

Segufta Hossain**DETAILED AREA PLAN (DAP) AND ITS IMPACT FOR DHAKA CITY****Abstract**

Dhaka is facing rapid unplanned urbanization with a huge population influx during the last couple of decade. In 1995, Rajdhani Unnayan Kartripakkha (RAJUK) prepared a 20-year plan for Dhaka city called Dhaka Metropolitan Development Plan (DMDP), a three tier plan including Structure Plan, Urban Area Plan and Detailed Area Plan. As the third and last tier, Detailed Area Plan was supposed to implement the provisions of the DMDP Structure Plan and Urban Area Plan policies and recommendations. The major focus of Detailed Area Plan was to put control over all development within RAJUK area through land use zoning and to lay down the framework for the development of future infrastructure and services. Although the first objective has been partially achieved, the second one has been ignored and violated. Powerful land developers and in some cases RAJUK itself has breached the land use zoning policy of Detailed Area Plan (DAP) and filled up the designated wetlands and flood flow zones which are mainly used as water retention zones. As a result, the drainage system of the city is facing obstruction and water congestion is becoming a very common chronic problem in Dhaka city. The water congestion situation of Dhaka city has reached a dangerous magnitude with the rapid unplanned urbanization. The present paper will try to focus on how the failure of Detailed Area Plan has impacted the water congestion scenario of Dhaka city which is increasing day by day as low lying water retention areas of the surrounding areas of Dhaka city are being filled up.

Keywords: Unplanned Urbanization, Rajuk, Dhaka Metropolitan Development Plan, Detailed Area Plan, Flood Flow Zones, Water Congestion

"Since its establishment, Dhaka has grown mostly without adequate planning interventions; substantially organic in nature."¹

1. Introduction

The world is becoming urbanized rapidly. The movement of people towards cities has accelerated in the past 40 years, particularly in the less-developed regions and the world's urban population is now growing by 60 million persons per year, about

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¹ Islam 1996 cited in RAJUK, "Draft Plan – Dhaka Structure Plan 2016-2035", in *Dhaka: Past and Present*, Dhaka: RAJUK, 2015, p. 35.

three times the increase in the rural population.² 55 per cent of the world's population lives in urban areas, a proportion that is expected to increase to 68 per cent by 2050 and the urban population of the world has grown rapidly from 751 million in 1950 to 4.2 billion in 2018.³ Asia, despite its relatively lower level of urbanization, is home to 54 per cent of the world's urban population.⁴ South Asia's urbanization, a messy one as seen in the widespread prevalence of slums, grew by 130 million populations between 2001 and 2011 and is poised to rise by almost 250 million by 2030.⁵

Bangladesh is one of the most densely populated countries in the world and one of the countries of South Asia which is experiencing very rapid urbanization. The urbanization of Bangladesh is interlinked with the development of Dhaka. The city has become a centre of political, administrative and commercial activities. As a result, Dhaka has experienced the highest rate of physical and population growth in the recent decades which has transformed the city into a megacity. Dhaka alone contains 37 per cent of the total national urban population, conforming to the classic case of primate city in which the population of the largest city is more than the combined total of the three next largest cities of Chittagong, Khulna and Rajshahi.⁶

Dhaka has a long history of urbanization. The city became the capital of the then East Pakistan after the partition of the sub-continent in 1947. Although Dhaka is one of the fastest growing megacities in the world, it has grown mostly without planning since its establishment. The city is growing in such an uncontrolled manner which has made the city more congested and overcrowded. The Economist Intelligence Unit (EIU) surveyed 140 cities around the world for its Global Liveability Index 2018, scoring them on over 30 parameters under five categories: healthcare, infrastructure, culture and environment, stability, education and Dhaka becomes the world's second least liveable city.⁷

A committee was formed in early 1950s headed by the then minister Hamidul Haque Chowdhury to prepare a development plan for Dhaka.⁸ The first comprehensive master plan, titled "The Dacca Master Plan 1959" was made by an expatriate firm Minupria & Macfarlane in 1958 and it was prepared over a 20 year planning horizon

² UNESCO, "Global Trend Towards Urbanisation – UNESCO", available at http://www.unesco.org/education/tlsf/mods/theme_c/popups/mod13t01s009.html, accessed on 18 February 2019.

³ United Nations Department of Economic and Social Affairs, "68% of the world population projected to live in urban areas by 2050, says UN", 16 May 2018, New York, available at <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>, accessed on 18 October 2019.

⁴ Ibid.

⁵ Peter Ellis and Mark Roberts, *Leveraging Urbanization in South Asia: Managing Spatial Transformation for Prosperity and Livability*, Washington, DC: World Bank, 2016, p. 2.

⁶ RAJUK, op.cit., p. 36.

⁷ Afrose Jahan Chaity, "What makes Dhaka the second worst city to live in?", *Dhaka Tribune*, 17 August 2018.

⁸ Akhter Chaudhury, "A Short History of Urban Planning in Bangladesh", available at <https://www.slideshare.net/AkhterChaudhury/a-short-history-of-urban-planning-in-bangladesh>, accessed on 20 October 2018.

