

Urban Intensification: The Evolution of Urban Sprawl and its Evidence on Land Use Transformation of Savar Municipality

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Abstract: Urban Sprawl is the spreading out of a city and its suburbs over more and more rural land at the periphery of an urban area. This involves the conversion of open space (specially, rural land) into built-up, developed land overtime. While many factors may have helped in explaining urban sprawl and its causes, it ultimately has always been a population and land-use issue. This paper will outline possible conditions and impacts of urban sprawl. Using a variety of discussions and arguments the founding is that sprawl is a result of inter-related social, economical, physical and political factors. Hence, different pattern of sprawl arise for different areas. The paper also includes discussion of urban sprawl and its impact on land use of Savar an emerging city of Bangladesh.

Introduction

Urban sprawl has become one of the most important issues facing many regions throughout the world at the onset of the twenty-first century. Urbanization is dramatically changing the physical as well as socioeconomic landscape with significant implications for quality of life, wildlife habitat, water quality, agricultural viability, taxation, and social equity and many other issues (Popenoe, 1979). Such spreading development initially known as "Urban Sprawl" is most challenging to the intellectuals in a manner that might provide meaningful insight into the development process (Ewing, 1994).

Urban sprawl refers to the development of residential and commercial centers on undeveloped land located outside the boundaries of a city. Many cities are feeling the effects and suffering the consequences of urban sprawl (Ivonne and Zifou 1989). Urban sprawl is also referred as irresponsible, and often poorly planned development that destroys green space, increases traffic, contributes to air pollution, leads to congestion with crowding and does not contribute significantly to revenue, a major concern (Malpezzi and Guo, 2001). Increasingly, the impact of population growth on urban sprawl has become a topic of discussion and debate (Freilich, 1999). Urban sprawl is controversial (Malpezzi and Guo 2001)). It is a term use to describe a common development pattern. It is typically defined as unplanned, inefficient, low-density, scattered development that extends out from cities. While urban sprawl has a commonly understood meaning, it is not a precise term that lends itself easily to operation and measurement (Audirac et. al. 1990). We do not have consensus on the reasons for sprawl and there are competing paradigms for urban growth and development in general. Sprawl is usually considered as post World War II phenomenon. It was described as unplanned, scattered and inefficient development that converted agricultural land to urban uses and destroyed important natural resources.

Urban sprawl is defined as *the increased use of urbanized land by fewer people than in the past*" (CWAC, n.d.). In sprawling metropolitan areas, development is outpacing population growth resulting in conversion of land to human-modified urban utilization at astonishing

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rates (Biirer, et al., 2004). As populations continue to rise, the conversion of land from rural to urban uses will only increase. This conversion of natural lands to highly-modified urban areas poses a major threat to the sustainability (Wear and Greis, 2002). Urban sprawl is a long lasting phenomenon. Urban sprawl occurs when cities grow, in terms of both population and land area, very rapidly (Ewing, et al. 2003). This phenomenon is common in the western cities such as Dallas, Phoenix and Los Angeles (Holtzclaw, et al., 2002). But with the passage of time the phenomenon is very common for developing and under developing countries and having consequences of affecting community negatively. Among common arguments against urban sprawl are that it creates disjointed communities, raises the costs of building and maintaining infrastructure, and results in longer commutes, which increases traffic congestion and pollution (Freeman, 2001 and Fulton 2001).

Objectives of the study

1. To examine the process of urban growth that has contributed to the dynamics of urbanization.
2. To examine the effect of sprawl in Savar Municipality.
3. To make some general recommendation to enhance the problem situation that causes for urban sprawl.

Methodology

Methodology covers following a planning process of in-depth investigation of the causes and nature of the urban sprawl, its good and bad effects on the urban environment and the efficiency with which the remedial efforts that are managed. The process is likely to lead to guidelines for the actions to be taken to achieve sustainable development as alternative to harmful urban sprawl. This study is based on secondary data and information. An empirical field level observation was conducted to know the existing land transformation pattern and unplanned growth associated problems and collect photographs. The secondary data, information and maps were collected from office survey (RAJUK, DCC, Savar Municipal Office, LGED, etc.), literature review and internet searching.

Urbanization and Urban Sprawl

Urbanization is the world wide phenomenon occurring rapidly as a result of over expanding urban population, more and more towns and cities bloomed with a change in the land use (Sturm and Cohen 2004). Urbanization is the consequence of the intrinsic nature of humans as social beings to live together and took part in complex activities (Burchell, et al. 1998). Urbanization describes a process where the portion of population living in cities increases and land-use is transformed into a more human-modified pattern of organization (Burchell, et al. 1998). With the development of skills, humans make enormous progress in their life styles (Sturm and Cohen, 2004). All this eventually led to the initial human settlements into villages, towns and then into cities (Burchell, et al. 1998). In the process, humans now live in complex city structure named as mega cities (Anderson, et al. 1996).

In recent year rapid expansion of metropolitan areas has been termed as Urban sprawl-referring to a complex pattern of land use, transportation, social and economic development (Biirer, et al. 2004). With the gradual development of the suburbs capital investment and economic opportunity shifts from the center to the periphery. The move to the suburbs reflects the lifestyle (Hartshorn, 2003). The issue being discussed so far for the developed country only, where it stated that overwhelming population pressure on the core cities that has let the

population being spread towards fringe and adjacent areas (Galster, et al.2001). Rapid development caused population influx in very short time. Unplanned development, rapid population growth, lack of supervision and above all improper management perspective created sprawl in city expansion system. Congestion, pollution, land distortion are some common phenomenon.

