

Violation of Land Use Plan and Its Impact on Community Life in Dhaka City

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Abstract

Dhaka, the capital city of Bangladesh, is experiencing one of the highest rate of urbanization in the world. Over the years, the city has had inconsistent transformation of land use and organic development; which in turn created crisis in residential areas or neighborhoods and affected the city life adversely. Bureaucratic problems, political influence, lack of appropriate mechanism for land development for the residential areas, ineffective implementation, poor supervision and monitoring system are continuously creating the opportunity to alter or violate the land use plan. This defiance to follow land use plan of the city (particularly in the residential areas) creates harmful consequence in the city life such as lack of social cohesiveness and social security. Moreover, it creates traffic congestion, inadequate provision of utility services, air pollution, noise pollution, overcrowding, lack of privacy, insufficient parking facility, lack of accessibility, frequent water logging and many other problems. Based on field observation and secondary information, this paper focuses on the issue of land use plan violation and its socio-economic impacts in Dhaka City. This paper also provides a guideline regarding implementation of land use plan for comfortable living environment in Dhaka City.

Introduction

Bangladesh is experiencing a very high rate of urbanization and as per 2001 census, the urban population is about 23.10%. Dhaka City, the capital of Bangladesh, has the highest population density in the world with population of 10.23 million that is about 40% of the urban population and 6% of the national population of the country (GoB, 2001). Since independence, Dhaka City is growing both horizontally and vertically. However, these growths are mostly not maintaining any proper guidelines. Moreover, the city is growing haphazardly without any proper and effective land use planning.

Rajdhani Unnoyan Kartripokkha (RAJUK) is the legitimate authority to prepare land use plan for 590 sq. k.m. of Dhaka Metropolitan Area (DMA) and for ensuring development as per the plan. Land use changing pattern and city development do not always conform to the obligatory tools prepared by RAJUK. This infringement pattern is predominant in the so-called planned residential areas (i.e. Dhanmondi, Uttara, Banani, and Gulshan) developed by RAJUK and other private housing areas developed by the private land developers. Contemporary changing pattern, especially commercialization, of the residential areas is dreadfully affecting the habitable environment of the city. Bureaucratic problems, political influence, lack of appropriate mechanism for implication of the land use development for the residential neighborhoods, ineffective implementation, supervision and monitoring system are continuously creating the break to alter the land use plan. This transformation of land use plan of the residential areas of the city creates harmful consequence in the city community life. Moreover, this situation is breaking the social cohesiveness, causing lack of privacy, overcrowding, traffic congestion, air pollution, noise pollution, inadequate provision of utility services, insufficient parking facility, lack of accessibility, frequent water logging, lack of safety and so on. It is observed that the major cause of the crisis in the community life of Dhaka City is rooted to the sharp violation of the land use plan.

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Livability of a city is laid on a good neighborhood to grow up. For a child growing up, a quality environment of a city is one where (s)he can safely and progressively conduct more responsibility and develop other life skills. Necessary community facilities and utility services within the city can contribute creating a habitable community life. However, any transformation of land use from the actual plan has substantial impact on the given urban settings. Over crowding, traffic congestion, environmental pollution, incidence of crime, lack of utility services, and many other problems put stress on the livability of a city. Community life faces acute crisis with the land use variation. This paper attempts to address the issues of land use plan violation practice, its spatial extension use and socio-economic impacts in Dhaka City. Based on the existing scenario, a guideline will be given to maintain the effective land use plan for comfortable and convenient habitable environment of Dhaka City.

Objectives and Methodology of the Study

The study has the following objectives:

- i) Observing the present crisis situation of the community life in Dhaka City;
- ii) Exploring the underlying causes with the reference to a case study area; and
- iii) Providing some guiding issues in regards to better community life.

This paper is mostly based on secondary information. In this regard, necessary published books, reports, journals, and ordinance have been studied and reviewed. Moreover, field observations were made to investigate the real situation of what is happening there. An informal discussion was made with the residents of the neighborhood to have a better understanding about the problems and issues.

Land Use and Residential Environment of Community

Land use is the distribution of city functions in an urban area. Residential areas are the major part of urban land use in any city. Residential environment in a city gives the sense of belongingness among the residents. This feeling promotes social cohesiveness and increases social security. Residential neighborhood maintains living environment suited to the nature and arranges community facilities and utilities that are shared in common by residents. Often this type of communities is small in size, easily walkable and distinguished from others by certain boundaries. They have special services, maintain particular environmental character and cultural attributes. As a planned residential neighborhood, it provides opportunity of more social interaction and increases social security or comfort, and city dwellers usually prefer to live in this area.