(1958–1978) with an estimated population increase by 40 per cent (1.75 per cent per annum).⁹ The Dacca Master Plan 1959 covered the Dhaka Improvement Trust (DIT) area roughly 220 sq. miles, with a population slightly exceeding 1 million and of this population, approximately 575,000 were in Dhaka City Corporation area.¹⁰ After the independence of Bangladesh, Dhaka became the capital and the Master plan failed to cope with the fast expansion of the city. The second Master plan was prepared with a time span of 20 years from 1995–2015 titled ‘Dhaka Metropolitan Development Plan (DMDP)’ covering an area of 590 sq. miles or 1528 sq. km with three components i.e. Structure Plan (SP), Urban Area Plan (UAP) and Detailed Area Plan (DAP). The DMDP SP identified the magnitude and direction of spatial growth within DMDP area and set forth spatial and sectoral policies over a longer period of time (1995–2015), whereas DMDP UAP, the second tier of the three stage DMDP plan package, provided mid-term strategy for ten years from 1995 and it defined the geographic boundary that covered mainly the urban areas.¹¹ As the lowest tier of DMDP, DAP was basically intended to be a local level plan which stipulated proposed land use zoning, infrastructure and utility services.¹² DAP was supposed to implement the DMDP SP and DMDP UAP as well as the policies and recommendations and to be prepared and implemented through community participation to make the plan people-oriented.

RAJUK began to formulate DAP in 2004 and completed it in 2007. Government approved DAP under DMDP through a gazette notification issued on 22 June 2010, but within a week of its approval, a high-powered cabinet committee was constituted for finalizing the plan through elaborate reviews.¹³ But the committee has failed in this endeavour. Instead, it has continuously made amendments to the plan, apparently to serve the interests of the land grabbers and approved as many as 158 changes during the past years, through which they got approval for filling up a large chunk of designated water-bodies and flood-flow areas under the plan.¹⁴ The cabinet committee has approved 135 gazette notifications and it has been found that the classification of land has been changed through these without mentioning the previous categorization of the affected lands.¹⁵ It was also found that after formation of the cabinet committee, permissions were given for filling up water bodies through 34 amendments and flood-flow areas through 14 amendments, agricultural and rural settlements have been cancelled through 20 amendments.¹⁶ Permission has been accorded to non-conforming areas for keeping residences alongside industries

⁹ Mowtushi Poit, “Summary of Dhaka Master Plan, 1959”, 21 April 2017, available at https://www.academia.edu/32675240/Summary_of_Dacca_Master_Plan_1959, accessed on 16 May 2019.

¹⁰ Ibid.

¹¹ RAJUK, op. cit., pp. 28-29.

¹² Helal Uddin Ahmed, “Flouting Detailed Area Plan and Dhaka’s Perilous Future”, *The Financial Express*, 26 April 2018.

¹³ Ibid.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

through four amendments, which violates relevant provisions and permissions have also been given to changes in the land use categories in overlay zones through 13 amendments, which again contravene the relevant rules.¹⁷ It has become obvious that the committee, which was supposed to finalize DAP, has become a committee to amend DAP in favour of the land grabbers and land developers to fulfil their demand.

Against this background, the present paper to focus on the reasons why the Detailed Area Plan (DAP) was not effective and its impact on Dhaka city. The paper is divided into five sections including the introduction and conclusion. Following the introduction, the second section of the paper deals with the history of urbanization and urban planning of Dhaka city. The third section to find out the reasons behind the failure of the DAP and the fourth section will emphasize on the impacts of the failure of the DAP on Dhaka city.

2. Urbanization and Urban Planning in Dhaka City

Urbanization, a process which increases the percentage of population living in cities and peripheries of the cities, is mostly linked with modernization and industrialization. Although the process of urbanization in Bangladesh was relatively slow compared to other Asian countries, the country has experienced a remarkable progress of urbanization and urban growth in terms of increasing proportion of urban population and urban centres since the country's independence in 1971.¹⁸ Dhaka has a long history of more than 400 years in which it has gone through various phases of growth and decline to become the present day megacity. Dhaka is located centrally and surrounded by rivers. Due to its location and connectivity, Dhaka became a hub of all kinds of activities from the past. By the year 2020, on the 50th year of our independence, the total urban population in Bangladesh is estimated to increase up to 50 million (five crores) from 30 million now and around half of them will be attracted or compelled to live in Dhaka and its conurbations alone unless a careful and well-thought-out urbanization policy is undertaken and implemented.¹⁹

The history of urban planning of Dhaka city is not a continuous one. The urbanization and urban planning of Dhaka city could be categorized in two periods: Before the independence of Bangladesh i.e. from pre-Mughal era upto 1971; and the Bangladesh period i.e. from 1971 till now.

¹⁷ Ibid.

¹⁸ Bangladesh Bureau of Statistics (BBS), *Changing Patterns of Urbanization in Bangladesh: An Analysis of Census Data*, Population Monograph of Bangladesh, Dhaka: Bangladesh Bureau of Statistics (BBS), 2015, p. xxi.

¹⁹ Md. Musleh Uddin Hasan, "Town planning for Bangladesh: Vision 2020", *The Daily Star*, 08 November 2008.