With rapid urbanization urban sprawl is becoming seriously concern for developing and under developing countries. But it is overlooked since they have other concern to take into account. For these countries mostly the capital and in rare cases multiple cities are affected. More and more towns and cities are blooming with a change in the land use along the highways and in the immediate vicinity of the city. This dispersed development outside of compact urban and village centres along highways and in rural countryside is defined as sprawl (Theobald, 2001).

Urbanization is a form of metropolitan growth that is a response to often bewildering sets of economic, social, and political forces and to the physical geography of an area. Some of the causes of the sprawl include - population growth, economy, patterns of infrastructure initiatives like the construction of roads and the provision of infrastructure using public money encouraging development (Galster, et.al., 2001). The direct implication of such urban sprawl is the change in land use and land cover of the region. Sprawl generally infers to some type of development with impacts such as loss of agricultural land, open space, and ecologically sensitive habitats. Also, sometimes sprawl is equated with growth of town or city. In simpler words, as population increases in an area or a city, the boundary of the city expands to accommodate the growth; this expansion is considered as sprawl. Usually sprawls take place on the urban fringe, at the edge of an urban area or along the highways (Biirer,et.al., 2004).

The process of urbanization is fairly contributed by population growth, migration and infrastructure initiatives resulting in the growth of villages into towns, towns into cities and cities into metros (Biirer, et al., 2004). However, in such a phenomenon is feasible development, planning requires an understanding of the growth dynamics (Miller, 2003). Nevertheless, in most cases there are lot of inadequacies to ascertain the nature of uncontrolled progression of urban sprawls. Sprawl is considered to be an unplanned outgrowth of urban centres along the periphery of the cities, along highways, along the road connecting a city, etc (Douglas, 1994). Due to lack of prior planning these outgrowths are devoid of basic amenities like water, electricity, sanitation, etc (Miller, 2003). Provision of certain infrastructure facilities like new roads and highways; fuel such sprawls that ultimately result in inefficient and drastic change in land use.

Urban sprawl as observed in the Bangladeshi context can be portrayed as a process of "scatterisation" particularly as it is mostly unplanned, unregulated development characterized by a mix of land uses on the urban fringe. The nature of urban development in the process of city expansion is shaped by the complex land tenure system. The development at the birth of East Pakistan urban fringe areas in Dhaka started to grow rather slowly, but its impetus has been increased tremendously after the creation of Bangladesh. Dhaka Metropolitan Development Plan (DMDP), 1995 – 2015 the post established area from the year 1983 was treated the urbanizing fringe area in the DMDP plan. This is the area of land which was converted to urban use in the 1980s. It is widely scattered around most of Dhaka's established urban area. It comprises one tenth of the 1991 urban area which supports almost 0.54 million people. However the developed area has taken place in a spontaneous, but haphazard way, leaving little way neither for an appropriate road network nor for basic infrastructure facilities and services. But haphazard development is undesirable for sustainable development. So, a direct policy is provided in DMDP (1995 - 2015) as "Policy UA/5 – Urban Fringe Development Acceleration". The policy proposed in the DMDP Plan appears to be not in line

with the policy of urban development without urban sprawl. But however this has been in practice in the framework of planning due to lack of planners and regulatory issues in plan administrations.

The Wikipedia (<http://en.wikipedia.org>) stated urban sprawl as, the increased use of urbanized land by fewer people than in the past. Urban sprawl, also known as suburban sprawl, is a multifaceted concept, which includes the spreading outwards of a city and its suburbs to its outskirts to low-density, auto-dependent development on rural land, with associated design features that encourage car dependency. As a result, some critics argue that sprawl has certain disadvantages, including:

- o Long transport distances to work.
- o High-car dependence.
- o Inadequate facilities e.g.: health, cultural. etc.
- o Higher per-person infrastructure costs.
- o Perceived low aesthetic value.

However, critics of the current mainstream of urban planning thought (which has become overwhelmingly anti-"sprawl") respond that sprawl also has certain advantages including:

- o More single family residences on larger lots.
- o Lower land prices.
- o Suburban areas generally associated with "sprawl" tend to have higher-quality schools.
- o Combating sprawl is ineffective at reducing commutes and pollution.
- o Perceived overwhelming consumer preference for sprawl-type developments.

Discussions and debates about sprawl are often obfuscated by the ambiguity associated with the phrase. For example, some commentators measure sprawl only with the average number of residential units per acre in a given area. But others associate it with decentralization (Benfield, et al., 1999).

The term urban sprawl coined by Whyte (1958) has developed through much deliberation and now can be given a reasonably precise definition: 'Urban sprawl is the growth of a metropolitan area through the process of scattered development of miscellaneous types of land use in isolated locations on the fringe, followed by the gradual filling-in of the intervening spaces with similar uses'. Urban sprawl, and the economic and regulatory systems which create it, not only produce an inefficient and unpleasant environment on the urban fringe, but adversely affect the inner city and the rural areas as well. (Bosselman, 1998).