The tasks for designing a residential area includes formulating location requirements, mapping the suitability for development of a residential area, deriving space requirement, analyzing holding capacity of suitable lands, adding local shopping and other population - supporting uses and facilities, and finally, synthesizing all those considerations into a land use design (Chapin, et al. 1972). Dhaka Metropolitan Development Plan (DMDP) 1995-2015 outlined neighborhood as the smallest unit of Spatial Planning Zone (SPZ) where people live together and share the common facilities. That plan also outlined that only about 70% land of the total residential project area will be permitted to sell as residential plots whilst the remaining 30% of the land would be available for different community services and facilities. According to the *Private Residential Land Development Rule 2004*, the requirement of space standards for community facilities by population size in urban areas is shown in Table 1.

Table 1: Space standards for community facilities in urban residential areas by population.

Community facilities	Size of the population (Facilities in acres per 1000 population)									Facility per 1000 population
	2500	5000	10000	15000	20000	25000	50000	100000	150000	
Nursery	0.2	0.4	0.8	1.2	1.6	2.0	4.0	8.0	12.0	0.08
Primary school	0.3	0.6	1	1.2	1.6	2.0	4.0	8.0	12.0	0.08
Secondary school			1.2	1.5	2.0	2.5	5.0	10.0	15.0	0.10
College				1.2	1.6	2.0	4.0	8.0	12.0	0.08
Small clinic				0.6	0.8	1.0	2.0			0.04
Hospital								4.0	6.0	0.04
Community center /mosque	0.1	0.2	0.5	0.6	0.8	1.0	2.0	4.0	6.0	0.04
Play ground, play field	0.5	1	1	1.2	1.6	2	4	8	12	0.08
Park	0.6	1	1.5	1.8	2.4	3	6	12	18	0.12
Corner shop/market/kutch bazaar	0.2	0.3	0.5	0.6	0.8	1.0	2	4	6	0.04
Residential roads	0.9	1.7	3.5	5.0	6.8	8.5	17	34	51	0.34
Total area for recreational facilities	2.7	5.2	10	14.90	20	25	50	100	150	1.00
Net residential area	4.44	9.08	18.5	27.95	37.14	46.43	92.85	185.71	278.57	
Gross residential area	7.14	14.28	28.57	42.85	57.14	71.43	142.85	285.71	428.57	
Persons per acre	350	350	350	350	350	350	350	350	350	

Source: GoB, 2004.

The violation of the land use plan in the residential areas as well as in other areas of Dhaka City is very common. This problem along with lack of community facilities have place stress on the community living within any residential neighborhood area.

Land Use and Provision of Utilities and Services

Land use pattern affects the cost of providing public infrastructure and services such as roads, schools, water and sewage, garbage collection, transport, and mail delivery (Litman, 2004). The cost of providing intra-neighborhood infrastructure to support new residential development could be reduced by increasing development density and/or promoting more efficient parcel shapes in the subdivisions (Suen, 2004). The relationships between density and public costs are, of course, complex. Actual costs are depended on the specific location and the types of services to be provided. There are also incremental costs associated with the increased density, including increased congestion and friction between activities, special costs for infill development, and often higher design standards (Litman, 2004).

Subdivision pattern of land and also the plot density has a great impact on the amount of infrastructure to be provided. Properly planned or designed residential area increases the

public efficiency by minimizing public or sectoral costs of water supply, sewer system, garbage collection, fire fitting, education, recreation, transportation and others. Transformation of land use in any residential area places stress to the public agency for providing these utility services. The public agency can not keep pace with the changing demand for the conversion of land use.

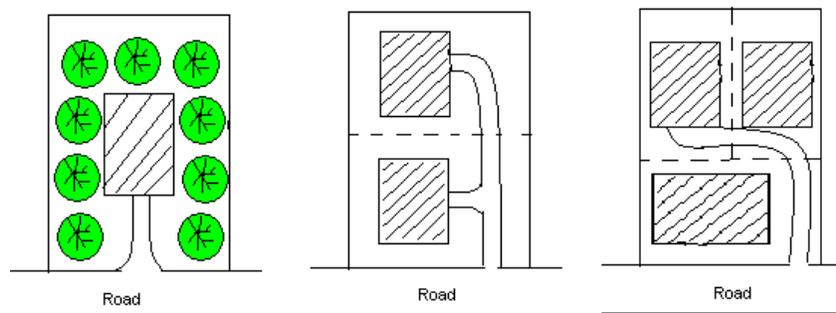
Transformation of Land Use in Dhaka City

Both the public and private residential areas developed in Dhaka City failed to create a quality neighborhood. Market demand for land, lack of appropriate machinery for implication of the land use development, the ineffective implementation of existing plan, lack of supervision and monitoring system, bureaucratic problems, political influence etc. are insisting transformation of land in the residential areas before the residential plan is prepared and as well as after the development. It is found that the transformation of land use in a planned residential area could take place in several forms; the most common of which are as follows:

- i) Land use;
- ii) Plot subdivision; and
- iii) Building height.