2.1 Before the Independence of Bangladesh

Dhaka was the seat of provincial Mughal administration for about one hundred years (from 1608 AD).²⁰ The factor that helped Dhaka to flourish during the Mughal period was the central location of the city. The city's superior geo-strategic location enabled both the surveillance of the lower Bengal and its geography also provided an administrative advantage in collecting imperial revenues and protecting revenue interests.²¹ The city rose to prominence in the 17th century as a provincial capital and commercial centre of the Mughal Empire in South Asia. In 1715-16, the capital of Bengal province was shifted from Dhaka to Murshidabad, with which the city lost a part of its population.²² Calcutta became the capital of British India in 1772 as Warren Hastings, the first governor-general, transferred all important offices to the city.²³ With the defeat of the Nawab of Bengal, the city formally passed to the control of the British East India Company in 1793.²⁴

The first civic committee created to consider solutions to urban problems in Dhaka was the Committee of Improvement, formed in 1823.²⁵ The British rulers declared Dhaka as a Municipality in 1846. Dhaka became the capital of the newly formed East Bengal-Assam province, during the British colonial period, for a couple of years.²⁶ With the rise of the colonial capital Calcutta, Dhaka saw a sharp decline in its population and the city suffered stagnation and decline during the mid-19th century. British town planner Professor Patrick Geddes first made a plan for Dhaka city in 1917 in the concept of a garden city.²⁷

In 1947, when India was partitioned, Dhaka became the seat of the provincial government of East Pakistan. The arrival of large numbers of Muslim population from India led to a 103 per cent increase of population of the city.²⁸ The city began to experience rapid urbanization from the 1950s. This city is growing primarily in a

²⁰ Adnan Zillur Morshed, "Understanding Mughal Dhaka", *The Daily Star*, 11 February 2019.

²¹ Ibid.

²² Qazi Azizul Mowla, "Dhaka: A Mega City of Persistence and Change", in R. P. Misra (ed), *Urbanization in South Asia – Focus on Mega Cities*, New Delhi: Cambridge University Press India Pvt. Ltd., 2013, pp. 341-372.

²³ Encyclopaedia Britannica, "Capital of British India", available at <https://www.britannica.com/place/Kolkata/Capital-of-British-India>, accessed on 05 September 2018.

²⁴ David Steven Cohen, "The Jewel in the Crown: Part 1-The British East India Company and the Raj", available at https://www.academia.edu/10071816/The_Jewel_in_the_Crown_Part_1-The_British_East_India_Company_and_the_Raj, accessed on 24 June 2018.

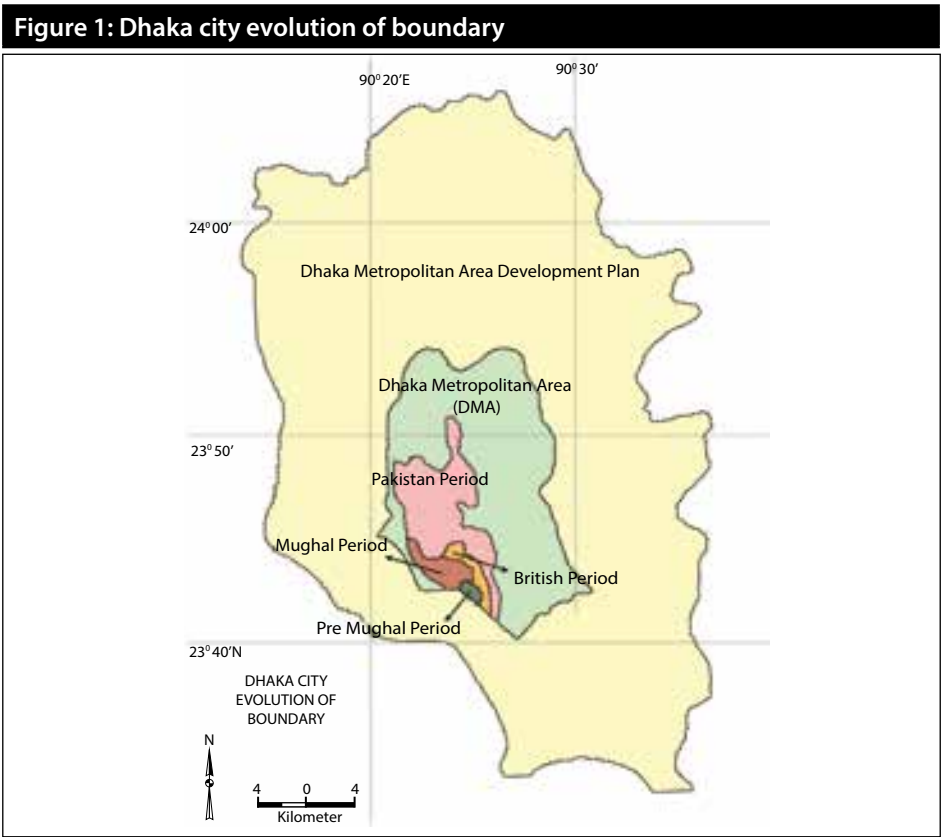
²⁵ Md. Ashiq Ur Rahman, "Coordination of Urban Planning Organizations as a Process of Achieving Effective and Socially Just Planning: A Case of Dhaka City, Bangladesh", *International Journal of Sustainable Built Environment*, 4, 2015, pp. 330-340.

²⁶ Qazi Azizul Mowla, op.cit.

²⁷ Mohammad Atikul Islam, "Setting Planning Standards for Public Facilities in a City: A Case Study of Ward 50 of Dhaka City Corporation", *Journal of Bangladesh Institute of Planners*, Vol. 2, December 2009, pp. 169-178.