Urban Sprawl: the Dhaka Scenario and Its effect on Savar

The Metropolitan City of Dhaka is located in the District of Dhaka in Bangladesh. Its central location in the country has considerable importance in the overall planning and development of the city. Dhaka has been experiencing rapid urbanization since independence of the country. The degree of urbanization is one of the fastest in the world.

The initial city was established on a loop of land bounded by a perennial main river on the south, the river Buriganga and a branch of the river surrounding the other sides. The area in 1610 A. D was five to seven square miles and total population was about thirteen thousand. The Metropolitan city of Dhaka is nearly four hundred years old. During the last four hundred years of growth of the city of Dhaka witnessed spectacular epoch-making changes (Rahman, et.al., 2008). Table 1 shows the changes of the population as well as increasing of areas with time.

Table 1: Changes in Population and physical expansion of Dhaka

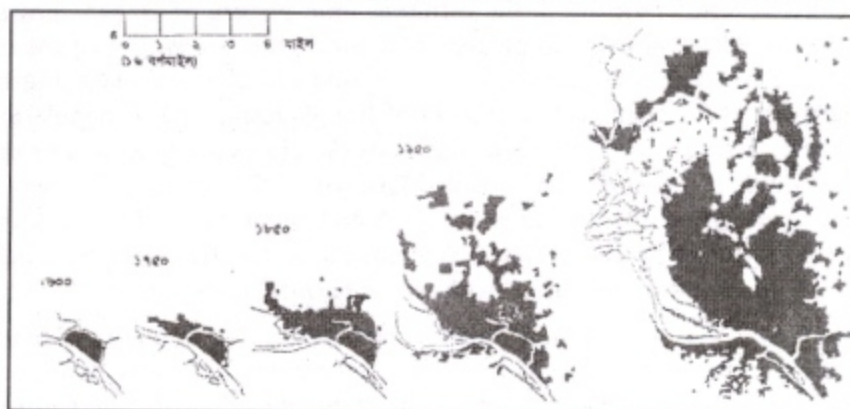
Period in A.D	Status	Area in sq.miles	Population (in thousand)
Before 1610	Unidentified observation post		
1610	Provincial capital under the Mughal Empire of India	5-7	13
1641	Capital under governor Shaesta Khan	50	200
1811	Capital transferred to Murshidabad	50	83
1951	Provincial capital of Pakistan	28	335
1961	Provincial capital of Pakistan	35	551
1981	Capital of Bangladesh	289.3	3450
1991	Capital of Bangladesh	350	6050
2001	Capital of Bangladesh	590	9912

Source: Rahman, et.al., 2008

By 2010, the population is increased to about 13 million (<http://en.wikipedia.org/wiki/Dhaka>) within the Dhaka metropolitan jurisdiction area.

Spatial pattern of urbanization shows that the growth of Dhaka was mainly confined to elevated lands in the 1960s and 1970s. Only 4,625 ha of lands were urbanized in 1960. This shot up to 5,550 in 1975, signifying 20 percent growth in 15 years. Since then, urbanization increased dramatically. A 95 percent increase of urban built-up area was estimated between 1975 and 1988. Analysis revealed that urban land of Dhaka reached to about 20,549 and 24,889 ha in 2005 and 2008, respectively. Different analysis shows that urban land increased by about 344 percent compared to 1960 (Dewan, 2010).

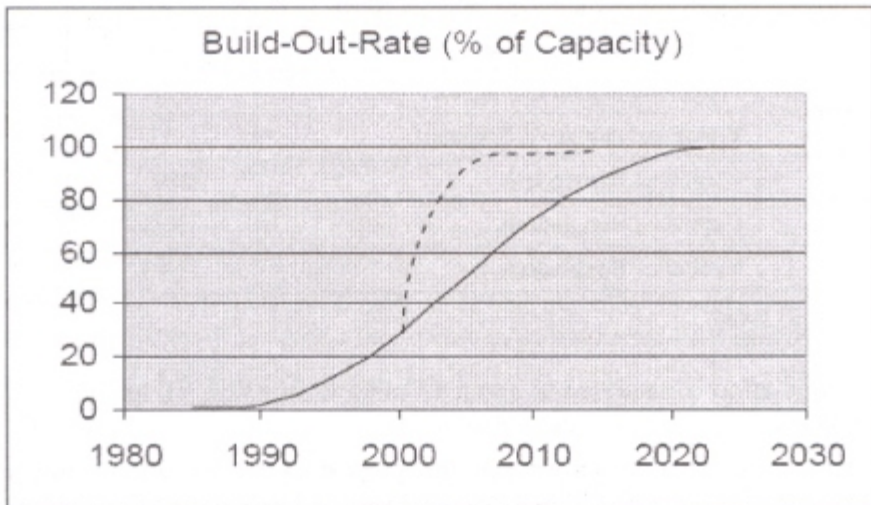
At the birth of East Pakistan urban fringe areas in Dhaka started to grow rather slowly, but its impetus has been increased tremendously after the creation of Bangladesh. An initial study has been incorporated in the Dhaka Metropolitan Development Plan (DMDP), 1995 – 2015. The post established area from the year 1983 was treated the urbanizing fringe area in the DMDP plan. This is the area of land which was converted to urban use in the 1980s. It is widely scattered around most of Dhaka's established urban area. It comprises one tenth of the 1991 urban area which supports almost 0.54 million people.

