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The Urbanization and Environmental Challenges in Dhaka City

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ABSTRACT: The main purpose of this study is to focus on the urban growth and environmental impacts on Dhaka city for the sustainable development of urbanization policymaking.

The study has found that the Dhaka city is expanding rapidly and environmental issues are the main problem for urbanization. Because there is huge pollution in Dhaka city through unawareness of human activities. The local government can increase the public participation in sustainable development for urban growth in Dhaka city. The policymaker can formulate a strategy for urbanization growth and green environment by training on public participation and facilitation for urban people.

KEYWORDS: Urbanization, Environment, Dhaka

1. Introduction

In developing countries as Bangladesh, Dhaka is facing many challenges to develop a better knowledge of social dynamics and the interrelations. The challenges are preparedness, flood management, flood risk perception, vulnerability, flood damage, lack of city government policies for a long-term plan, deficiency of environmental concerns, lack of community participation, etc. ADB (2008). In recent decades, Dhaka is one of the fastest growing city in the world. During the last four decades, the average annual growth has been over 7% which led to rapid expansion of Dhaka city both horizontally and vertically (ADB 1998). Currently, ADB is working on environmental support to Southeast Asian countries as well as Bangladesh for the expansion of urbanization process. Especially, this expansion held at the city periphery areas which led to a transformation of surrounding land and urban dwellers with an ever-increasing demand for basic services and facilities and other resources. It enhanced based on physical growth, slum, and squatter formation and so on (Rahman 2008).

As part of the urbanization development, this research tries to explain the rapid urbanization of Dhaka city and its impact on the environment in accordance with water resources management under the environmental change and unplanned urbanization resulting urban floods in Dhaka city. The urban environment is being frequently degraded due to the lack of appropriate planning and lack of right policy framework, inter-city budget, local government, un-skilled institutional management and so on emphasized by Alam (2004). Definitely, we can say, there is a substantial administrative challenge for local governments and community leaders to formulate ways to develop and execute appropriate policies and strategies to control persistent urban growth. It may pursue viable urban environmental management in the peripheral areas of Dhaka city.

According to the Asia-Pacific Forum for Environment and Development (APFED) meeting, in Asia, the high step of social and economic development results in unplanned infrastructure, lack of infrastructure, environmental degradation, congested traffic, and a housing shortage as foremost issues met by cities and towns in their sustainable development (Ichimura 2003). Nowadays, cities are going as home to more than half of the world's population which generate 80% above of all GDP. The UN (United Nations) estimates that "today's urban population of 3.2 billion will rise to nearly 5 billion by 2030 when three out of five people will be living in cities" (Lewis 2007). Morever, Brockerhoff (2000) notes that a majority of the population

of less developed countries will be living in urban areas by 2020, and dramatically in Asia and Africa (IRIN 2006).

I will show an increase in urban population in the world from 1950 to 2030. As can be seen in the table, by 2030, 60.3% of the population will be living in urban areas of the world, whereas it was only 29.7% in 1950. Notable, more developed countries show a saturated kind of urbanization, while less developed countries' urban population increases from 17.8 to 39.9% between 1950 and 2000, and will be more than tripled between 1950 and 2030 increasing from 17.8 to 56.2%.

More importantly, many cities of this region will get huge urban population, which are already known as megacities. According to World Bank, Bangladesh is one of the most densely populated countries which is no 8th in the world. Recently, the country is experiencing a rapid urban population growth (13.5 million in 1981, 22.9 million 1990, 37.3 in 2000, and 46.4 in 2005) in recent decades (Chowdhury and Amin 2006). Therefore this research aims to investigate the causes of urban growth and its impact on the selected peripheral "Union's" in order to throw light on how they are governed and can be better governance. This research also has concentrated on the development of Dhaka city, while little attention has been focused to the geographic designs of urbanization in Dhaka city of Bangladesh. The main objectives of this study are:

a) to highlight the causes of urban growth in Dhaka city

b) to investigate the environmental impact of the persistent urban growth

In the first section, we specify the introduction of this study, in the second section, we execute the urbanization trends and its impact, the third section contains impacts of the environment in Dhaka city, and the fourth section covers the hinders in developing of the cities in Bangladesh. Finally, we conclude the study with policy implications.