Land Use: Transformation of land use is the most common phenomenon in the planned residential areas of Dhaka City. Changes in population density, concentration of activities and commercialization are taking place in already developed planned residential areas. Land use changes put unprecedented challenges and problems regarding housing, infrastructure provision, community facilities; and historical and environmental preservation. However, this situation is most acute in the residential areas developed by private sector compared with the areas developed by public sector.

Plot Subdivision: Existing plot subdivision law does not allow the physical subdivision of a plot in a number of smaller plots. Rules allow a single plot available (according to the developed plan of the residential area) in the planned residential area only for construction of a single residential building. However, a number of plots in the planned residential areas of Dhaka City have experienced the subdivision of allotted plots in a number of smaller units. This practice deviates the set back rules and forces the densification; and eventually, provides excessive pressure on provisions of public services. Moreover, this type of plot subdivision reduces the area available for plantation within the residential plots.



Single plot

Subdivided plots

Fig. 1: Physical subdivision of single plot to a number of smaller plots.

Building Height: Population growth as a result of immigration, and socio-economic changes creates market demand for land to increase the floor area. This creates the demand for increasing the building height. Increasing the building height along with the subdivision of a single plot to a number of plots reduces the visibility of the city, reduces air circulation and creates sunblock. Thus, eventually the transformation of land uses is changing the cityscape of Dhaka City.

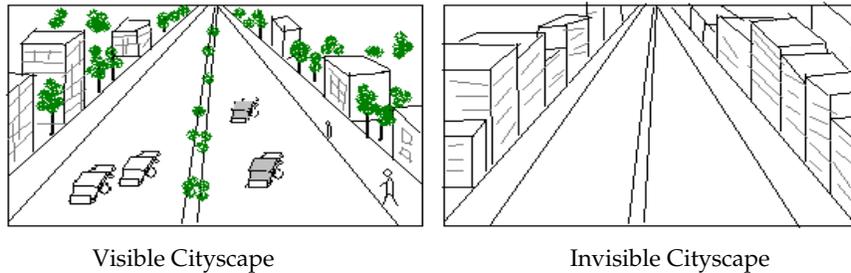


Fig. 2: Transformation of land use and city skyline.

The Case Study: Dhanmondi Residential Area

The reason behind selecting Dhanmondi as the case study area is that it is one of the most exclusively planned areas of Dhaka City for residential purpose. Dhanmondi Residential Area comprises about 0.55 sq. km. of land area. To develop a residential area in Dhanmondi, the project had been undertaken earlier in 1949. The Construction and Building Department of the government of East Pakistan acquired about 500 acres of agricultural and horticultural lands in 1950, leveled them, and according to an approved plan allocated plots to the people. Dhaka Improvement Trust (DIT) (renamed to RAJUK in 1987) later undertook the task of providing public facilities, constructing roads and other facilities. The area was divided into blocks, which were in turn sub-divided into individual plots measuring approximately a *Bigha* (0.33 acres) each (Banglapedia, 2004). The subdivision layout followed basically wide gridiron roads with some rectilinear pattern to match up with lake.

Initially, DIT kept the plots of Dhanmondi exclusively as residential and did not allow any plot or house for use of commercial purposes. At the initial stage, the idea was that in each plot the owner would build a one or two-storey house. However, in response to tremendous pressure on city land after the year 1972, the restriction was relaxed to the point of virtual non-application (Banglapedia, 2004). At present, more than half of the total number of plots in Dhanmondi Residential Area are used for non-residential purposes, which include shops and stores, government and semi-government offices, show-rooms and warehouses of business firms, NGO offices, clinics, educational institutions, and even manufacturing units. Thus, it seems that the original plan of keeping Dhanmondi as a purely residential area has now given way to free play of market forces.

Form of Land Use Changes in Dhanmondi Residential Area

Since, Dhanmondi Residential area was exclusively planned for residential purpose, due to the spatial advantage and land market pressure, the land use of the area have radically transformed from the initial plan. Now-a-days this residential area has become a renowned commercial place and centre for educational institutions of the city. The paper attempts to portraint the present situation of Dhanmondi Residential Area in more detail.