Figure 01: Physical expansion of Dhaka with the course of time

Source: <http://img149.imageshack.us/img149/4441/dhaka>

However the developed area has taken place in a spontaneous, but haphazard way, leaving little way neither for an appropriate road network nor for basic infrastructure facilities and services. But haphazard development is undesirable for sustainable development. So, a direct policy is provided in DMDP (1995 - 2015) as "Policy UA/5 – Urban Fringe Development Acceleration".

Figure 2: Accelerated development of the fringe areas converted to urban use 1983 – 1990



Source: DMDP, 1995

The policy proposed in the DMDP Plan appears to be not in line with the policy of urban development without urban sprawl. But however this has been in practice in the framework of planning due to lack of planners and regulatory issues in plan administrations.

The growth has been phenomenal as the city is the hub of administrative, cultural and commercial activities. Since urban built-up areas are increasing at a faster rate, concurrent decline of other land use categories has been observed. For example, wetlands decreased from 13, 514 ha in 1960 to 7,128 ha in 2008. Substantial loss of cultivated land was also observed in the same period. A recent newspaper article warned that Bangladesh, on average, is losing 220 ha of agricultural land per day, which has an effect on food security, and the situation may exacerbate in the context of climate change that would bring changes in agricultural production (Dewan, 2010).

Looking at the urban sprawl situation, the different time picture of Dhaka shows that up to 1850, growth of population appears to be absorbed within the boundaries of the existing city area. After that date urban sprawl started gaining ground and after the mass migration to city after (1947) partition of India and establishment of Bangladesh in 1971, population of Dhaka could not be accommodated within the boundaries of the planned city area. The urban sprawl has taken unacceptable proportions. The detailed land use of the city of 2001 shows that urban sprawl along the main spinal road towards the north and along the road to the south east, was widespread. Besides unauthorized isolated settlements at the fringe areas adjacent to the border lines of the city created slum areas with all the harmful consequences of urban sprawl.

The satellite towns of Tongi (14 miles in the north) and Narayanganj (16 miles in the southeast) and Savar were in the process of development which was expected to absorb additional migrants to the city and contend urbanization and urban sprawl. Considerable gap between the main city and the satellite towns with rural agricultural land were expected to

check urban sprawl of a continuously elongated pattern. Unfortunately, inappropriate urban planning and inefficient urban management failed to bring about success.

Savar located to the northwest of Dhaka city at a distance of 25 km from the city center. It has good connectivity with the capital city not only by Dhaka-Aricha highway but also the river Dhaleswari and Buriganga connect Savar with Dhaka. Because of its well connectivity with the city this is the potential area for urban sprawl.

Savar has experienced a rapid growth of population and urban expansion and a change of traditional agrarian landuse during the past twenty years due to the influence of urbanization process of Dhaka Metropolitan Area. In 1974 crop land (61.31%) was the dominating landuse of Savar and the commercial use occupied the least amount (0.19%) of the total land. During 1974 to 2004 the crop land significantly decreased and in 2004 it became only 45% of total municipal land coverage (Miti, 2008).

Table 2: Land transformation scenario of Savar

Year	Agricultural land (area in acre)	Housing and settlement (area in acre)
1974	2264	173
1981	2202	264
1991	1923	439
2004	1662	742
2007	1566	856
2010	1426	934

Source: Fouzder, 2005 and Field survey, 2010

History reveals that industrial investment of the study area increase with the development of the transport system. During 1980s the industrial pattern was not same like today. Just after liberation people choose the place to establish the industrial plants because of convenient transportation and low land value. When the land of Dhaka became compactly used the city started growing outwards. As to why Savar become a lucrative location for industrial development. Industrial development pattern has an influence over the whole system of the urban area. Due to centrifugal migration of industry and commerce more and more industries quit from the core city and get themselves placed in the suburban township like Savar because of well road connectivity. Even two decades ago Savar was a rural area which served only the agricultural producers but the scenario has drastically changed. A lot of heavy manufacturing industries have been developed over this period and created option for secondary and tertiary industry. Since then with the development of the transportation facilities industries are occupying a lot of space in Savar. During a period of 1974 to 2001 there appeared a significant change in the landuse pattern of Savar.

Table 3: Trend of Industrial Development in Savar (1972 to 2011)

Year	No. of industry established
1972-80	4
1981-1990	10
1991-95	26
1996-2000	45
2006	70
2007 to 2011	125

