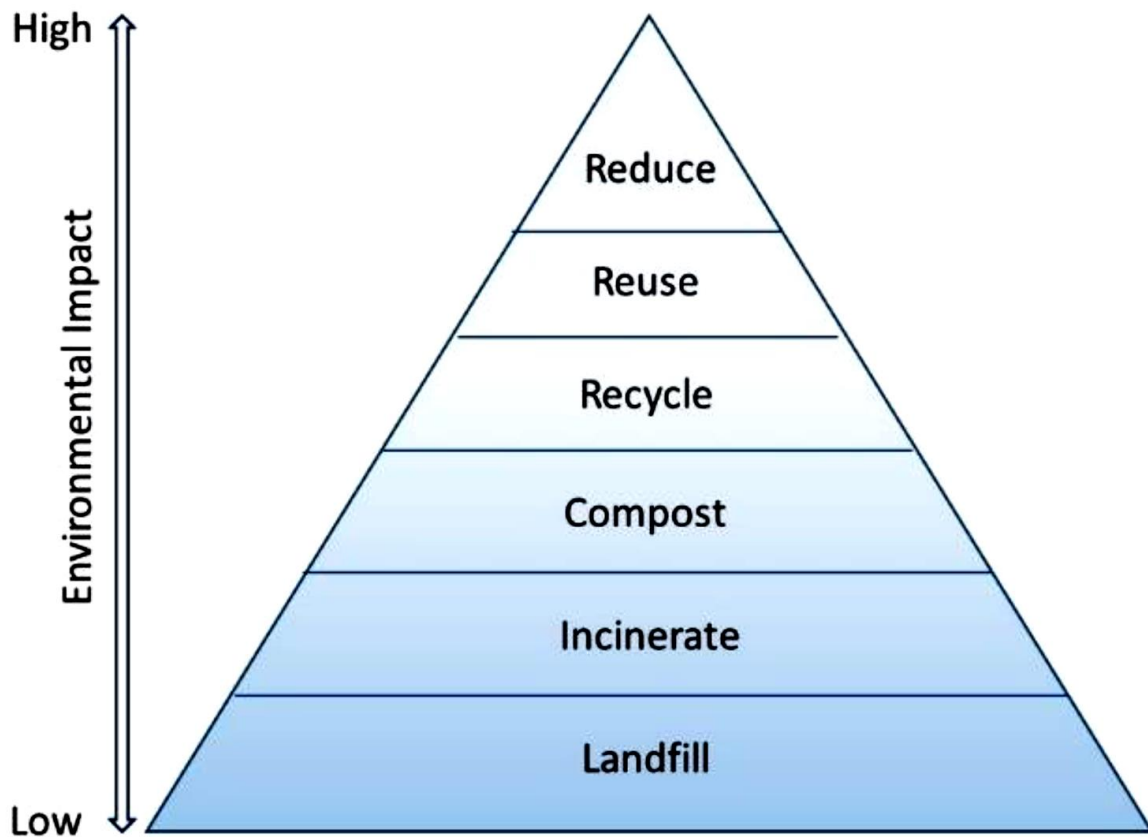


Figure 7-6 Hierarchy of C&D waste materials disposals (Peng et al., 1997)

However, Yuan & Shen (2011) has developed a C&D waste management method hierarchy which comprises with only four strategies namely, waste reduction, reuse, recycling and disposal which is illustrated in following figure.

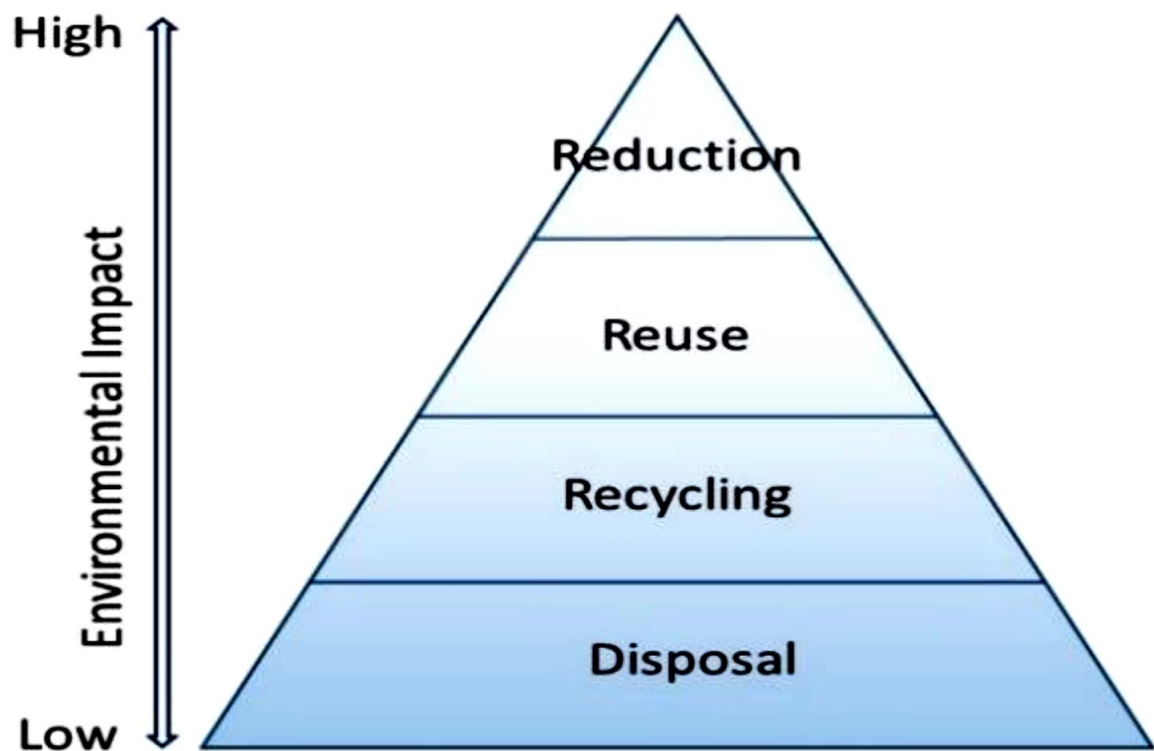


Figure 7-7 The C&D waste management method hierarchy (Yuan & Shen, 2011)

As it is a well-established fact that construction and demolition waste (C&D) management practices should be guided by the '3R'- reduce, reuse and recycle-principles. Hence, several researches have been carried out to find its efficiency and dodges (Huang, 2018). Nasrin (2016) has argued that 5R policy is more effective for a sustainable waste management than 3R policy. This 5R policy includes Re-think, Reduce, Recycle, Recovery and Re-use. In another research carried out by Keys et al. (2000) shows the hierarchy of waste management which is originally based on the EU Waste Management Hierarchy. But this hierarchy doesn't include the strategy of recycling which is illustrated in following figure.

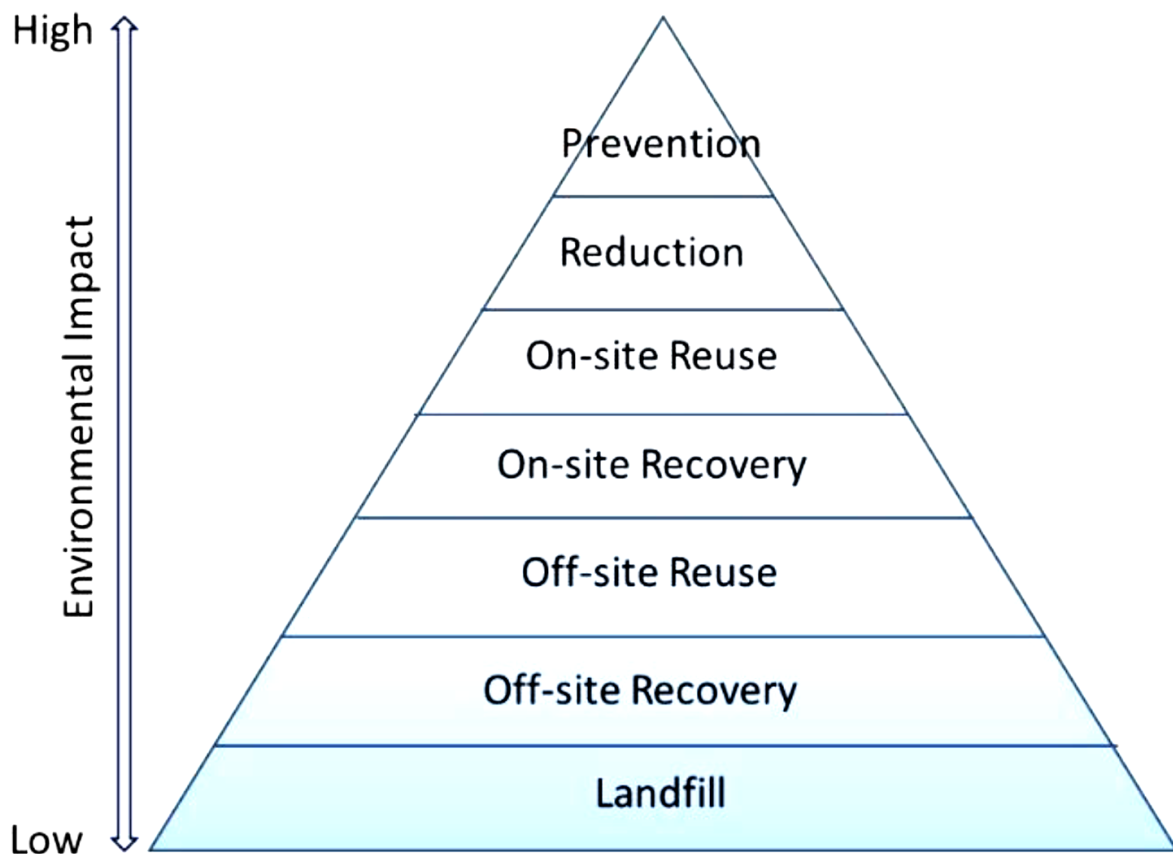


Figure 7-8 The hierarchy of EU Waste Management (keys et al., 2000)