²⁸ Professor Sirajul Islam and Sajahan Miah (eds.), *Banglapedia*, Dhaka: Asiatic Society of Bangladesh, 2003, p. 476.

spontaneous manner. A town planning cell under the Ministry of Public Works used to do the functions of town planning during the 1950s. The Dhaka Improvement Trust (DIT) was established in 1956 to coordinate the city's development. City level urban planning in Bangladesh began in the late 1950s. The first Master Plan, which was prepared in map form showing proposed land use and infrastructure development for the city was drawn up in 1959. The content of the Master Plan report was comprehensive and sensible and DIT followed the plan quite diligently and developed the transport network, residential, commercial and industrial areas according to the guidelines. The area of Dhaka mega city had expanded 17.88 times from its size in the year 1951, over the same time period population had increased 25.09 folds.²⁹ The population increased from 0.28 million in 1951 to around 1.2 million in 1971.³⁰



Source: Professor Sirajul Islam and Sajahan Miah (eds.), *Banglapedia*, Dhaka: Asiatic Society of Bangladesh, 2003, p. 481.

²⁹ Islam et al. cited in Md. Al Mamun, Md. Ashraf Ali Akhand, "Land use of Dhaka metropolitan development plan area: Past and present scenario", *The Guardian*, 02 May 2016.

³⁰ Rajdhani Unnayan Kartripakkha, "History of RAJUK", available at <http://www.rajukdhaka.gov.bd/rajuk/aboutusHome>, accessed on 02 October 2018.

2.2 The Bangladesh Period

Dhaka was declared the national capital by the Constituent Assembly of Bangladesh in 1972. The rapid expansion of Dhaka city began with the end of the Liberation War of Bangladesh In 1971. Although Dhaka is the capital of Bangladesh, the city did not get attention for planning for a long time after the country's liberation in 1971. Being the capital, Dhaka has become a major source of both formal and informal employment opportunities. Dhaka seems to be the most favourite area and has become the main migration destination in the country because of the concentration of economic and political institutions which attracted migrants from other regions of the country. The proportion of migration varies among divisions. Higher proportions of migrations take place in Dhaka division 25.41 per cent.³¹ But, the city has grown haphazardly with a huge population and without a proper planning to ensure the basic services such as housing, utility services, transportation, open spaces and recreational facilities, etc. to its population.

In 1987, Rajdhani Unnayan Karttripakkha (RAJUK) was established replacing DIT. Dhaka's rapid growth necessitated a fresh plan and the United Nations Centre for Human Settlements (UNCHS) undertook a series of studies for the urban areas of Bangladesh and a joint effort with ADB in 1980 produced an extensive study on Dhaka but the Planning Commission did not approve the report.³² Finally, in 1991 the then newly elected government took up the proposal for a Master Plan. In 1995, RAJUK prepared a 20-year plan for Dhaka city called Dhaka Metropolitan Development Plan that included analysis of potential growth options, a structure plan and detailed area plans and ultimately, almost 30 years after independence, a new Master Plan i.e. Dhaka Metropolitan Development Plan (DMDP) was undertaken and completed in 1995 and approved in 1997.

3. Detailed Area Plan (DAP): Why It was Ineffective

DMDP, a three tier master plan, was approved and provided the planning policy guideline for Dhaka. The DAP is the third and last tier of DMDP. DAP provides more detailed planning proposals for specific sub-areas compliant with the Structure Plan (SP) and Urban Area Plan (UAP). The general objective of DAP is to implement the provisions of the DMDP SP and UAP policies and recommendations. The provisions of DAP is inherent in the DMDP SP with some specific purposes which include:

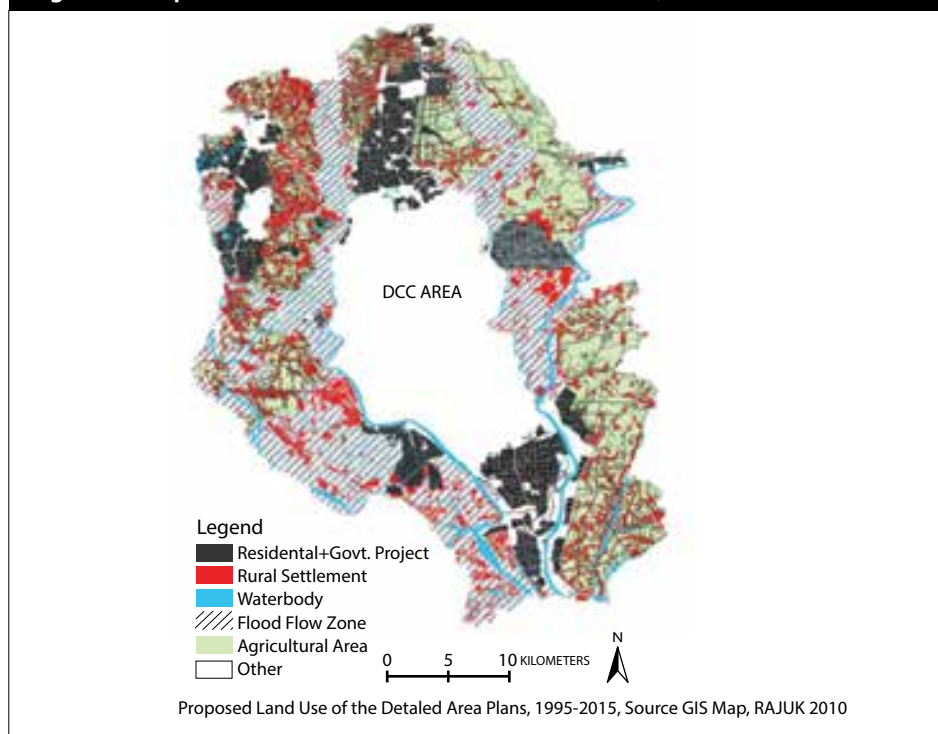
- a. Provide basic infrastructure and services in the study through systematic planning.