Source: Field Survey, 2010

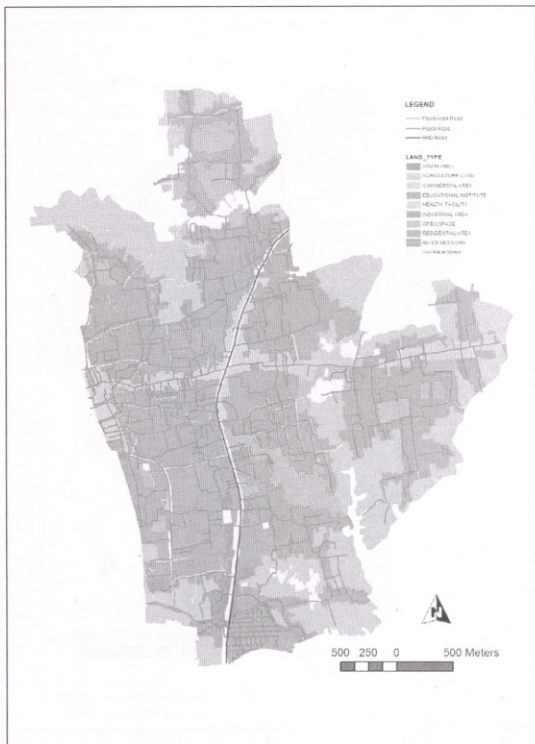
The whole area is characterized by a number of different landuses like residential, commercial, industrial, agricultural, educational, administrative, open space, water body, etc. After the establishment of the Savar Pourashava a massive industrialization was started along Dhaka Aricha Highway and Bangshi River. The characteristics of this area were being changed and gradually being invaded by non-residential uses like commercial, institutional etc. Now the commercial land use expanded more than 5 times bigger than Savar bazar area of that Seventies. Its economic activities are promoted changes in the uses and intensity of uses of this area. During 1970 and 1980 Nama Bazar which is located at the western part of Savar Pourashava was the major area to serve the commercial purpose.

Table 4: Change of commercial land use from 1974 to 2001

Year	Areas in acre
1974	8
1981	12
1991	28
2001	40

Source: Fouzder, 2005

After that during the 1980 and 1980 Savar Upzilla office complex has also made a new impact in administration point of view. During 1974 to 1990 there has been a significant change in commercial landuse pattern. In 1974 the percentage of commercial land was 0.19% accounted for a total amount of 8 acres out of 3696 acres and it increase at a snail's pace from 1974 to 1981.



Source: LGED, 2006 and reconstructed by the authors

Figure 03: Land Use Map of Savar Municipality (2006)

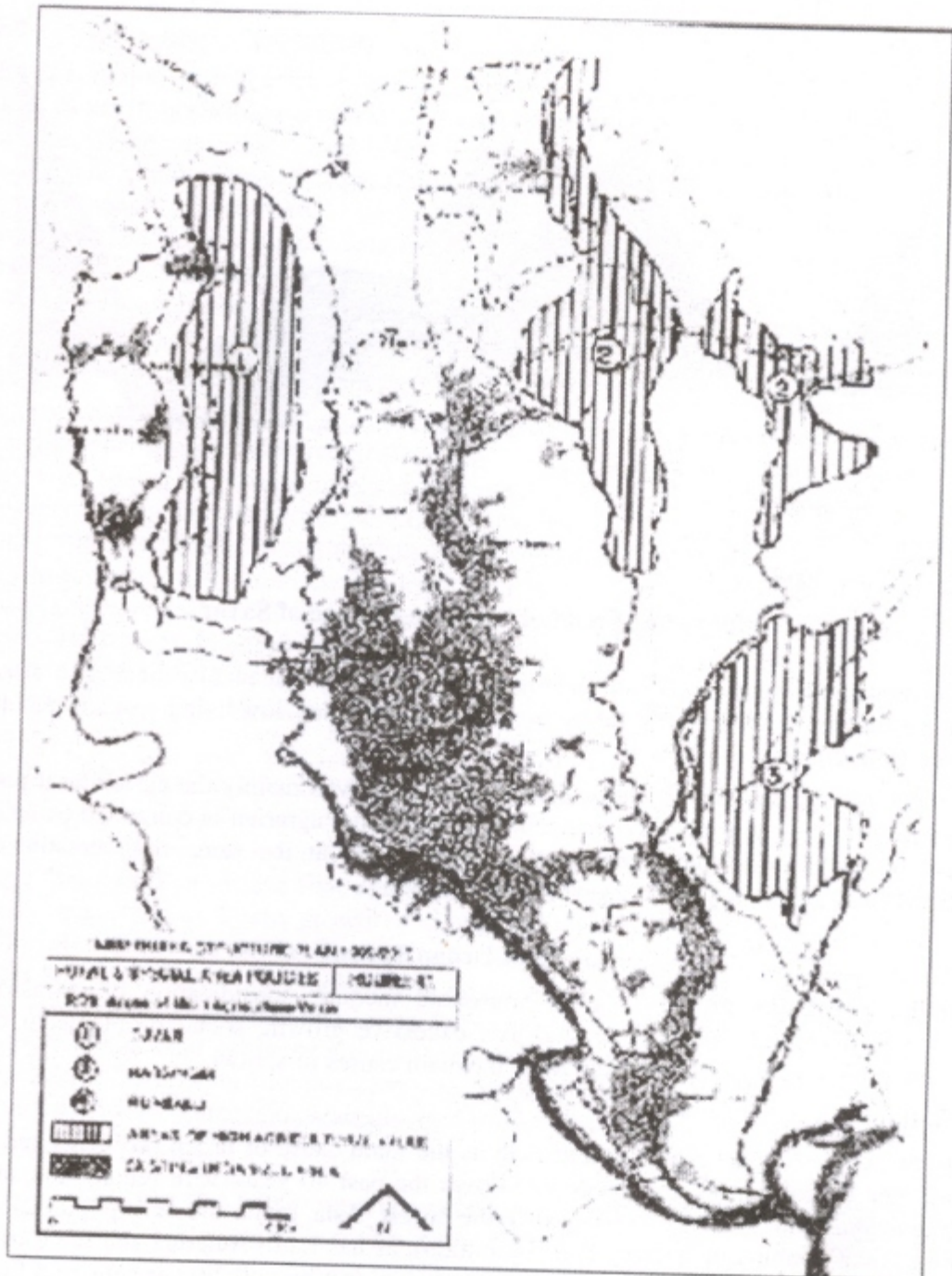


Source: LGED, 2006 and reconstructed by the author

Figure 04: Land Use Map of Savar Municipality (2010)