3R policy of waste management is getting importance in many agendas and action plans. The Johannesburg Plan of Implementation (JPOI) adopted at the 2002 World Summit on Sustainable Development stipulated that all countries should promote sustainable production to facilitate global sustainable development. The 30th G8 Summit at Sea Island Georgia, US (June, 2004) and the follow-up 3R Ministerial Meeting in Tokyo (April 2005) have directly or indirectly emphasized the critical need for reorienting production and consumption patterns through the effective implementation of 3R principles (Reza et al., 2013).

7.2.7 The extreme Zero Waste concept

According to Li & Yi (2016), ‘‘Zero Waste’’ was at first devised and used by Paul Palmer in 2013 who recovered resources from chemicals. The definition of ‘‘waste’’ also depends on the perception from different persons because, what is waste to someone may be valuable to others. However, a zero-waste city will be possible if they recycle 100% of waste and recover 100% of all the resources from waste materials (Zaman and Lehmann, 2011). The concept of zero waste includes more strategies than just the 3R policy such as; reduce, reuse, redesign, repair, regenerate, remanufacture, recycle, resell, zero waste dispose to landfill and zero waste burning

(Li & Yi, 2016). In their research, Zaman and Lehmann (2011), stated the key principles to achieve a zero-waste city which are as follow:

- Behavior changes and sustainable consumption
- Extended producer and consumer responsibility
- 100% recycling of municipal solid waste
- Legislated zero landfill and incineration
- 100% resource recovery from waste

7.2.8 How CWM is practiced in Bangladesh

Bangladesh is one of the promising Least Developed Countries having the potential to grow further. About 2.4 million people are working in this industry and the contribution of this industry to national GDP is 20% (Islam, et al 2015). At the same time, construction industry generates 40% of the total solid waste in the country (Fatemi, 2012). The current environment of Bangladesh has been deteriorating rapidly during last 10 years and the situation is worse in the cities and the urban population rate was 3% from 2010 to 2015. Due to rapid population in the cities, a severe housing scarcity was experienced during 1970s which triggers the construction of multi-storied buildings. According to Bangladesh national Building Code 2006, these regions are getting more Floor Area Ratio (FAR), which means more construction of 8-12 storied buildings. As a result, more and more construction and demolition are taking place (Fatemi, 2012). Zahur (2007), in his study showed that the solid waste generation of Bangladesh in 1995 was 10742 tons/day, in 2001 it increased to 17000 tons/day and in 2025 it is estimated to increase to 47,000 tons/day. In addition, due to lack of motivation, awareness and commitment, expertise and money nearly 40-60% waste is not listed (Yasmin and Rahman,2017).

There are some significant changes noticed in this industry after the Rana Plaza tragedy in 2013, when a multi storied garment factory complex collapsed and 1130 workers died. As a result, this industry was forced by the international apparel brands to ensure environmental standard. Due to huge external pressure, green building rating system has been adopted massively to satisfy the foreign buyer's demand.

There is lack of proper research on construction waste generation and its management in Bangladesh. World Health Organization, 2014 reported that Dhaka is termed as one of the most polluted cities (Yasmin & Rahman, 2017). In their research, Yasmin & Rahman (2017), categorized different waster in Bangladesh such as:

- a) Commercial waste
- b) Institutional waste
- c) Domestic waste
- d) Industrial waste
- e) Street sweepings
- f) Clinical waste
- g) Construction & demolition waste.

Abedin & Jahiruddin, (2015) in their research discussed argued that there are three systems of waste management in Bangladesh. These three systems are as follows:

- Formal System: where municipalities/city corporations are responsible for Solid Waste Management (SWM).
- Community Initiative: which is based on primary solid waste collection by NGOs (Non-Profit Organization) and CBOs (Community-Based Organizations).
- Informal System: which is represented by the large informal labor force involved in the solid waste recycling trade chain.

However, there is a lack of proper Public-Private Partnership in between these organizations.

7.3 National resolution on CWM in Bangladesh

It is a matter of surprise that there is no sufficient laws and legislations in Bangladesh to address the growing problems of construction waste management. Although, there is some legislation regarding solid waste management, the execution of these laws is limited. The existing laws and legislations are as follows:

Table 7-2 Legislations related to waste management of Bangladesh (Nasrin, 2016) & (Abedin and Jahiruddin, 2015).

Legislation	Description
1. National Environmental Management Action plan (NEMAP), 1995	This Act is formulated by The Ministry of Environment and Forest (MoEF). NEMAP has recommended actions in the areas of sanitation, solid waste management, water supply and environmental awareness etc.

2. The Dhaka Municipal Ordinance 1983	This Act authorizes Dhaka City Corporation (DCC) responsible to collect and disposal of waste.
3. The Environment Policy Act 1992	This Act restricts disposal of municipal and industrial wastes into water bodies like river or ponds.
4. Urban Management Policy Statement 1998	This Act considers the interest of providing economic, efficient and reliable services for waste disposal and maintenance.
5. The Penal Code	This Act provides six months of imprisonment or Taka 2000(BDT) fine spreading life threatening infectious disease.
6. Environment Conservation Rule 1997	This Act Ensures to take Environmental Impact Assessment for any large landfill project.
7. The Factory Act 1965	This Act provides rules for disposal and control of wastes and dusts discharged from factories.

Source: Abedin and Jahiruddin, 2015

Waste management practices at public-private level in Bangladesh are as follows:

Table 7-3 PPP programs of waste management practices in Bangladesh (Nasrin, 2016).

PPP programs	Description
1.South and North City Corporation in Dhaka	It is responsible for the solid waste collection in the metropolitan areas.
2.Chittagong City Corporation (CCC)	The CCC is responsible to manage waste in Chittagong City
3.Waste Concern	It is a NGO which has added new dimension to make organic waste a profitable commodity. Waste concern has initiated recently a Clean Development

	Mechanism (CDM) for collection and treatment of waste in a plant.
4.Prism	The main focus of Prism was the waste management of government and nongovernment hospitals, private clinics and diagnostics centres at Dhaka City
5.Dustha Shasthya Kendra (DSK)	It provides Health and Hygiene Training on waste management.
6.CARE	It takes initiatives in Tongi, Dinajpur, Mymensingh and Jessore through ‘Shahor project’ funded by USAID since 2000.
7.Prodiipan	It started its journey in Khulna City and Khulna City Corporation has helped Prodiipan to dump waste in a particular place.
8.Clean Kalabagan	This is an Initiative which was taken complete privately by Mr. Karam Mahbub to collect waste without taking fees. But now it has become a community based private initiative in waste management after its success.

Source: Nasrin, 2016

7.3.1 Main challenges to adopt CWM plan in Bangladesh

In spite of its economic potential and environmental benefits, there are not sufficient research papers available on particularly on construction waste management in Bangladesh. However, after going through a lot of literature review about solid waste management in Bangladesh some main challenges to adopt CWM plan has been identified broadly:

- There is lack of national policy to encourage waste management plan for the construction sector.
- Lack of proper knowledge about environmental degradation and pollution created by the construction waste.

- Lack of enough research and technical resource related to construction waste management.
- Lack of interest by the architects in waste minimization in the design phase. Because, design phase is considered as a major part where waste can be reduced (Fatemi, 2012).
- Lack of proper recycling national policy (3R) about construction waste.
- Lack of finance and tax collection.
- Shortage of suitable land for proper recycling.
- Lack of proper partnership between public sectors, private sectors and community groups.
- Lack of proper handling rules and standard.