2. Urbanization trends and its impact

2.1. Historical Trend of Urbanization

Dhaliwal (2000) noted that the populations are particularly concentrated in and around major cities of the world. Moreover, according to UN (2000) report, 90% of urban population growth will be in developing countries of Asia, Africa, and Latin America. It is also projected that 80% world's cities will be in developing countries as well as Dhaka city of Bangladesh. Arnstein (1969) specified in her research on citizen participation that "there is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process."

Apparently, it shows that the cities of the developing countries will create much more challenges in the days to come.

2.2. Urban Population growth in Dhaka city and Bangladesh

Considering Dhaka city, the city has been growing exponentially, particularly since it became the capital of the independent nation of Bangladesh in 1971. Uneven development and regional policies, natural hazards, and the lack of employment opportunities in the rural areas are the vital factors of urban population growth. Islam (2001a) indicates three factors of rapid urban population growth; (1) a high natural increase in native urban population, (2) the territorial extension of existing urban areas and a change in the definition of urban areas, and (3) rural to urban migration.

Bangladesh experienced higher urban population growth rate at 10.03% due to the facts of both pull factors and push factors during 1974-1981 (BBS 2001). For the preference of the pull factors, these are employment opportunities, higher wage, and income, better life status, educational opportunities, transportation facilities, comparatively better social security, etc. On the other hand, push factors are poverty and lack of employment in the rural area. There is no higher educational institution; also cause of natural calamities like cyclones, floods, river erosion, and so on. Therefore, migration is the most important factor of intensive growth (up to 70%) of urban population for the Dhaka city (Islam 2001a). World Bank (2007) showed that in the Dhaka city, new poor migrants (about 300,000-4000, 000) arrive in a year.

Comparatively, the overall population growth of Bangladesh is greater than many other developing countries in the world. The estimated total population was 152 million in Bangladesh in 2005 with the growth rate of 1.2%, which was 2.6% in 1990. Only 8.8% of 76 million people lived in urban areas in 1974. In the same year, the level of urbanization touched near about to 25% (BBS 2005). Right now, the overall urban population growth rate is unchanged, but it is vast in few big cities, such as Dhaka which is the capital city of Bangladesh (Islam 1999). This type of rapid urban growth leads a vital role in sustainable development of urbanization, which is very challenging for the government to formulate policies of urban sustainability (Rana 2009). Mostly, the nature of urbanization would be measured by considering two components. No one is the level of urbanization, and no two is the growth rate of urban population.

For the case of Bangladesh, the level of urbanization is still low, but its total urban population is substantial, which was 28.60 million in 2001. Before independence of Bangladesh, the urban population growth was about 3%. After independence, it was rapidly changed about a tremendous urban growth 8.89% in 1974. Comparatively,

4.34% growth was in 1951 and 8.89% in 1974, which is continued up to 20.15% in 1991. Moreover, the annual growth rate was approximately high (10.03%) during 1974-1981 because of rural-urban migration as the result of huge famine in many remote village areas of the country. During 1981-1991 periods, slower growth of urban population (5.43%) was observed in comparison with the previous decade. During 1991-2001, the growth further declined to 3.15% but remained much higher than the national population growth rate. The overall growth indicates that the urban population in the country has been doubled every 12 years (CUS 2001). According to the United Nations, the current population (January 2018) of Bangladesh is 165,609,515.