According to the “*Policy RS/1- Areas of High Agricultural Value*”, DMDP identify three area as of high quality agricultural land within the market catchment area of Dhaka. The areas are:

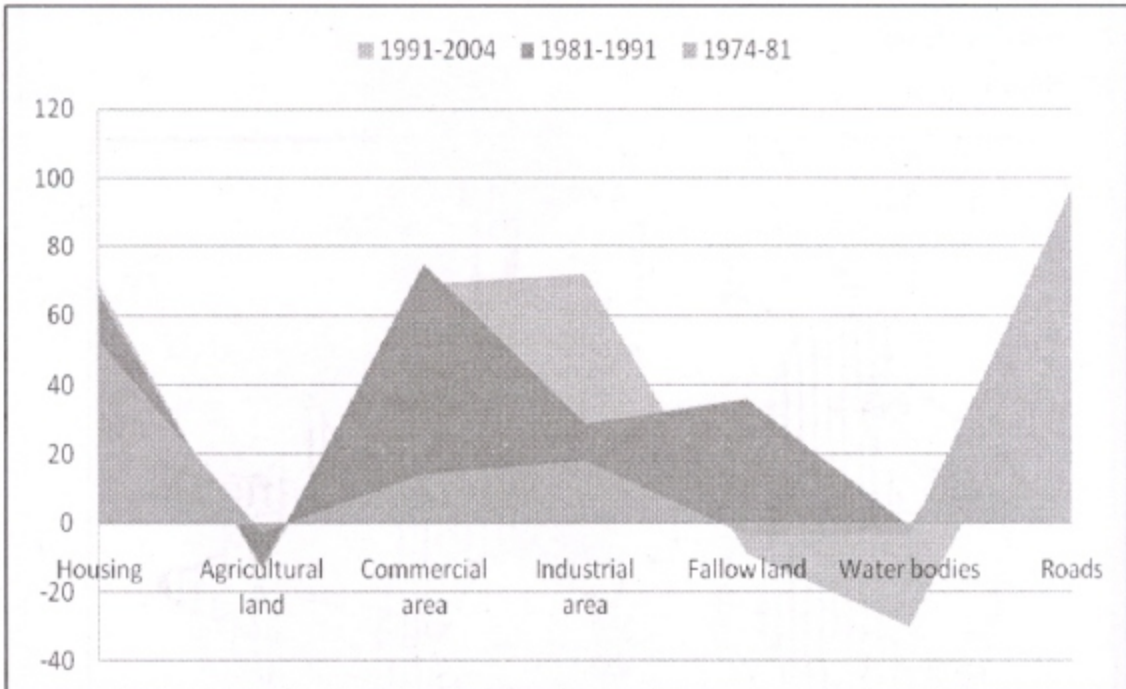
1. Savar
2. Norshingdi and
3. Rupganj



Source: DMDP (volume-1, Dhaka Structure Plan)

Figure 05: DMDP Areas of High Agricultural Value

But the in practical scenario is quite different: There is high rate of transformation of agricultural land. City dwellers are getting the land comparatively less in price than the capital and developing their houses in an unplanned manner at that agricultural land. This tendency is found so high during the last decade.



Source: Fousder, 2005

Figure 06: Trend of land Use Change of Savar

A huge number of people who are unable to buy a plot or flat or also unable to afford in Dhaka are interested to shift at Savar because of low land price, low living cost as well as well accessed from Dhaka.

Even three decades ago Savar was a rural area which served mainly the agricultural purpose but the scenario has considerably changed. The traditional agrarian is converted to an urban one paving way for further increase of civic facilities at the same time creating some complexities of unplanned urban growth (Fousder, 2005).

Causes of Urban Sprawl

Generally, population growth, rise in household income, subsidization of infrastructure investments like roads, ineffective land-use, excessive growth, social problems in central cities and poor land policies are taken to be the main causes of sprawl.

Population

Often, one comes across population growth as the main cause of urban problems and urban sprawl. The global population has doubled over the past 40 years with remarkable shifts in geographical distribution. Africa has grown the fastest. Asia, by far the most populous region, has more than doubled in size (to over 3.6 billion), as has Latin America and the Caribbean. In contrast, the population of Northern America has grown by only 50 per cent, and Europe's has increased by only 20 per cent and is now roughly stable. Over the second half of the twentieth century, the total population of the world increased at an average annual rate of 1.75

per cent. In comparison, the world urban population increased at an average annual rate of 2.68 per cent (UN). The difference between these two rates of growth, that is, between the growth rate of the urban population and that of the total population, is the rate of growth of the proportion urban. Thus, between 1950 and 2000, the world population urbanized rapidly, rising from 30 percent in 1950 to 47 percent in 2000. As a result of these unprecedented trends, the population of the world, which during most of human history has lived mainly in rural settlements and grew very slowly, is on the verge of becoming more urban than rural for the first time in history.