³¹ Bangladesh Bureau of Statistics (BBS), *Population Distribution and Internal Migration in Bangladesh*, Population Monograph: Volume-6, Dhaka: Bangladesh Bureau of Statistics (BBS), Statistics and Informatics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, November 2015, p. 37.

³² Salma A. Shafi, "Implementation of Dhaka city Master Plan", *The Daily Star*, 23 February 2010.

- b. Create congenial environment to promote economic activities.
- c. Improve drainage system of the area and protect flood flow from encroachment.
- d. Create service centres to enable urban growth.³³

Figure 2: Proposed Land Use of the Detailed Area Plans, 1995-2015.



Source: GIS Map, RAJUK 2010, available at [https://www.google.com.bd/search?q=detailed+area+plan+\(d+p\)+of+dhaka&tbm=isch&source=univ&sa=X&ved=2ahUKEwjZ3A2JzhAhVFRo8KHZKEAG8Q7Al6BAgHEBE&biw=1366&bih=654#imgsrc=Olc_IAennqudzM;](https://www.google.com.bd/search?q=detailed+area+plan+(d+p)+of+dhaka&tbm=isch&source=univ&sa=X&ved=2ahUKEwjZ3A2JzhAhVFRo8KHZKEAG8Q7Al6BAgHEBE&biw=1366&bih=654#imgsrc=Olc_IAennqudzM;) accessed on 25 March 2019.

DAP aimed to implement the SP and UAP policies and recommendations and the specific objectives of DAP are:

- Data management and dissemination at *mouza* dag level
- Providing a programme for Multi-sector Investment Plan
- Providing control for private sector development and clarity and security of investment for inhabitants and investors

³³ Rajdhani Unnayan Karttripakkha, "Detailed Area Plan DAP", available at <http://www.rajukdhaka.gov.bd/rajuk/dapHome>, accessed on 01 October 2018.

- Providing guideline for development considering the opportunity and constraints
- Ensure constraints environment.³⁴

The total area under DAP is 1528 sq. km. or 590 sq. miles which cover the total RAJUK jurisdiction area. The jurisdiction of DAP planning area includes Gazipur Pourashava to the North, Dhaleshawri River to the South, Bangshi and Dhaleshawri River to the west and Shitalakkhya and Meghna River to the East.³⁵

Mostly DAP remained unimplemented due to the strong protests from real estate owners and various interest groups.³⁶ The then Rajdhani Unnayan Karttripkha (RAJUK) chairman Nurul Huda alleged that an influential quarter was out to bring distortion and deviation to the Detailed Area Plan of Dhaka city. According to him, "An influential vested quarter is hatching conspiracy to twist and distort the already-gazetted DAP so that its implication is thwarted".³⁷ He also mentioned, "Planning is not a static thing, rather a continuous process. In course of time, planning can be changed in line with the aspirations of the people, but not at the will of a certain quarter".³⁸ The DAP has been planned to make decisions about land use, but there was no comprehensive implementation plan.

When RAJUK began the process of public hearing on the plan, it was criticized by various professionals, environmentalists and civil society groups. They observed various contradictions in the approach to the proposed plan and found various issues which could jeopardize the environment and social goals of the city. It was found that as the plan has a gross violation of national laws and DMDP, it might create environmental disaster and social unrest. As RAJUK did not conduct any land-use requirement survey, the consultants appointed for preparing DAP failed to get any comprehensive guideline to calculate the actual land-use demand for the people of the city. As a result, the consultants³⁹ focused on their specific location.

Apart from this, as the last tier of DMDP, DAP was supposed to fulfil DMDP, which is a legal document⁴⁰. DMDP categorizes flood flow zone into two categories, (i) Main flood flow zone and (ii) sub flood flow zone, among which there is no sub flood flow zone in DAP. DAP proposed only 'Agriculture with Rural Homestead'

³⁴ Ibid.

³⁵ Ibid.

³⁶ Iqbal Habib, "DHAKA STRUCTURE PLAN 2016-2035-Prioritise people, not coteries", *The Daily Star*, 16 September, 2015.

³⁷ "Influential Quarter Out to Foil DAP: Says Rajuk Chairman", *New Age*, 01 July 2010.

³⁸ Ibid.

³⁹ RAJUK appointed four consulting firms to prepare DAP.

⁴⁰ Ministry of Housing and Public Works, "SRO No 184-Law/97", Bangladesh Gazette, 04 August, 1997, available at https://www.dpp.gov.bd/bgpress/index.php/document/extraordinary_gazettes_monthly/1997-08-28, accessed on 10 September 2018.

category which was classified as 'High value agricultural land' and 'Agricultural land' which created scope for the private land developers to encroach the land.

In addition to violating the DMDP policy, DAP also contradicts with the "Water Body Conservation 2000"⁴¹, "Bangladesh Environment Conservation Act 1995"⁴² and violates the "Ramsar Convention"⁴³ which Bangladesh is a signatory. JICA in its report FAP-8A and FAP-8B identified main and sub flood flow zones and DMDP SP also adopted the same divisions. "Structure Plan Policy RS/3 for Flood Flow Zone" mentioned that land development, within the designated flood plain areas of the DMDP Structure plan, will be controlled in order to avoid obstructions to flood flow, which might otherwise result in adverse hydraulic effects, such as, the rise of flood water levels and changes of flow direction.⁴⁴

DAP contradicts with the Flood Flow Zone policies of DMDP and designated most of the sub flood flow zone as 'urban residential area' and 'agriculture with homestead' category. Apart from this, 'urban residential area' and 'agriculture with homestead' category is also found in the main flood flow zones which have paved the way for the developers to grab the land and fill up the low-lying areas of the fringe areas of Dhaka city which are basically used as water retention sites for Dhaka city.