7.3.2 Construction waste generation:

Almost 60% of the generated waste from demolition are basically concrete blocks. 21% of them are mixed fragments, 9% ceramic, 3% plastic and a range of other type of wastes (Islam et. Al., 2019).

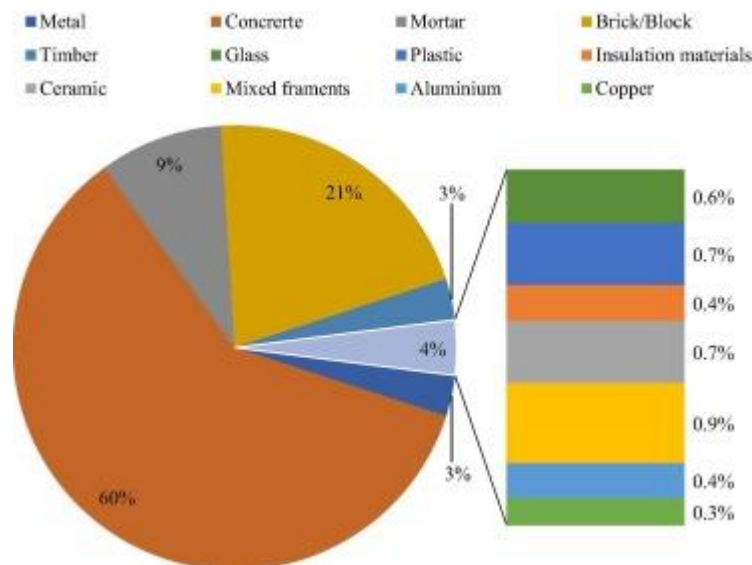


Figure 7-9 Construction waste Composition (Islam et. Al., 2019).

7.3.3 Conclusion/Recommendation

Housing sector is an emerging sector in Bangladesh. Due to extensive demand scarcity of land is a major issue for this sector. But high-rise buildings act like the best solution for this problem. Another problematic side of this sector is the huge amount of waste it generates in every step of the construction and usage. Due to the massive volume of waste, it is difficult to manage. Government authority is struggling to make up for the issue but it still remains unmanageable.

Urgent private sector involvement is necessary in this sector because it will be more manageable and a great economic potential is there if these wastes can be recycled properly.

However, from the discussion above it is clearly found that the main barriers which are lack of national policy to encourage waste management, lack of proper research on this field, lack of enough knowledge of the construction professionals such as; architects, engineers etc. Hence, it is worthwhile to look into this problem seriously and conduct research to develop a construction waste management system to improve the quality of this industry and make it capable to contribute to its GDP.

8 Real Estate Scenario in Dhaka, Bangladesh

8.1 Introduction:

People live at home as social creatures. People's living habits are changing day by day. The rate of change in urban areas is very fast. In the last century, upper class people have been buying apartments in the city. These apartment housings are being developed through real estate companies. The real estate company came to Dhaka in 1970 and is now growing. At present there are 213 real estate companies in Dhaka with 492 projects improved. The activities of the real estate company are located all over Dhaka.

8.2 Establishment of real estate company

Of the 213 real estate companies, 21 were listed. Real Estate Business / Apartment Business is one of the current 21 companies in this sector. 5 companies were found in this sector. These are- Sheltech, Eastern Housing, Rupayan etc. Eastern Housing was the first real estate company to start development services in Bangladesh.

Table 8-1 Established Company

Year of Establishment	Number of Company
Before '90s -1990	5
1991-1995	8
1996-2001	8
Total	21

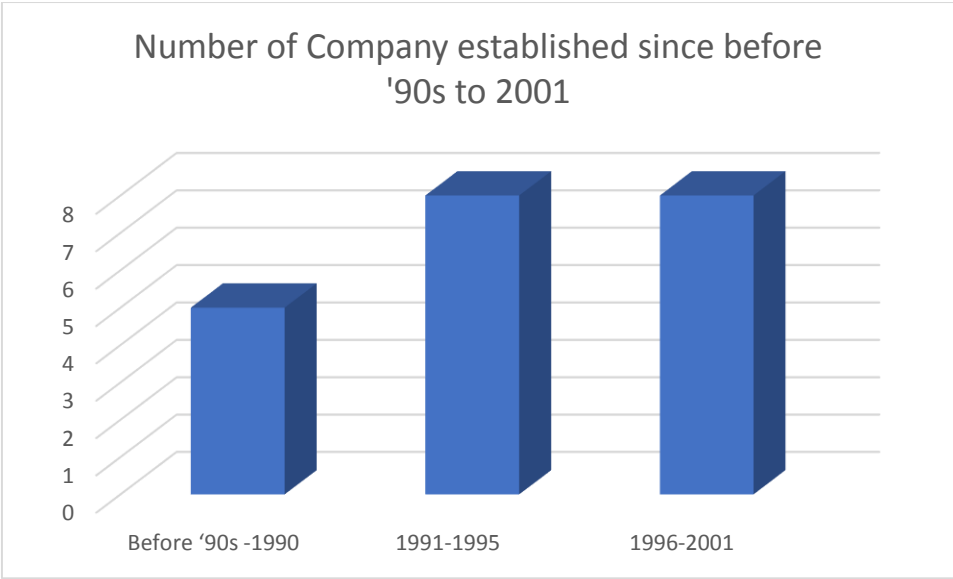
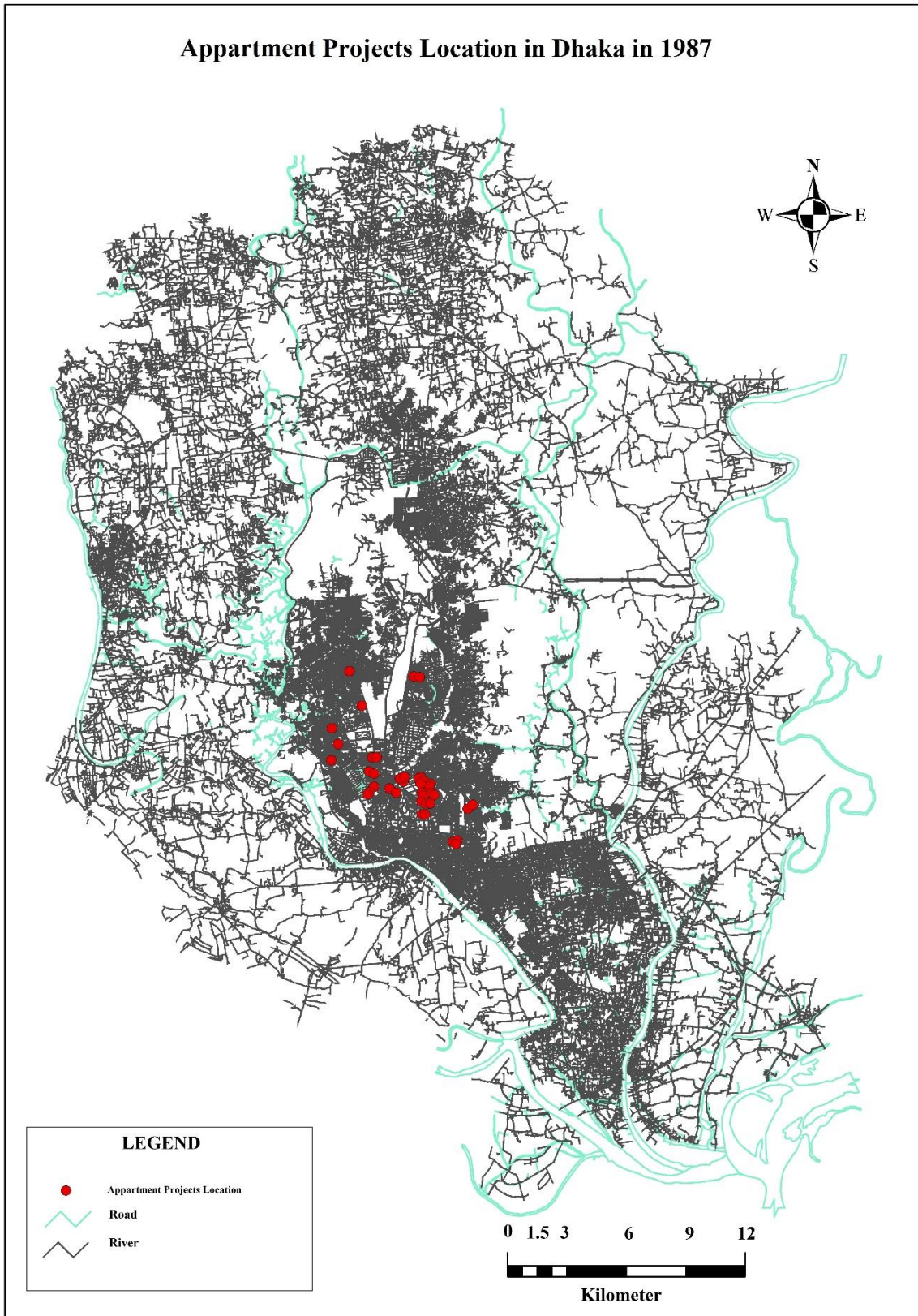