Changes in Land Use: Dhanmondi Residential Area was planned in the method of site and services scheme to provide residential area basically for the people of high and higher-middle income group. Though it was residential in nature, the area was not developed considering the idea of neighborhood planning. At the initial plan of Dhanmondi Residential Area, there was no provision of commercial and community facilities except the schools and mosques. Of the total land, about 61.4% was proposed for residential purpose, whilst the rest was proposed for roads, water bodies, parks, playgrounds, mosques and schools (PWD, 1999). The neighborhood itself started various non-residential activities for the requirement of community and commercial facilities. Different forms of land use transformation started and the rate increased in a prominent way for the market force and the relaxation of restriction of non-residential development. Quite a good number of residential buildings have transformed into non-residential uses or activities. However, the percentage of transformation into non-residential use is increasing in a very high rate. The Figure 3 depicts the high rate of transformation into nonresidential uses during the last two decades.

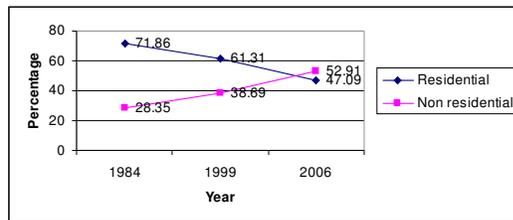


Fig. 3: Transformation of residential uses into non-residential uses (1984–2006).

Source: Alam, et al. 1986; PWD, 1999; Shumi, 2006.

Changes in Plot Subdivision: Evidence shows that to date, a number of plots have been subdivided into more than one smaller size of plots in Dhanmondi Residential Area. The original owners sell or mortgage the title of the partial land of the plot. Afterwards, more than one building is constructed into these subdivided plots. Land developers and real estate companies make these circumstances easier. This subdivision of the plots reduces the green space of the surrounding areas (premises) of the building and induces densification. It was found that of the total 1085 plots in Dhanmondi, only 360 of them have been subdivided into 860 plots where the remaining 725 plots were not subdivided. Surprisingly, some of the plots were subdivided into 13, 14 and even 16 small plots; obviously the majority was subdivided into 2 or 3 plots respectively 80% and 13% (Figure 4).

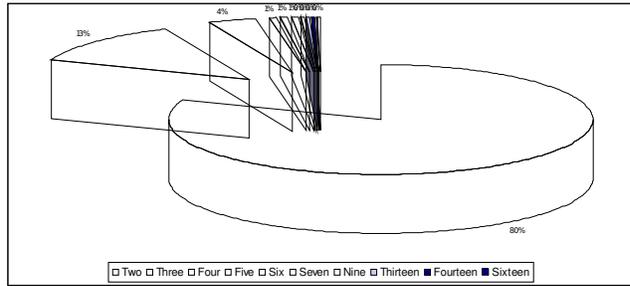


Fig. 4: Number of subdivision of the actual plots.
Source: Shumi, 2006.

Changes in Building Height: Because of the changes in socio-economic condition and the relaxation of building height restriction, the skyline of Dhanmondi Residential Area is increasing day by day. In the year 2006, it was found that around 53% buildings are more than four storied whilst in the year 1962 there was not a single building more than two storied (Shumi, 2006). Figure 5 shows building height changes during the last 45 years in Dhanmondi Residential Area.

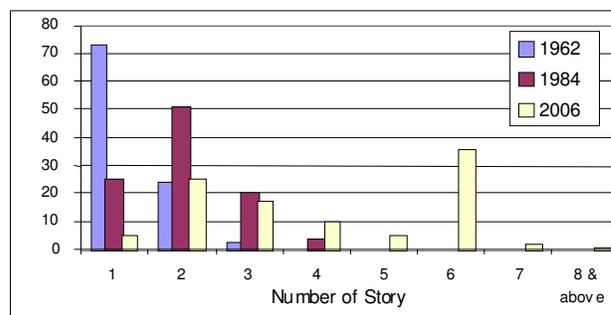


Fig. 5: Building height change for the last 45 years.
Source: Alam, et al. 1986; PWD, 1999; Shumi, 2006.

Impacts of Land Use Variation

Transformation of the residential areas is negatively influencing the community life of the city dwellers. There are insufficient community services and amenities for a healthy neighborhood or community. There is shortage of open space and playgrounds. Consequently, the social character of the areas is changing very rapidly. Multi-purpose characters of the areas reduce the scope of social interaction and split the social ecology. Socially, the non-residential elements influence social gap and reduce social link. This increases social insecurity and incidents of crime. Mothers do not feel safe to send their children outside of home. This restricts the proper growing of the present generation children both physically and mentally.