Urban fringe areas are also used for agricultural purposes which used to fulfil the demand of the urban population. DMDP SP classified agricultural land into two categories: 'High Value Agricultural Land' and 'Agricultural Land'. But DAP proposed only one category i.e. 'Agriculture with Rural Homestead'. As a result, the fertile agricultural lands surrounding the city which were used earlier as agricultural lands have been encroached and converted as residential and mixed development

⁴¹ Act is created for conservation, regulation, protection and to reduce the abuse of resources as well as to make them sustainable for future. See for details, Mega city, Divisional Town and District Town's municipal areas including country's all the municipal areas' playground, open space, park and natural water reservoir Conservation Act, 2000, available at <https://www.bwdb.gov.bd/archive/pdf/198.pdf>, accessed on 20 September 2018.

⁴² In 1995, the Government of Bangladesh adopted a comprehensive environmental law called the "Bangladesh Environment Conservation Act" to provide for conservation of the environment, improvement of environmental standards and control and mitigation of environmental pollution. See for details, The Bangladesh Environment Conservation Act, 1995, available at extwprlegs1.fao.org/docs/pdf/bgd42272.pdf, accessed on 20 September 2018.

⁴³ The Convention on Wetlands (Ramsar, Iran, 1971) is an intergovernmental treaty whose mission is "the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world". See for details, Ramsar Convention Secretariat, "An Introduction to the Convention on Wetlands, Gland, Switzerland: Ramsar Convention Secretariat", 2016, available at https://www.ramsar.org/sites/default/.../handbook1_5ed_introductiontoconvention_e.pdf, accessed on 20 September 2018.

⁴⁴ Sohag Chandra Roy, Israt Jahan and Md. Asaduzzaman, "DMDP as a Tool to Safeguard the Flood Flow Zones from Unrestrained Development", *Journal of Bangladesh Institute of Planners*, Vol. 4, December 2011, pp. 71-79.

purposes. In some areas, DAP replaced 'Agricultural Land' by 'Urban Residential Use'. Thus, DAP has allocated a huge amount of land for residential use hampering the environmental concerns. The DAP reports do not have any strategy to control and regulate development. There is a shortage of open space in Dhaka city. Although it is necessary to have open spaces in a city, it is also very difficult to designate land for open space in a city with huge population. DAP proposed only 0.328 acres of land/1000 population which is far below than any other densely populated cities of the world.⁴⁵ The plan proposed only one-third of the land as open space after relocation of Dhaka Central Jail which is very inadequate.

The city development authority RAJUK itself has failed to implement properly any of the city's development plans including the DAP. Apart from the private land developers, RAJUK itself has become encroacher in several places. RAJUK has taken several projects on flood flow zones and crop lands in adjacent areas of Dhaka city for its housing projects. RAJUK completed feasibility studies for developing a 201 acre residential cum commercial area close to Uttarkhan on the Balu river bank which has been designed to swallow flood flow zone as well as fertile crop lands in seven *mouzas* of Dhaka districts.⁴⁶ Similarly, a new 2,209 acre project taken by RAJUK at Keraniganj for providing residential plots mainly to MPs which would also swallow areas designated for conservation in the DAP.⁴⁷ Apart from these, Jheelmil, Purbachal and Uttara 3rd Phase residential projects which are now being implemented by RAJUK, have already swallowed flood flow zones and crop lands by taking them out of conservation areas as earmarked in the DAP.⁴⁸ Recently, RAJUK has changed the layout plan of Purbachal Project for the fifth time which has shrunk the open space to accommodate 'influential people'.⁴⁹ As RAJUK itself is violating the laws by encroaching the flood flow zones and crop lands, the real estate developers are also following RAJUK by launching new projects in the surrounding low-lying flood flow zones and crop lands of Dhaka city.

⁴⁵ Bangladesh Institute of Planners, "Detail Area Plan (DAP) of Dhaka: Shattering the vision of DMDP", *The Daily Star*, 20 December 2008.

⁴⁶ Mahamudul Hasan, "Rajuk's violations make DAP useless", *New Age*, 04 April 2017.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Tawfique Ali, "Purbachal Project: CONCEPT lost on REVISIONS", *The Daily Star*, 24 March 2019.

Figure 3: The images show how arable land and flood flow zones covering over 6,200 acres in Purbachal area on the outskirts of the capital have been turned into a housing project over the years.



Source: Tawfique Ali, Purbachal Project: CONCEPT lost on REVISIONS, *The Daily Star*, 24 March 2019.

4. Failure of DAP: Its Impact on Dhaka City

RAJUK, responsible for the planning of Dhaka city and implementing the policies, has violated DAP which is creating problems in the urban areas and hampering the city life for its population. The present paper will try to highlight on the water congestion issue of Dhaka city which is increasing day by day as the low lying water retention areas of the surrounding areas of Dhaka city are being filled up by RAJUK itself as well as other developers violating DMDP.