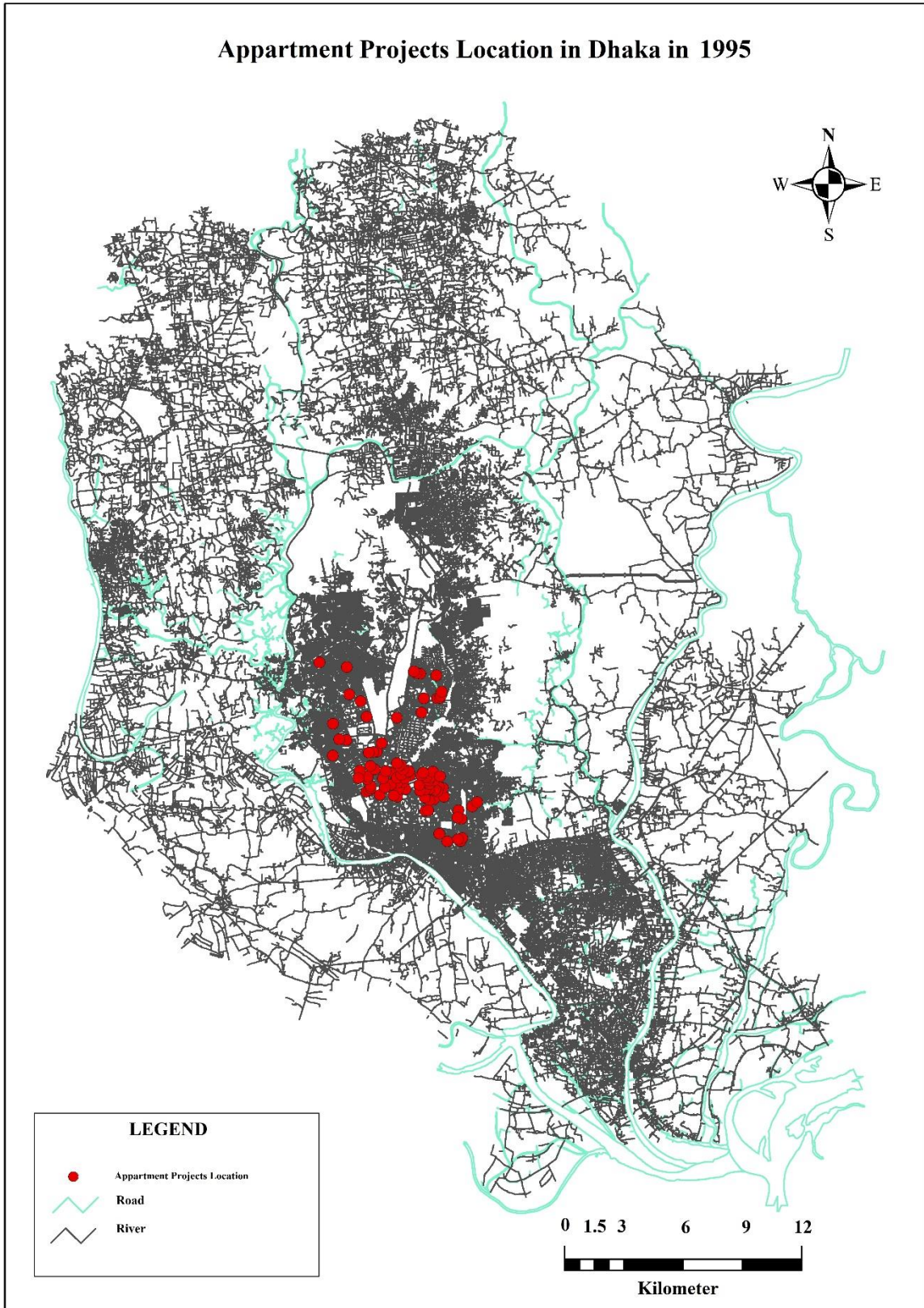
Figure 8-1 Number of Company established

Appartment Projects Location in Dhaka in 1987



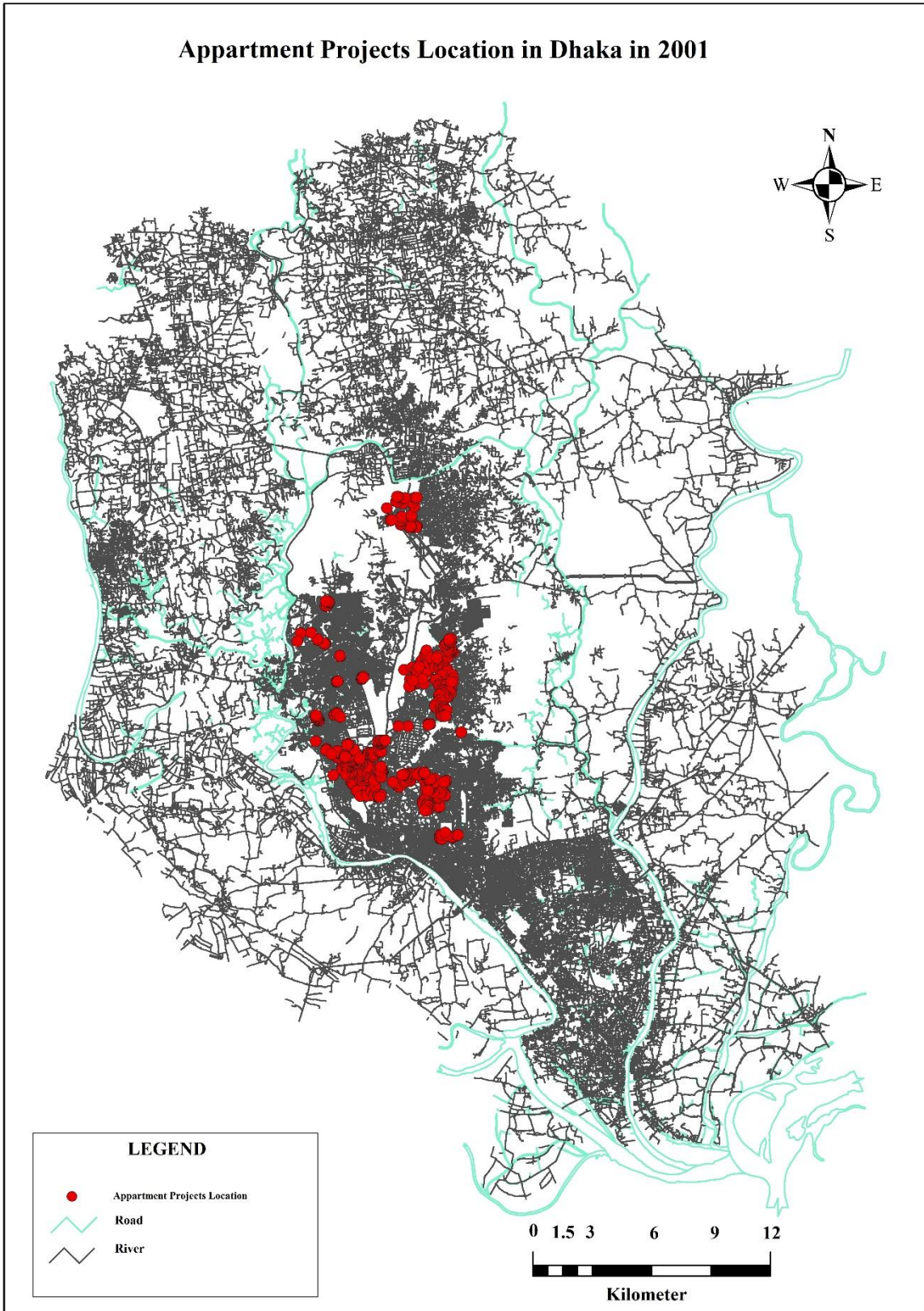
Map 8-1 Appartment Projects Location in Dhaka in 1987

Appartment Projects Location in Dhaka in 1995



Map 8-2 Appartment Projects Location in Dhaka in 1995

Appartment Projects Location in Dhaka in 2001



Map 8-3 Appartment Projects Location in Dhaka in 1987

8.3 Type of real estate organization: -

Real estate organizations are divided into four categories according to location. These are: Private Limited, Public Limited, Sole Proprietor and Partnership. However, most organizations are known as individual ownership. Of the 21 organizations, 20 are privately owned. Partnership Limited means 5% organization is Partnership Ltd. There is no Public Limited Company here.