Land-use and Land Consumption

There is a major controversy whether land-use and consumption decisions are the primary engines of urban sprawl or whether it is continuing population boom that provides most of the expansion. Some argue that sprawl is first and foremost a land-use phenomenon since even an area of static population can experience sprawl as its built environment is modified in a sparse, low-density, auto-friendly way pushing city limits further and further out. A careful analysis of U.S. Census Bureau data found that these two sprawl factors share equally the blame for some, if not all, of the sprawl in some regions of the country. Therefore, questions like "Is population growth or land-use change worse for sprawl?" can only be answered after a deeper observation of the situation, causes and effects within the area in question.

Cities grow, with or without planning, and develop landscape characteristics that persist through time determining how they will function. Fulfilling the resource requirements of a growing population ultimately requires some form of land-use change in order to provide for food, living space, recreation, infrastructure development and service provision. Historical constraints on city size limitation were cost of transport to export goods/ import agricultural products, the degree of economy of scale relative to market demand and the cost of carrying on day-to-day activities within the city itself (commuting to work, delivery of water, disposal of waste and sewage). These were all relaxed with time. Some possible forces driving land-use and land-cover changes are population, technology (mainly automobile), political economy and political structure. Land consumption - the amount of land used per person - is the inverse of population density, the higher the population the lower the amount of land used per person.

In developed countries, one half of increased sub-urbanization between 1950 and 1980 can be explained by increased demand for larger plots of land per inhabitant. This is because of higher incomes. Increased income also means high probability of owning a private car and having a 'ground-floor' house (not apartment) in the outer periphery of the city. The other alternative reasoning as to why growth of the suburbs has come about is because people have fled the social problems of the inner city. In addition, population pressure in city centres enhances the competition for employment, production and sales and hence some planning policies favour decentralization and locate firms and residences in the urban fringes creating edge cities. Urban land use generally expands at the expense of agriculture as demand for housing grows. This brings about differences between land consumption in the centre and fringe of the urbanized area and create changes in land consumption rates through time.

Population and Density

The rough measure of this relationship is a simple population density measure, which is total land area divided by total population residing in the same area. When viewed separately, the three countries differ substantially on their level of population density. Increasing densities has been a response to land scarcity and protection, the need for energy conservation (mainly the reduction of motorised travel) and an increasing number of households (resulting from falling household sizes in the developed world and population growth elsewhere). Proper

densities for city dwellings can only be determined by how well the cities perform. On specific instances, density can also be expressed as number of dwellings per unit of land.

There are benefits as well as costs derived from a concentration of people and activities in an area. In a way high density allows efficient utilization of land and assures maximum use of public investments including infrastructure, service and transport. But high-density schemes can also overload infrastructure and services putting an extra pressure on land and residential spaces, producing crowded and unsuitable environment for humans. In contrast, on the other extreme, low densities may increase per capita costs of land, infrastructure and service provision affecting the sustainability of human settlements making it hard for future generation to function normally.

Impacts of Sprawl

It has been depicted sprawl as a contributor to most contemporary urban and environmental problems. The suggested negative impacts of sprawl include

Loss of Agricultural land: We're chewing up farms at an alarming rate to create new highways, fringe industrial parks and sprawled housing developments. This loss reduces our ability to grow food, fiber and timber. In many areas, urban development pressure and increased property taxes are forcing farmers out of business. They often sell their farms for housing developments, to provide financial security for their retirement (Glaeser and Kahn, 2003).

Loss of Wildlife Habitat: Wild forests, meadows, and wetlands are also disappearing, replaced by pavement, buildings and sterile urban landscaping. The remaining habitat is smaller, degraded and more fragmented, making survival of certain wildlife species very difficult as they try to reach breeding ponds, hibernation sites, feeding locations, or to establish viable nesting areas(Glaeser and Kahn, 2003).

Increased Tax Burden: The costs of providing community services have skyrocketed as homes and businesses spread farther and farther apart, and local governments are forced to provide for widely spaced services. Owners of these dispersed developments seldom pay the full government costs of serving them, forcing the rest of us to subsidize them with higher taxes at the local, state and federal leve (Benfield,et.al., 2001).

Increased Air Pollution: Sprawl increases car and truck traffic, leading to major increases in air pollution and smog. Vehicles are the cause of air pollution in many urban areas, and a threat to public and wildlife health(Glaeser and Kahn, 2003).

Increased Water Use and Pollution: Sprawl increases air pollution, which falls out to become water pollution. In addition, urban activities create water pollution directly, through land run-off of construction site erosion, fuel spills, oil leaks, paint spills, lawn chemicals, pet wastes, etc. Sprawled, low-density development produces more than its share of this runoff. In addition, more water is consumed for lawn watering and other landscape activities, straining local water supply systems (Glaeser and Kahn, 2003).

Increased Energy Consumption: At a time when we desperately need to reduce our energy use, sprawled developments increase our energy consumption per person, for increased gasoline, home heating, and electricity use (Glaeser and Kahn, 2003).

Social Fragmentation: Old-fashioned neighborhoods with compact housing, front porches, a corner store, and a school two blocks away were much more conducive to social interactions. It was possible to feel a sense of belonging and community. Now, in sprawled generic housing tracts, many people never meet their neighbors as they pass them in their cars. It's

rare for neighborhood events to occur. Families are more isolated and those living alone are marooned in a hostile environment (<http://www.actionbioscience.org> and Popenoe, 1979).