The low-lying areas, canals, lakes and ponds of Dhaka city are used as retention basins and play important roles in the drainage function. The storm water is accumulated in the low-lying areas and lakes, flows through the storm channel i.e. *khals* and discharged to the surrounding rivers. The Dhaka region has more than 50

*khal*s that drain 80 per cent storm water of the city to the surrounding rivers.⁵⁰ The major *khal* systems are–Degun-Ibrahimur-Kallyanpur *khal* system that drains to Turag River, Dhanmondi-Paribagh-Gulshan Banani-Mohakhali-Begunbari *khal* system that drains to Balu River, Segunbagicha-Gerani-Dholai *khal* system that drains to Balu and Buriganga rivers.⁵¹ Major drainage improvement infrastructures include three pumping stations with a combined capacity of 52 cumec, 7 km box culvert, 205 km storm drains (buried pipes of diameter ranging from 450 mm to 3000 mm) and 57 km of open canals which have proved to be inadequate to rid the city of floodwater because many areas of the city experience severe and prolonged flooding, especially during heavy showers in the monsoon season.⁵² Dhaka's drainage network was designed to discharge storm water to the surrounding four rivers–Buriganga, Balu, Turag and Shitalakhya-through the existing 26 canals. According to Dhaka Water Supply & Sewerage Authority (DWASA) officials, Dhaka used to have 65 canals but the number has come down to 43 over time and among the existing ones, around 20 canals have also nearly vanished because of encroachment.⁵³ DWASA covers 370 km drains, while the Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) together have around 2,000 km and these existing drains are unable to discharge rainwater swiftly as the 26 drainage canals they are connected to have been encroached by land grabbers.⁵⁴

Rainwater would have gone under the ground naturally, instead of flooding the city streets, if the city had 50 per cent of the surface been open earth. But out of 400 sq. km. area of the capital covered by (DWASA), some 350 sq. km. Of the surface is paved, which prevents the ground to soak up rainwater. The rainwater could easily flow into the canals and ponds if they had not been filled up. The city's natural drainage system-comprised of a network of 65 canals and four rivers, numerous water retention areas (ponds, ditches), extensive low-lying areas and flood flow zones are consistently being destroyed in the name of development. The low-lying wetlands and flood flow zones assigned in the DAP no longer exist as those were filled up, in many cases with official approval.

Water congestion has become a very common chronic problem in Dhaka city during the monsoon period as well as all the year round. Dhaka has been experiencing a gradual increase in water congestion over the last decade. Moderate to heavy rain causes serious drainage problems in many parts of the city. With rapid urbanization and rapid increase of population, Dhaka city is expanding both horizontally and vertically. The population of Dhaka city is increasing at a very high rate and this increased population is putting tremendous pressure on different utility services.

⁵⁰ Khan 2006 cited in RAJUK, *Public Facilities for Better Urban Living*, Chapter 08, p. 154.

⁵¹ Chowdhury et al. 1998b cited in RAJUK, 2015, Ibid.

⁵² Md. Mafizur Rahman and Shahriar Quayyum, "Sustainable Water Supply In Dhaka City: Present And Future", paper presented at the Conference of the Japan Science and Technology Agency at Bangkok, Thailand on March 2008.

⁵³ Abu Hayat Mahmud, "Can Dhaka's waterlogging problem really be resolved?", *Dhaka Tribune*, 23 July 2017.

⁵⁴ Ibid.

Drainage system is one of such facilities. As a result of this pressure, problems like drainage congestion have now become a crucial problem for the city. The main canals that drain water to the nearby waterbodies have been grabbed by encroacher. Apart from this, culverts, box culverts and drains have been obstructed due to lack of maintenance. According to experts, the city's storm-water drainage system is inadequate and is only capable of dealing with 20 mm of rainfall and the streets get waterlogged if the rainfall exceeds 40 mm.⁵⁵ As a result, there is a lack of outlets for the rainwater to pass. For this, even a little rain causes serious problems in many parts of the city on every occasion and can create water congestion situation for several days which in turn causes huge infrastructural damages.

This problem also has negative financial impact. According to a World Bank study published in November 2015, the potential damages from waterlogging between 2014 and 2050 will be Tk11,000 crore in Dhaka, if climate change is not considered. In a changing climate with more intense rainfalls, the loss will be Tk13,900 crore between 2014 and 2050.⁵⁶ The drainage system in the capital is dysfunctional due to clogging of the drains. No sustainable initiative has been taken to address the water-logging problem in Dhaka city. This situation normally occurs due to unplanned infrastructure development, insufficient or limited drainage systems, blockage of drains, lack of consciousness of these problems by the inhabitants, unplanned build-up of areas within the city, filling up off the canals, lake and waterbodies in areas which are mainly acquired by housing companies and brick burning industries within the city. Unplanned urbanization is also increasing water congestion. Elimination of local water storage areas by land-filling is one of the major causes of rainfall flooding and drainage congestion in many locations of the Dhaka city. The city development authority RAJUK has failed to implement properly any of the city's development plans including the DAP. Prof Jamilur Reza Choudhury identified the shortcomings of DAP in 2013 and commented,

"A large number of land developers continue to fill up flood flow zones and grab the banks of four rivers around Dhaka. The DAP remains far from being implemented due to negligence of the authorities concerned. The land developers are using land by violating all RAJUK plans and laws."⁵⁷

A large number of drainage channels, water reservoir and flood flow zones inside Dhaka city and its surroundings have been taken over by construction activities. According to the Flood Action Plan and DAP, the city should have 5,523 acres of conserved water retention areas, 20,093 acres of canals and rivers and 74,598 acres of flood flow zones. But according to experts, most of these wetlands have been filled up.⁵⁸

⁵⁵ "Waterlogged Dhaka streets", *The Daily Star*, 21 June 2017.