2.3. Effects of rapid Urbanization

In Bangladesh, rapid urbanization seems to be quite a difference of opinion on whether we should encourage or discourage it. In our view, it does not matter what we think; it is, in fact, a reality that cannot be prevented but needs to be controlled. Failure to control it will mean that it becomes a big problem, but if we have to control it. Then it need not be one. In Bangladesh, the problem with rapid urbanization by rural-to-urban migration is not that it is occurring, but almost all of it is happening in Dhaka.

Hence, the solution to managing this urbanization is to reinvest in other cities and district level towns throughout the country to bring the migrants there instead of Dhaka city. It means investment in jobs, education, healthcare, etc., migrate to in the secondary cities of Bangladesh. Recently, Dhaka has hosted a number of international workshops and meetings on issues to do with migration and also on urbanization. The outcomes of these series of workshops are that the two issues are very much intertwined in the context of Bangladesh where rural-to-urban migration and primarily to Dhaka, is the major issue. For the real impact of urbanization of Dhaka city, local government has to create a good policy for investing in other cities and towns for developing the new urban city.

2.4. Urbanization for the environment

According to conventional wisdom, urbanization degrades the environment. This finding may lead to many developing countries to limit rural-urban migration and curb urban expansion. But this finding is incorrect because there are some reasons. If the urbanization managed correctly, it could be useful for the environment. Firstly, urbanization conveys higher productivity growth due to positive externalities and scale of economic factor. Urbanization is the important factor in an Economy. Asian countries urban productivity is more than 5.5 times that of rural areas. For the case

of Dhaka city, the same output can be produced using fewer resources with urban agglomeration. In this sense, urbanization reduces the ecological footprint. The service sector requires urbanization because it needs a concentration of clients. As services pollute less than the factor of manufacturing, the view of this aspect, urbanization can also be beneficial to the aspect environment.

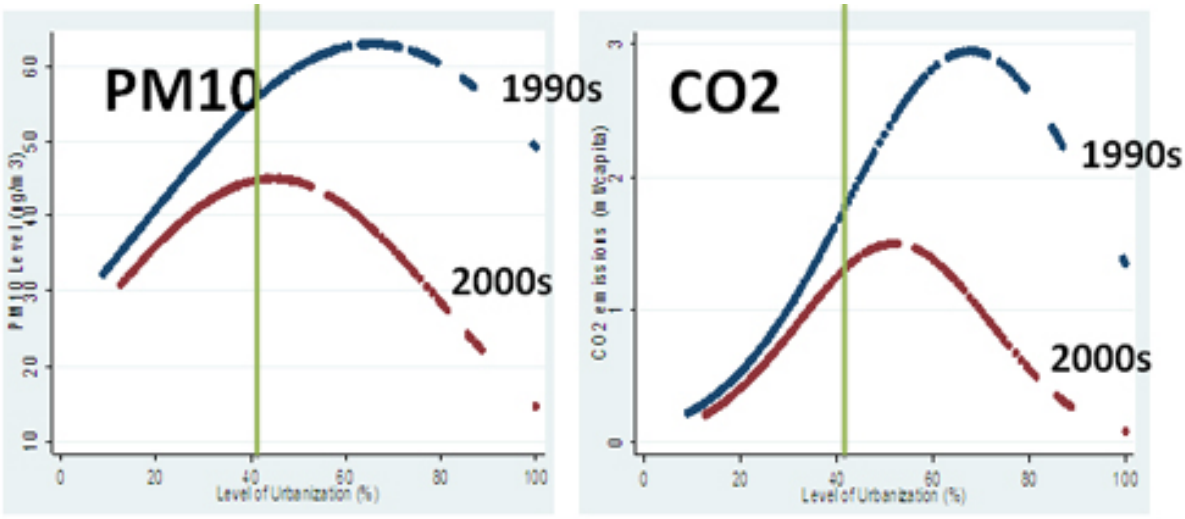
Secondly, the high urban density is benign for the environment for any given population. The urban economics literature focused that compactness is a key indicator of energy use. The high populated city can make crowded and use more public transport for viable and reduce the distance of trips. But, urban living boosts walking, jogging and cycling rather than driving.