Table 8-2 Type of Real Estate Firms

Company Type	Number
Private Limited	20
Public Limited	-
Sole Proprietor	-
Partnership	1

8.4 Goals and Objectives of the Organization: -

The main goal of real estate entrepreneurs was to eliminate housing problems and provide jobs through planned urbanization. In the following table, out of 21 organizations self-initiated housing problem, 13 organizations had the objective of planned urbanization, 2 organizations started for profit only and 2 organizations only provided job opportunities.

Table 8-3 Goal of the Organizations

Target	Number	Percentage
Planned Urbanization	13	62
Solution for housing problem	21	100
Making Interest	2	10
Job Opportunity	2	10



Figure 8-2 Goal of the Organizations

8.5 The main work of real estate organization: -

Real estate companies mainly do two types of work, firstly, land development, secondly, construction of housing buildings. Some real estate companies include land developers, building developers and some companies both works.

The survey found that out of 21 organizations, the main work of 13 organizations is building construction and the remaining 8 organizations are involved in land development and building construction.

Table 8-4 The main work of the organization-

Job name	Number	Percentage
The only building construction	13	62
The only land development	0	-
Both (1 and 2)	8	38
Total	21	100

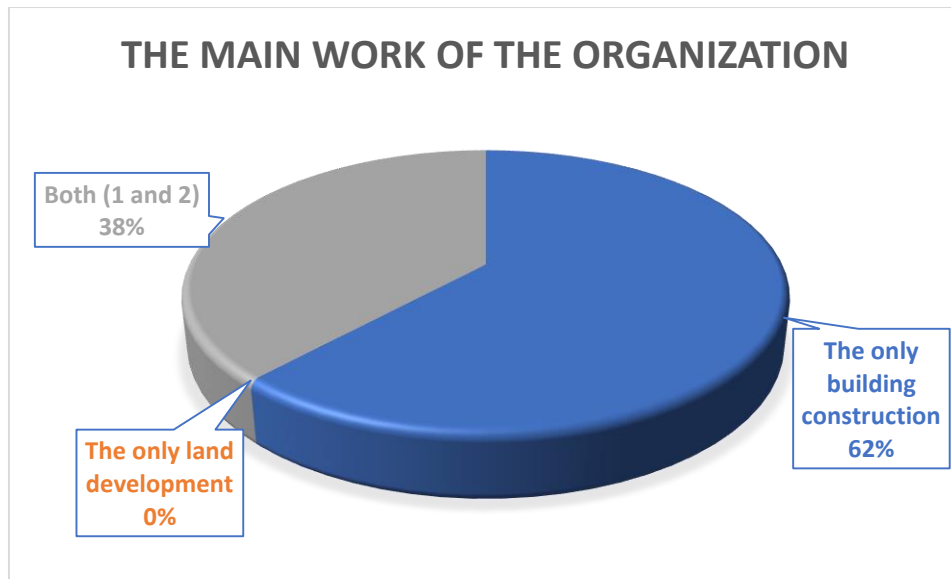


Figure 8-3 Primary task of the organizations

8.6 Regulatory Authority.

There are some government and non-government organizations that regulate the real estate business. Such as- Capital Development Authority (RAJUK), Ministry of Rehab, Housing and Public Works. The utility department plays the biggest role in this sector. Utility departments include Desa, Washa, Titas, T&T etc. The survey found that all institutions except REHAB have 100% control over the real estate sector.

Table 8-5 Managing Authority

Authority	Number	Percentage
RAJUK	21	100
Rehab	14	66
D.C.C.	21	100
Ministry of Housing and Public Works	21	100
Utility Department	21	100

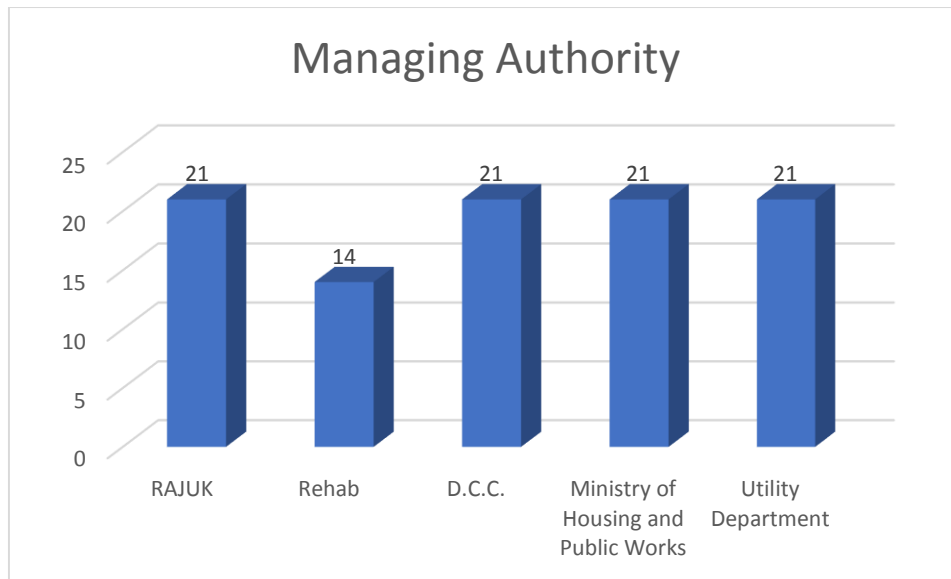


Figure 8-4 Managing Authority for housing sector

8.7 Housing financing

Money is the key to all business. Real estate companies regulate their activities through various types of financial loans. The main source of money is own money, borrowing from banks or borrowers. House Building Finance Corporation is the first financial institution. There are some non-governmental organizations such as Delta Brack Housing (DBH), National Housing and Finance Corporation (NHFC) which also act as the economic sector of the real estate.

Table 8-6 Established Housing financing Company

Year of Establishment	Number of Company
Before '90s-1990	5
1991-1995	8
1996-2001	8
Total	21

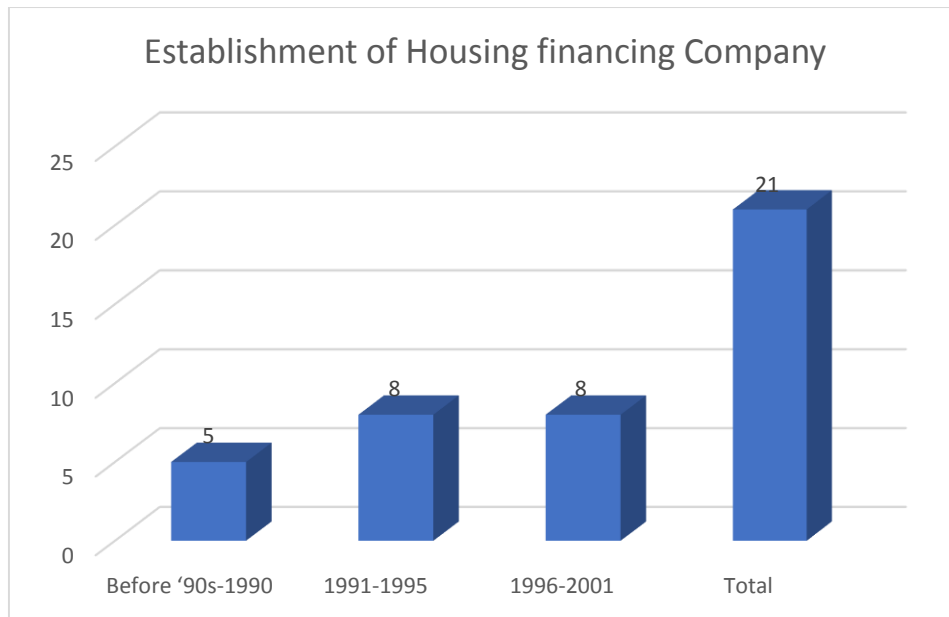


Figure 8-5 Established Housing financing Company

8.8 Assigned Buyer:

Real estate companies mainly develop their projects to accommodate two types of buyers. One is the high-earning class and the other is the middle-earning class. The middle-income class has a monthly income of less than Rs 30,000 and the upper-income class has a monthly income of over Rs 30,000. Some organizations are developing projects for the upper-income class only.

The survey found that all organizations are developing housing for the upper-income class. Among them, 13 companies are developing housing for the middle-income class. No institution is included here for housing for the low-income class.

Table 8-7 Defined Buyer Class

Class	Number	Percentage
Middle-earning class (BDT 30,000 / =)	13	61
High-earning class (BDT 30,000 / =)	21	100

8.9 Means of depositing money in the organization

Real estate companies also offer consumers the opportunity to deposit money, mainly through a short list. Of these, two types of deposits are offered by all the institutions. Some institutions arrange bank loans for their buyers. About 4 institutions arrange bank loans and only one institution supports the buyers.