Loss of Time: People are forced to spend more time commuting longer distances to reach their jobs, homes, schools and shopping areas. In a compact, efficient city these travel times are often minimal, but sprawled cities take time to navigate. Suburban tract and country dwellers also spend more time maintaining large, empty residential properties: mowing the grass, plowing long driveways, raking leaves, weeding, etc. (<http://www.actionbioscience.org> and Popenoe 1979).

Increased Private Costs and Risks: Sprawling business and home owners often fail to realize the long-term personal costs and risks of maintaining distant properties. As property taxes rise to cover service costs, and fuel costs increase for travel and heating large buildings, the owners' budgets may have trouble keeping up. Transportation costs for children and handicapped family members are much greater. As sprawled homeowners age, their large properties become a greater burden to maintain. When they can no longer drive their car, they are stranded (McMichael, 2000).

Loss of Exercise: Sprawled communities force people to drive their cars if they need to get groceries, go to school, or get to work. In the past, cities were structured so many of these destinations were within walking distance. Now, many neighborhoods lack even sidewalks for pedestrians, forcing residents to walk in the street next to the traffic whizzing by. In the past it was normal for kids to walk to school, but now their parents often drive them or they take their own cars. Is it any wonder that an epidemic of obesity can plague? Walking is the best form of life-long exercise, yet our development patterns actively discourage walking (McMichael, 2000).

Degraded, Noisy Surroundings: Helter-skelter sprawl is not attractive, yet many of our transportation corridors are now edged with jumbles of residential, commercial, and industrial developments (and their enormous parking lots), which have no sense of beauty or order. This adds to the stressful, disconnected feelings which urban residents often express. We're losing the "green space" we need as part of our natural heritage. Large areas of noisy, speeding traffic are also not conducive to peaceful communities. Many people want to live in the country to escape this stress, but urban escapees are helping to create these problems instead, as they commute back to the city for work, school and shopping (McMichael, 2000).

Recommendation

It is important to promote smart growth and sustainability. For instance, using subways and buses or living close enough to work to walk will help dramatically. If proactive approach to this problem is taken, over time we may be able to live in an environmentally stable world.

Local governments are constantly engaged in what can only be described as a battle for control of land and how to use that land. The capital cities are too crowded already to accommodate any more people. Unfortunately, thus FAR (floor area ratio) is the preferred method of fixing this has been to expand the aforementioned cities outward, starting at the center and working with the immediately adjacent space. Instead, there needs to be some buffer room around the big cities.

Large cities have planned very little ahead of time as far as development plans. The small towns could have remained isolated and instead grown proportionally, as opposed to expanding toward the city to meet the outward expansions. This way, the city could have stayed relatively the same size while the towns surrounding it could have had the freedom to expand at the rates that were necessary, all the while keeping traffic congestion, pollution, and so forth at a minimum.

Economists Edward Glaeser and Matthew Kahn (2003) have shown that even in the absence of any government policies that encourage sprawl, low-density suburban communities still would proliferate because many people prefer living in areas with less traffic congestion, larger lot sizes and cheaper housing costs. Since the automobile has made transportation to and from urban centers easy and inexpensive, urban living has lost the advantage of convenience.

It's an area of particular importance to city planners as they must manage zoning to supervise this growth and the spread of population and has become a problem particularly in cities. Unfortunately, thus far the preferred method of fixing this has been to expand the aforementioned cities outward, starting at the center and working with the immediately adjacent space. There is nothing that can be done about the growing population. Instead, the ways that this population is handled need to be changed fast. Urban sprawl is eliminating what little amounts of untouched forestry and agricultural land are remaining. With proper planning from local governments and the discouragement of large commercial developments, metropolitan areas will be able to stop expanding at such an astronomical rate and smaller towns can grow instead. This way, more medium-sized cities will be created without increasing the size of the already large cities at the same time. With the space kept as a buffer between cities, the highway systems can be relieved of the constant congestion they suffer and traffic flow will improve overall. This would lead to a direct decrease in pollution, which would work in conjunction with the preserved forestry to lessen the destructive effects these cities are currently having on the environment. All that is needed now is to start fixing these problems before it really is too late.

Conclusion

It has been argued that urban sprawl is the root of many environmental problems. In the past, cities were compact and efficient but recently the density of land utilized per person has seen a major decline (Freilich, 1999). This drastic change in urbanized areas has been met by both environmental impacts, as well as financial and time burdens on the people. One of the most affected environments would be agricultural lands. Agricultural lands are being lost due to the creation of new highways, fringe industrial parks, and new sprawled housing developments. Along with the loss of agricultural land, there is a loss of wildlife habitats that are disappearing due to urban sprawl. These forests, meadows, and wetlands are disappearing and being substituted with pavement, buildings, and sterile urban landscaping. The urban sprawl has been so bad in some places that species of plants are becoming nearly extinct (CWAC, n.d.).

After above discussion, the conclusion can be drawn in the way by asking a question, what is the responsibility of the existing authority or agencies to get rid of from afore mentioned problems with proper solutions. At the same time, the authority should play a key role in further development in a planned way and control unplanned development in the area by policy guidelines, act, rules and regulations.

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