Thirdly, Sustainable environment-friendly infrastructure and public services, for example, municipal infrastructure, piped water, sanitation, and waste recycling management are much more comfortable, convenient and more economical to build, operate and maintain in the urban setting. For example, Stockholm has a good infrastructure when it drives to recycling. Also, urbanization consents more people to get access to environment-friendly facilities and services at reasonable prices.

Fourthly, urbanization process plays innovation and creating green technologies. Environment-friendly equipment, vehicles, machines, and utilities will determine the future of the green economy in the long term. Green technological innovations in Bangladesh will be considered when the millions of people who will buy energy-efficient (environment-friendly) products. It will create opportunities for the entrepreneurs to invest in developing such type of products. So green technology can change the environment.

Urbanization is important for the environment. Finally, the higher standard of living also related to urbanization which facilitates people with education, health care, housing, and better food. Urbanization creates revenues that fund utilizes infrastructure projects, improving public health and reducing congestion. Urbanization also generates a pro-environment stance between property owners and the middle class, which is the application of environmental laws, rules, and regulations. In the context of Dhaka city, urbanization is the vital parameter for the green environment. An assessment of the impact of urbanization in Figure 1 follows that the Asian environment–urbanization association-ship varies on the level of development as the lower CO2 emissions and particle pollution (PM10).

Figure 1: Environment–Urbanization Association-ship in Asia



CO_2 = Carbon di-oxide; PM10 = Particulate matter with diameter of 10 micrometers or less; μg/m3 = micrograms per cubic meter; t = ton.

Source: ADB estimates.

The graph indicates that the cities in the 2000s are enjoying a better environment at the same level of urbanization than the cities in 1990s. In the case of green urbanization, the developing countries should continue the downward shift by adopting the urbanization process.

2.5. Urbanization effects in Dhaka city

Dhaka has earned the infamy of being one of the world's most unlivable cities and "worst vacation spots." According to different local and global media, Dhaka is the "traffic capital of the world." Every time the city's alleged urban dysfunction is in the news, local social-media reactions are typically three-pronged. The first group retorts that the western media don't understand how the metropolis functions with its organic cultural paradigms and carry-on-no-matter-what ethos. Because the western (journalistic) eye judges the city with western living standards, this type of labeling is fundamentally flawed and deceitful. The second group is the nihilist, conceding, yes, it is an unlivable city, and we have become frogs in the familiar well. All members of this group are likely to retreat into their private worlds, rather than engaging with the broader city life. The third group includes the umber-fatalists, who ask: "What can you do about it? It is too unsolvable a problem and let's just go on with our lives." It is also important to memorize that growth of cities everywhere has always been a complicated process. Cities defy singular narratives. Dhaka city's urban growth

transpired with both promises and perils, introducing contentious debates not only on urbanization but also the questions of progress and modernity. As Marshall Berman articulated, "a paradoxical unity, a unity of disunity [that] pours us all into a maelstrom of perpetual disintegration and renewal." So Dhaka city shows to be a modernist narrative in which resilience and dysfunction, optimism and pessimism. Karl Marx's observation that in modernization "all that is solid melts into air"-that is, the forces of the global market push into a perpetual city of transience, that presents a prescient of contemporary Dhaka. When Dhaka proved the worst cities in the world, the sweeping label simplifies a robust urban problem by isolating the city from its political, social, and economic issues. An urban tornado is sucking everything into a dizzying vortex of traffic congestion, wild land speculation, environmental challenges and economic disparities.

3. Impacts of the environment in Dhaka city

Perhaps most of the environmental problems of the next century will result from the continuation and sharpening of existing problems that currently do not receive enough government attention. The problems are not necessarily noticed in many countries as well as Bangladesh. The most emerging issues for cities are freshwater scarcity, climate changes, population growth and deforestation. These problems are complicated, and their interactions are hard to define. It is very important to examine problems through the social-economic-cultural system. Even the interconnections between environmental issues are now better known; we still lack exact information on how the issues are linked, on what degree they interact and what are the most effective measures. One problem is to integrate land- and water use planning to provide food and water security (UNEP 1999).