Table 8-8 Payment Type for of the Companies

Type of Payment	Number	Percentage
Lumpsum basic	0	-
Installment basic	21	100
At once	21	100
According to the financial capacity of the buyers	1	5
Partial bank loan	4	19

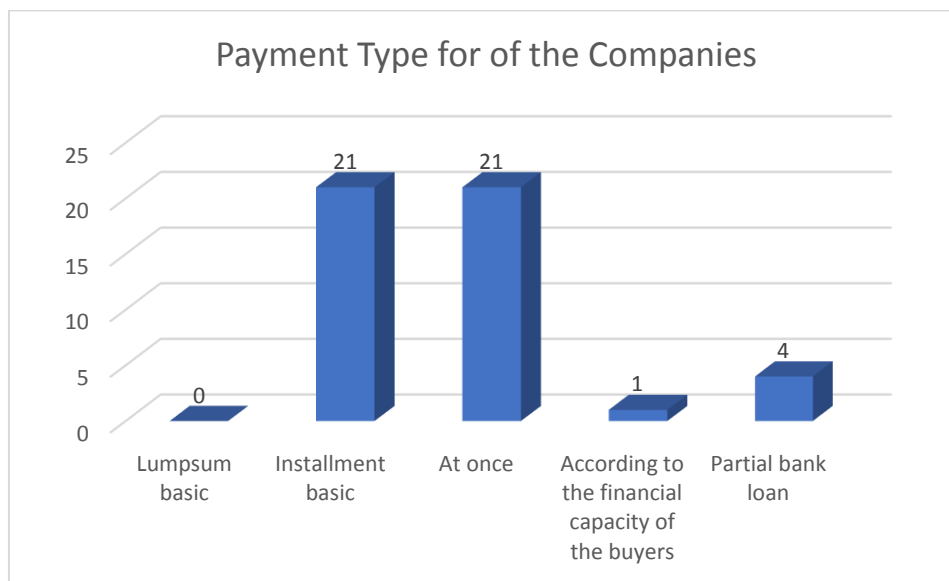


Figure 8-6 Payment Type for of the Companies

8.10 Project of the organizations outside Dhaka

Advanced projects of real estate companies depend on the needs of the buyers. If there is a demand from the buyers outside Dhaka, then the companies will develop outside Dhaka. Organizations develop their projects through buyers' money. As a result, they get more buyers and continue their business in Dhaka. However, some companies have taken risks to develop new projects outside Dhaka. Following table shows that most of the companies do not have any project outside Dhaka. Only one organization has a project outside Dhaka.

Table 8-9 Projects outside Dhaka

Projects outside Dhaka	Number	Percentage
Yes	20	95
No	01	05

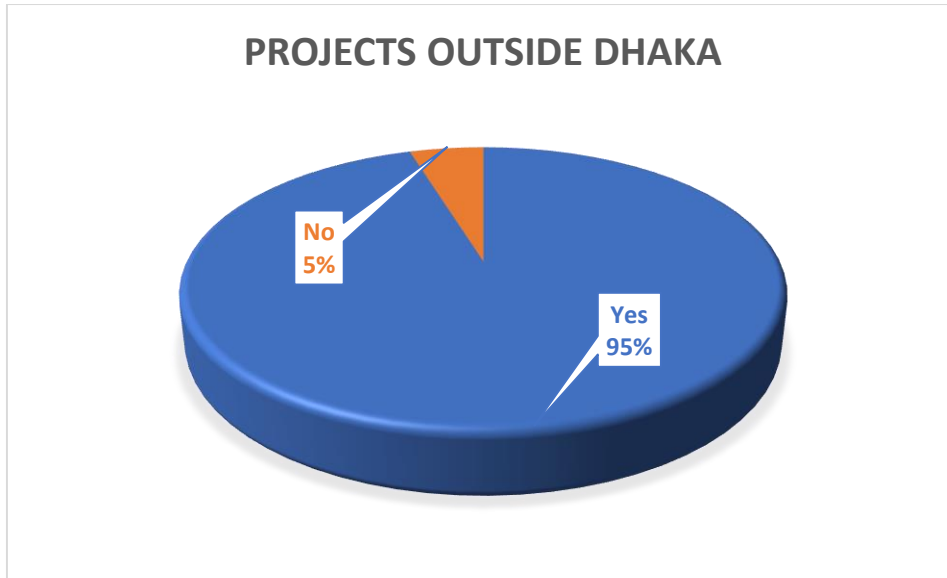


Figure 8-7 Projects outside Dhaka

8.11 Steps of the organization to deal with new competition

Business is the center of competition. They face new competition all the time. The real estate sector is the business sector. It tackles new competition. Before 1990, there was only one institution here but now there are a large number of institutions in this sector. This is the most competitive sector. Each organization has taken different steps to survive in this competition. The main step is to control the quality or increase the quality. Together housing fairs, increasing the number of advertisements through different types of media, reducing the cost of submission, discounting facilities, low-cost housing etc. are the main steps. Following table shows that companies have taken different steps for different types of buyers and they have tackled different types of risks by increasing the quality of their products.

Table 8-10 Dealing with the risks of new competition

Step	Number	Percentage
Quality assurance	17	81
Reduce the price	8	28
Deposit flexibility	12	57
Discount facility	9	43
Increase the number of ads	15	71
Low-cost housing	1	5
The modern approach	1	5

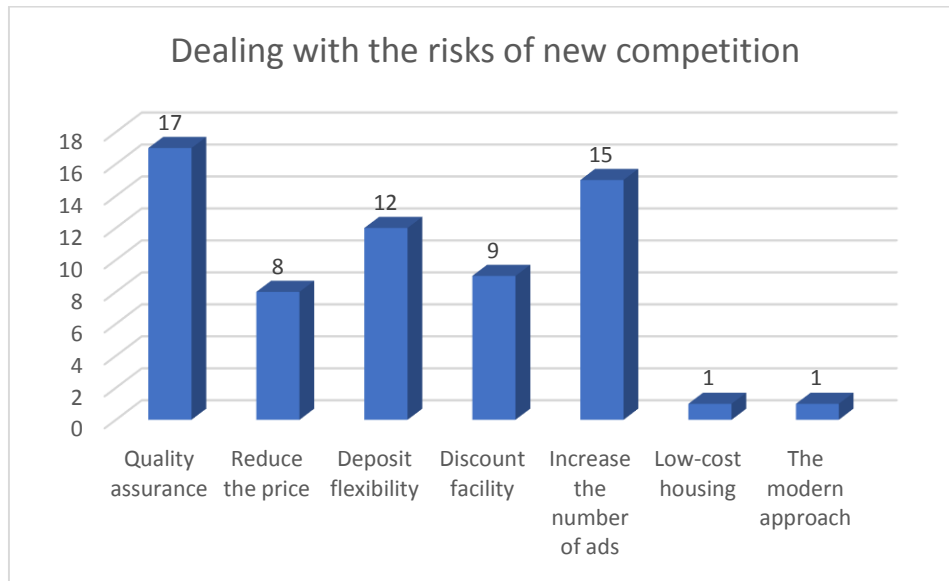


Figure 8-8 Dealing with new competition

8.12 Sales growth methods

Different types of real estate companies have taken to selling their products. This is called sales growth. The main methods in this sector are- Advertising through different media, Housing Fair together, Including different types of media, Daily Newspaper, Television, Government Satellite Channel, Weekly Newspaper etc. Some companies arrange housing fairs to promote their sector or to attract people to open this sector. These companies are- DBH, REHAB, CMS etc. Following table shows that most of the companies have taken steps to increase their distribution through various advertisements. 17 companies are coming together in the housing fair, 16 companies through existing buyers and 7 companies sell their products through their executives.

Table 8-11 How to increase sales

Sales growth method	Number	Percentage
Through various advertisements	20	95
Buyer	16	76
Executive	7	33
Housing fair together	17	81

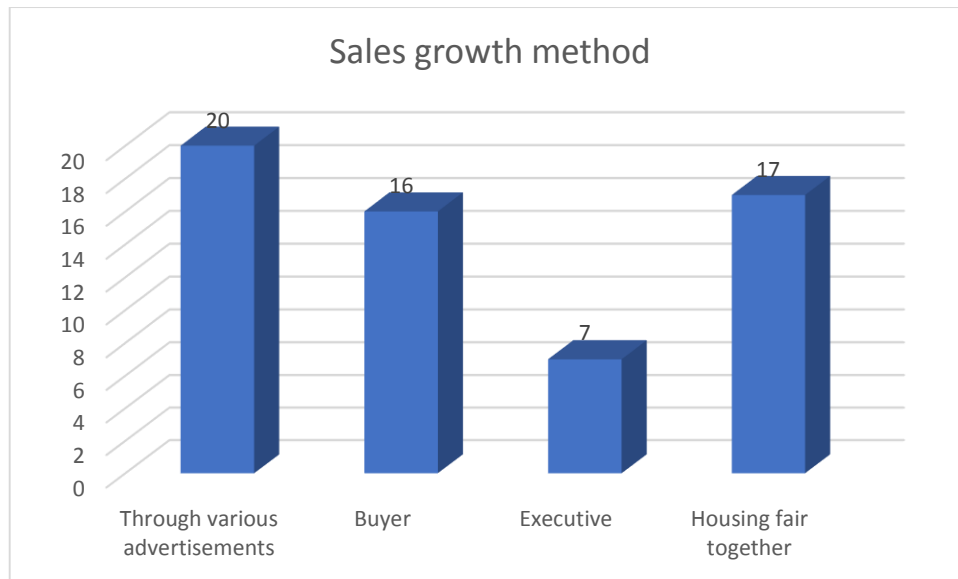


Figure 8-9 Sales growth method of Real Estate Firms

8.13 Number of project developments in real estate organizations

The survey found that a large number of organizations were completing projects below 10. And a number of organizations are completing projects above 10. Following table shows that 6 organizations are completing the project below 5 p.m. 8 institutions are completing 8-10. This is the only organization that is completing 16 projects.