The most difficult problems have to face by the city planning authorities. As transformation of land use induces higher population density, unplanned and irregular

division of residential block makes it difficult and costly to provide infrastructure, public services, and community facilities by concerned authorities. This creates stress on water supply and gas supply, causes power failure, water logging, improper solid waste management, and visual obstruction. Again, establishment of excess facilities is also creating problems. There are 106 schools in Dhanmondi Residential Area compared with the threshold population of 26,760 inhabitants, and this number seems too much (Sharmin, et al. 2004). This intensifies the negative effects of non-residential activities within and adjoining localities. Establishment of commercial centers generate considerable activities that create traffic jam, noise, and glare, which lead to degradation of local amenity. Increase of traffic and on-road parking negatively affects the environment of the area as well as the people's convenience. Moreover, as the people come from outside of the residential area due to easy access and alluring activities for the commercial development, privacy of the residents are hampered. As a result, the residential areas become more prone to mugging and other crimes that threaten the safety of the residential area.

Implementations of land use plan in public and private residential areas according to the approved plan are not sufficient in Dhaka City. Most of the time, these activities contradict and sometimes overlap. There is lack of coordination on decisions among existing and planned public transportation services and the needs for non-motorized access. Transformation of residential land use in the residential areas creates a number of vehicle and pedestrian conflict and affects the safety of community life. Moreover, lack of convenience, safety and recreation is causing various psychological problems of the people of Dhaka City. Thus, violation of land use is creating a numerous problems in the communities of the city.

Recommendations

For building a healthy and comfortable community environment in the residential areas of Dhaka, a standard for community services (i.e. open space, play ground, community center, mosque, educational institute, shopping facility, health centre, etc.) must be included in the planning legislations. These community facilities should be provided in both public and private residential areas and this should be maintained regularly. Provision of community facilities such as open space, parks, community centers and safe roads with street lights at night provides opportunity to the dwellers for interaction and building community attachment. This also creates opportunity for developing community conservancy and preventing crimes. This could also play a great role in safe guarding environmental and social quality of the community.

Typically, separate-use development on previously developed land must be discouraged in the planning legislation. Because, it incurs higher public infrastructure cost. Mixed land-use zoning can have a positive effect on economic development. As vehicle trips are reduced and viability increase, this type of use brings new life to the community. This is safer and convenient for pedestrian and gives people shorter travel distances between origin and destination. However, regulatory barriers of the planning authority should be removed in order to restrict or prevent the unplanned non-residential land uses within

the residential areas. Efficient taxation policy could be a potential instrument for discouraging invasion of unplanned non-residential land use, deviation of subdivision plan and building height in the residential areas. The compact, sustainable, and efficient use of land reduce air pollution, traffic jam, and the number and severity of vehicle crashes. This could lead to a safer environment, which in turn, encourages more people to walk, ride bicycles, and use mass transit.

Designing and building local roadways for all modes such as pedestrian, bicycle, rickshaw, transit, truck, and automobile etc. might have a positive impact on the overall safety of a community. Properly designed road networks within the residential area could reduce the number of traffic, pedestrian conflict, and intensity of accident risks. Measures must not only address accident reduction, but should also take into account resident's satisfaction. As a result, strong involvement of the community in the decision making process is important.

Sufficient building spacing should be maintained between two buildings within the residential areas. Each building should be constructed maintaining the proper *Set-back* rules. This will create space for plantation and eventually provide privacy of the dwellers. Some good design standard of buildings such as careful grouping of dwelling units, positioning of window can also maintain certain degree of privacy. Screening by plantation and iron fence rather than solid high wall can increase visibility and security of the neighborhood. Plot consolidation of the adjacent plots could create ample space for plantation. This plantation could preserve the environmental quality of the area and also allow air circulation and thus protect the dwellers from heat formulation.

Conclusion

To maintain habitable quality of Dhaka city, it is the utmost necessity to prevent the inconsistent land use transformation and the natural development in the city. It is high time to create community environment within residential areas by proper planning, implementation of plans and provision of sufficient community facilities and utility services. Development control authorities should be aware to prevent inconsistent invasion of non-residential land uses in the residential areas. Community participation by awareness building could play a positive role for preventing violation of land use. Only maintenance of appropriate residential neighborhood could ensure livability of Dhaka city for the next generation by increasing community cohesiveness. Proper land use planning along with provision of sufficient community facilities in public and privately developed residential areas crisis in the community life of the city.

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