⁵⁶ Abu Hayat Mahmud, op. cit.

⁵⁷ Abu Hayat Mahmud, "Dhaka: Four centuries of uncontrolled growth", *Dhaka Tribune*, 02 October 2017.

⁵⁸ "Waterlogged Dhaka streets", op. cit.

The people of Dhaka city is suffering from water congestion during the monsoon in spite of various plans, projects and programmes taken by the authorities. Extensive water congestion takes place from May to October every year due to the result of rapid and unplanned urbanization in the city and surrounding areas. The drainage networks of Dhaka city are regulated by three local government bodies–DWASA, DNCC and DSCC. RAJUK on the one hand is accused of irregularities and corruption in the implementation of city plans and on the other hand also faces obstructions and constant pressures from developer companies and land grabbers. DWASA, the two city corporations, the deputy commissioner's office, RAJUK, Water Development Board, Bangladesh Inland Water Transport Authority (BIWTA) and Dhaka Cantonment Board are involved in resolving water congestion problem in Dhaka city and the surrounding areas. But these authorities have not become successful in solving the problem. According to urban planner Dr. Maksudur Rahman, "If the present trend of city governance continues, all city streets will be flooded during monsoon in a decade, intensifying the suffering of city dwellers, and people will be compelled to leave the city." He has also predicted that about 50-60 per cent of the city will be inundated in ten years if it experiences even a moderate rainfall.⁵⁹

The drainage congestion situation of Dhaka city has reached to a dangerous magnitude with the rapid urbanization and increase of infrastructure, reduction of water retention areas inside and outside of the city. DAP prepared a land use zoning plan together with infrastructure development plan, where the land use plan indicated where the future land uses have to be located as a part of development control. Any Developer intending to develop any structure or make any use of any particular land has to obtain a land use clearance from RAJUK consistent with DAP.⁶⁰ But developments have been observed in many places where land uses are being cropped up ignoring the DAP land use zoning plan. Urban Planner Prof Sarwar Jahan pointed out that a large number of land developers have already filled up most of the DAP designated wetlands and flood flow zones and this land grabbing is behind the constant waterlogging and destruction of ecology around the city.⁶¹

5. Conclusion

Dhaka is facing rapid urbanization backed by huge population. In less than 325 sq. km. of area, it supports more than 15 million people which make it one of the most densely populated megacities.⁶² Although the city has become a megacity from a mere provincial town, the infrastructures and facilities have failed to cope with the current rapid urbanization scenario. Master plans for the city are not a new phenomenon, but the city has grown mostly in an unplanned haphazard manner. The rapid unplanned growth of the

⁵⁹ Rafiqul Islam, "Value of Water is on the Rise", *Reliefweb*, 28 Jul 2017, available at <https://reliefweb.int/report/bangladesh/value-water-rise>, accessed on 19 October 2018.

⁶⁰ RAJUK, Chapter 08, op. cit., p. 30.

⁶¹ Abu Hayat Mahmud, 02 October 2017, op. cit.

⁶² Dhrubo Alam and Arfar Razi, "Why Dhaka's liveability is only worsening", *The Daily Star*, 01 January 2018.

city is creating difficulties in various sectors in the urban life of its population. Increasing number of population in a small area instigates the land developers to make residential planning in the areas designated for environmental purposes. DMDP was prepared in 1995 by RAJUK for its entire 1528 sq. km. to prepare a hierarchical multi-sectoral development plan comprised of Structure Plan, Urban Area Plan and Detailed Area Plan.⁶³ The major focus of DAP was first to put a control over free for all development within RAJUK area through land use zoning and second, to lay down the framework for development of future infrastructure and services. While the first objective has been partially achieved, the second focus has virtually been ignored.⁶⁴ The powerful land developers have violated the land use zoning policies of DAP, grabbed the lands and hampered the planned spatial development of the city. RAJUK itself has violated its own policies in some occasions. These activities are mainly observed in the fringe areas of the city which are mainly designated as flood flow zones and agricultural purposes. As a result of the development activities in the flood flow zones, the drainage system of the city is obstructed and water congestion is created in the city and which is becoming severe day by day. Management of the drainage system of Dhaka city has become a challenge for the urban authorities.

The Sustainable Development Goal (SDG) 11 of the United Nations mentioned "Make cities and human settlements inclusive, safe, resilient and sustainable".⁶⁵ The United Nations Conference on Housing and Sustainable Urban Development (Habitat III) in Quito, Ecuador on 20 October 2016 adopted "The New Urban Agenda" which represents a shared vision for a better and more sustainable future and it also mentions that if well-planned and well-managed, urbanization can be a powerful tool for sustainable development for both developing and developed countries.⁶⁶ Therefore, it is necessary to have a coordinated urban planning policy with proper implementation mechanism to solve the problem which will bring together all the stakeholders in a single platform.

⁶³ RAJUK, Chapter 08, op. cit., p. 28.

⁶⁴ Ibid., p. 30.

⁶⁵ Sustainable Development Goals, available at <https://sustainabledevelopment.un.org/sdg11>, accessed on 18 October 2018.

⁶⁶ The United Nations Conference on Housing and Sustainable Urban Development, "The New Urban Agenda", Habitat III, 17-20 October 2016, available at <http://habitat3.org/the-new-urban-agenda/>, accessed on 18 October 2018.