Table 8-12 Type of Real Estate Firms

Company Type	Number
Private Limited	20
Public Limited	-
Sole Propreitor	-
Partnership	1

8.14 Number of development projects of the organizations are going on:

Apartment housing is a common sight in Dhaka city. The city is currently undergoing a number of development projects. The survey found that 9 organizations were running projects below 6, 7 organizations were running projects below 11, and only one organization was running 15 projects.

Table 8-13 Ongoing projects of the organization

Ongoing Projects	Number	Percentage
Up to 5	9	42
6-10	7	33
11-15	2	10
16-20	1	5
21-25	1	5
25+	1	5

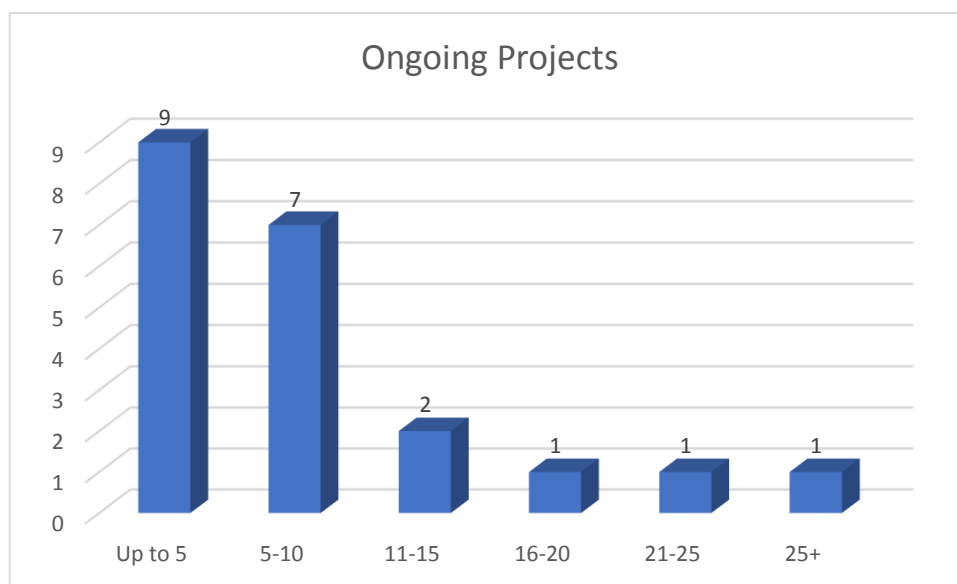


Figure 8-10 Ongoing projects of Surveyed firms

8.15 Providing after sales service

Providing after sales service is an organization's business method. Some organizations provide services and some do not. Following table shows that 17 companies provide after sales services and 4 companies do not provide after sales services.

Table 8-14 Availability of after sales service

After sales service	Number	Percentage
Yes	17	81
No	8	9

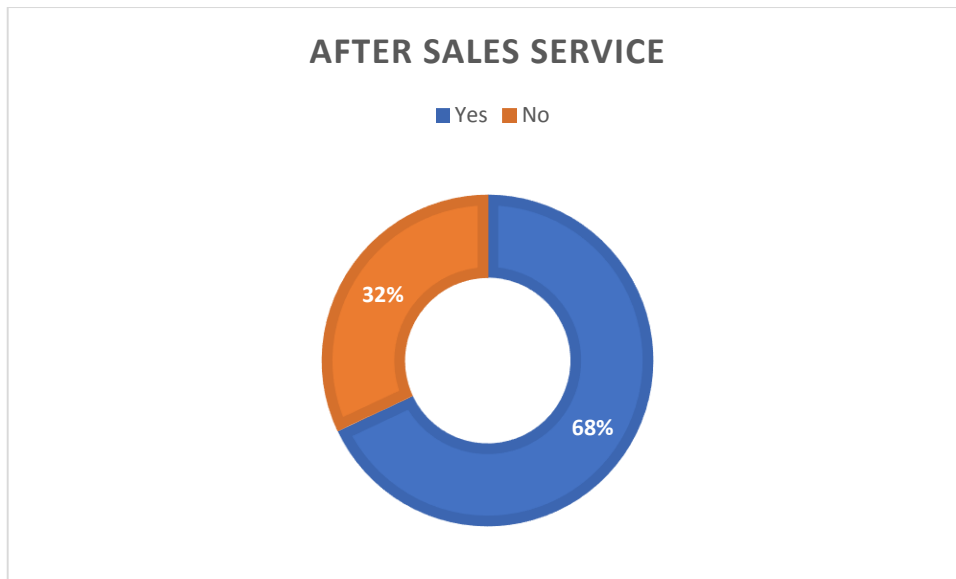


Figure 8-11 Availability of after sales service

8.16 Type of after sales service

Real estate companies offer a wide range of after sales services. Their interior design, elevator management, utility equipment repair, etc. are the main after-sales service. Most organizations provide this service

For the time being, it can be a few months to several years since the apartment was handed over to the buyer.

The second is utility equipment repair and interior design, interior design means interior construction and decorating the apartment. Lift management is another notable service. The biggest problem is that real estate companies provide such management services for high-rise buildings. Some institutions offer bank loans to their customers. Give each company the opportunity to offer their own services after the sale. It can be seen from Table 5.13 that the management of 8 organizations also provides design services inside. 5 companies provide services as per the needs of the customers. 3 companies provide lift management services, 4 companies provide bank loans and 2-1 companies only repair and design utility equipment.

Table 8-15 Type of available after sales service

Type of service	Number	Percentage
Management	8	38
Interior design	8	38
Lift management	3	14

Utility equipment repair	2	10
Design	1	5
Advice	1	5
Meet the needs of buyers	5	23

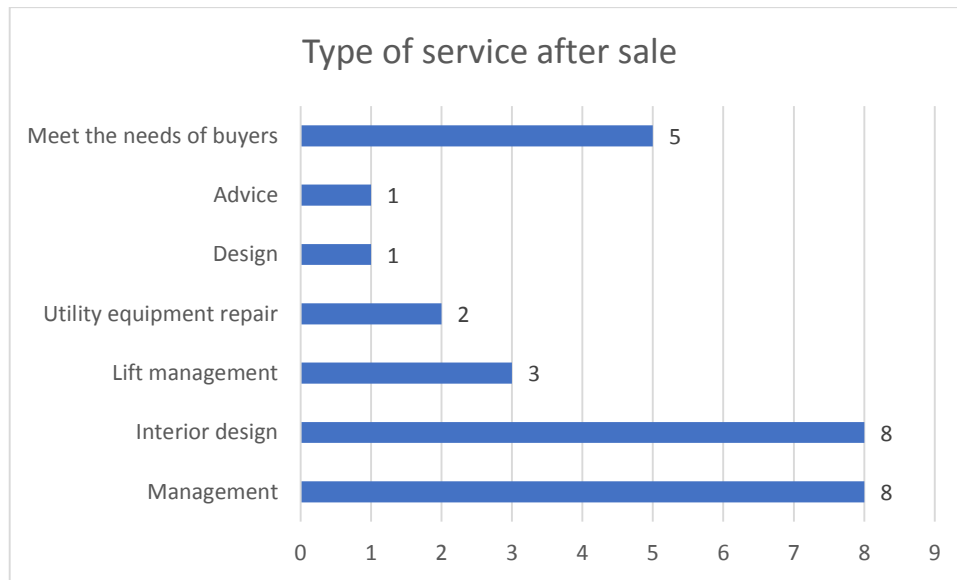


Figure 8-12 Type of service after sale

8.17 Complaint against the organization: -

When a person buys something, he tries to get the best things. Buyers are likely to call everyone who looks appropriate, if there are only a few. A buyer looks for all sorts of opportunities from the company for a long time after buying an apartment. Institutions here face many types of complaints. Such as- utility problems, open space problems, interior construction, design, windows, doors, sunsets, income tax, elevator problems, etc. The main problem for most buyers is utility services. The survey found that 12 companies had utility problems, 8 had internal construction problems and 4 had design and lift problems.

Table 8-16 Complaints of buyers against the company

Type of complaints	Number	Percentage
Utility problems	12	57
Open space problem	2	10
Interior construction problems	6	28
Design problem	4	19
Window / door / sunscreen problem	3	14

Income tax	1	5
Elevator	4	19
No complaints	2	10

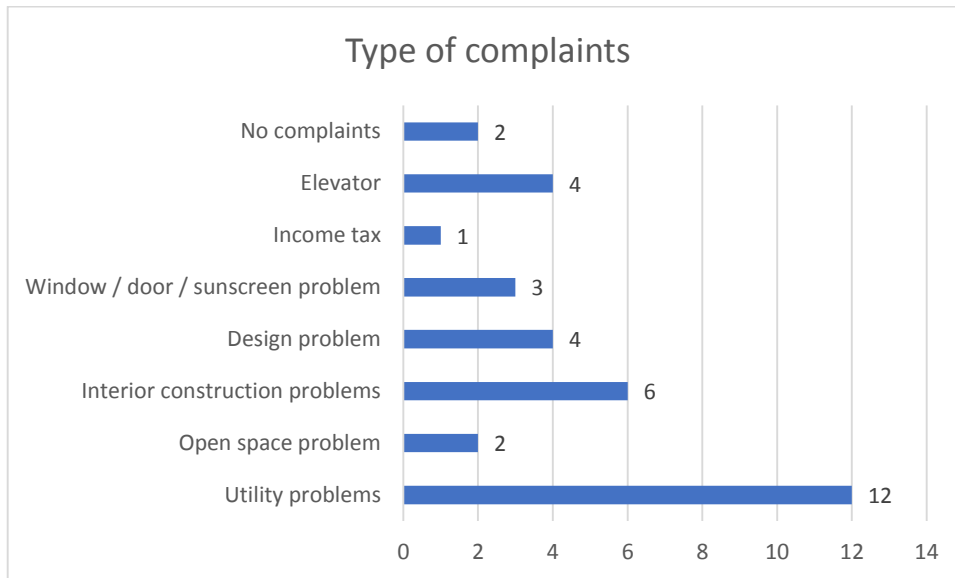


Figure 8-13 Type of complaints against the company

8.18 Dealing with buyers' complaints

The real estate business depends on serving the buyers. Because they sell their products through current consumers. If the company can keep the buyers happy then the reputation of the company will continue to grow and that will help in selling future projects. For this reason, most organizations try to solve the problem according to the needs of the buyers without their loss.

According to the field survey, 11 organizations solve the problem according to the needs of the buyers, 5 organizations solve the problem without their loss and only one organization gives advice only.

Table 8-17 Dealing with Complaints Against Institutions

The type of deal	Number	Percentage
According to buyer's demand	11	53
According to the needs of the buyers without loss to the organization	6	23
Advice	1	5

It doesn't matter	4	19
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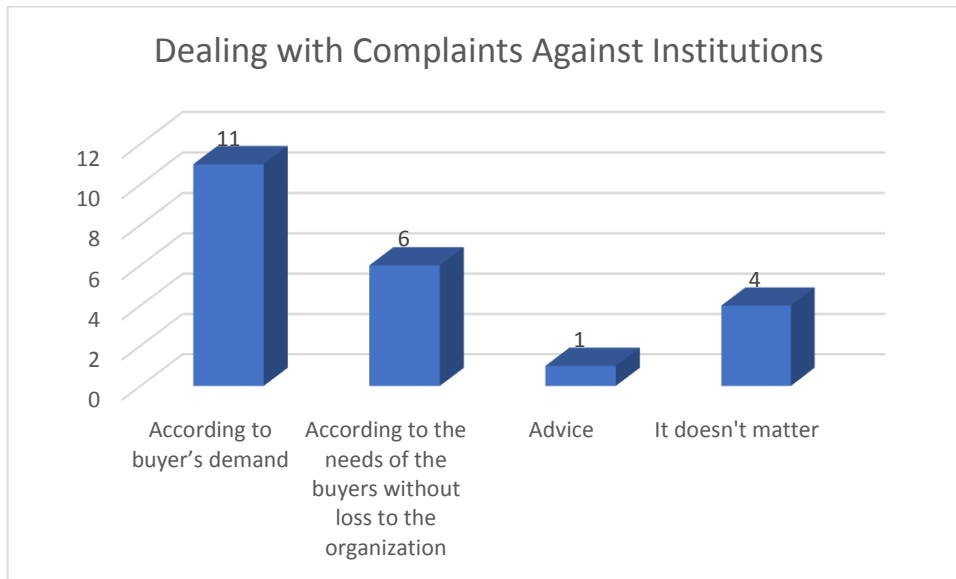


Figure 8-14 Dealing with Complaints Against Institutions

8.19 The ratio of flat sales over time

The ratio of flat sales varies according to the type of establishment to the organization and the type of project. Six-Storied projects take a short time to sell and multi-Storied buildings take a long time to sell. Some companies sell flats before starting the project.

9 Challenges due to COVID 19 in Real estate sector in Bangladesh.

According to article published by Dhakatribune, April 19th, 2020, the pandemic has put a brake on the country's real estate sector turnaround, which may lead to joblessness for at least 35 lakh people and source was mentioned as Real Estate and Housing Association of Bangladesh (REHAB). According to data from the Bangladesh Bureau of Statistics (BBS) for the year 2019, the real estate and housing sector contributed BDT 1.41 lakh crore, or 7.8% of the country's gross domestic product (GDP), to the national economy. So, damage to this sector may cause significant damage to the nation's GDP. However, Prime Minister Sheikh Hasina announced a BDT 72,750,00,00,000 incentive package on April, 2020 to help mitigate the impact of the coronavirus on the country's economy. (Dhakatribune, 2020a).

In another article, Dhakatribune stated that the real estate sector has been suffering worst due to the closure and lockdown in recent months. According to REHAB, the sector is actually one of the worst affected industries in the country. There is still no definite figure on the amount of losses incurred during the last months. However, given that construction and real estate activity has been almost nil since the end of March, 2020 and only limited activity in recent times, it is safe to assume that the real estate sector immediately needs some support. Some developer companies with limited resources have even stated that their business could die if no help aided immediately. (Dhakatribune, 2020b).

Before Covid-19 hit the country, all activities in the real estate sector including construction, merchandising and sales were encouraging. The upward trend of investment continued further in 2020 when the advance amount was recorded at around 800 billion taka. As of December 2019, there are still around 11,000 unsold apartments, as opposed to 14,000 at the end of 2018. The sector will gain momentum if the interest rate on home loans to the general public is reduced to one number. At present, the interest rate on home loans ranges from 11% to 13%. The government reduced the registration fee to 11% from 14-16% of the property price. In another positive step, the central bank raised the ceiling for housing loans to 20 million taka from 10 million taka and allowed banks to provide loans up to 70 percent of the property price. (Khan, 2020).

Experts are however hope the real estate sector in Bangladesh will be able to handle the ongoing coronavirus pandemic as collection of premiums on past sales began to recover after the economy reopened in June, according to several realtors and financiers. Besides, the government has allowed non-taxable income to be used to purchase land or apartments, while reducing registration fees makes this an ideal time to invest in real estate at reasonable costs. (Jagaran, 2020).

10 Findings

The real estate sector is growing and showing a future growth trend. The share and growth of real estate and construction GDP is increasing. This indicates a promising future for this sector. The rise in housing rent, increased demand for housing, access to easy financing facilities, rapid urbanization, insufficient land, and many other factors create ample room for the growth of this sector. As a result, the overall demand for housing and apartments has shown an increasing trend and is expected to increase further. Although the supply of apartments is not enough with the number of real estate developers it has also shown an upward trend and suggests future growth. The regulatory environment has been beneficial for the sector to grow with the exception of the recent Real Estate Management Decree of 2008 which has not yet been passed and is likely to be very important to protect the interests of buyers. The financing market for the real estate sector is easier and more available than ever. Housing finance for the private sector is available at a competitive interest rate for a flexible period, but the volume of loans granted is very low compared to loans in other sectors. Strengthening the financial sector regulatory and supervisory system, improving and expanding debt markets are matters of particular concern to the housing finance sector. The cost of apartments increased according to different locations and sizes. Additional cost is required for additional facilities. In general, this study found a promising and positive tone for growth, provided that this sector is given appropriate attention and facilities. It has definitely become very essential to meet the growing demand for housing and reduce the supply gap in the country.

11 Conclusion

From the above discussion and analysis, it can be seen that real estate activities in the housing sector are a new phenomenon and their development apartment projects are increasing day by day. Most of the organizations are privately owned and their goal is to solve the housing problem in Dhaka city. The main task of the real estate organization is to develop the land and build buildings for the upper-class people.

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