3.1. Impacts of the climate:

3.1.1. Environment Pollution

Pollution is the common phenomenon of cities. The city is full of industrial areas that often produces environment pollution. Lead-based paint used on highways, roads and on buildings that is one of the causes of Environment Pollution. For example, a widely dispersed pollutant that found its way into the soil. Some solid Materials such as concrete, bricks, asphalt, etc. absorb and reflect energy differently than vegetation and soil because cities are built of solid materials which create heat. So Cities remain always warm in the night while countryside has cooled. Human activities produce

every day a wide range of Green House Gas (GHG) emissions into the environment including carbon dioxide (CO2), Mithen (CH4), carbon monoxide (CO), ozone (O3), sulfur oxides SO, Mithen (CH4), and many other pollutants. For this reason, the air is always polluted in cities. The dust and GHG emissions freed into the environment alter patterns of precipitation over the cities. Cities often catch more rain than the surrounding villages since dust can produce the condensation of water vapor into rain droplets.

3.1.2. Pollution of Water

Higher, faster peak flows change streams channels that have evolved over centuries under natural conditions. Undisturbed soil and natural vegetation are replaced with brick, cement, concrete, and other materials. In rains, water is less likely to be absorbed into the ground; water flows directly into the river channels. Also, flooding can be a major problem as cities grow and stream channels attempt to keep up with these changes. The water quality degraded with time due to urbanization that ultimately leads to increase the pollution. Rapid development can occur high levels of erosion and sedimentation in river flows. The fertilizers that spread across lawns finds its way into water channels where it promotes the growth of plants at the expense of fish. The waste dumped into streams lowers oxygen levels during its decay and cause the die-off of plants and animals. There is also complete eradication of habitats as an outcome of urbanization, and native species are pushed out of cities. Moreover, new habitats are also created for some species such as pigeons, sparrows, rats, mice, flies, and mosquitoes. It causes the climate change.

4. The hinders in developing the cities in Bangladesh

The Dhaka city works like an urban maze that provokes some observers to dismiss the city as an irredeemable wasteland and some as a resilient urban zone that can be transformed into a livable metropolitan by political goodwill and sustainable development planning. By 2050, seventy-five percent of the world's population will qualify to live in urban areas, and future big megacities will be built in developing countries. Many researchers reveal that the urbanization experiments were undertaken in the western metropolises in late 19th and early 20th centuries which have shifted to the developing countries, particularly Asia. In the past decades, urban growth of Dhaka city was prolonged, but the current decade is very high. The urban population of Bangladesh was only 8 % at independence, in that period, the country was still an

agrarian delta punctuated by a few cities, most prominently Dhaka and Chittagong. The population of Dhaka grew at more than 6% per year in 1970, and early 1980 was at nearly 10% growth. In early 1990, the population of Dhaka was more than 6 million. Currently, the population of Dhaka is approximately 18.9 million according to some estimates and growth rate is 7.39%. The migration of impoverished rural population to Dhaka city is to find a better life which has been created a population boom. There have been some crucial factors for the city's growth. Such as natural growth, territorial expansion, job opportunities, educational institutions and healthcare facilities, industrialization, manufacturing, etc. Mainly, textiles (readymade) garments have focused the Dhaka into a primate city. The textiles are contributing nearly 40 % of the national GDP which is the big sector for internationalization process of Bangladesh. Besides, in the popular perspective, the capital is where one needs to be to pursue big dreams. The leading effect has been an unsustainable demand for urban land, leading to a large population density and sending the urban land value to an economic view. The pressure on land rapidly altered the city's traditional urban fabric, particularly low-rise residential areas.

4.1. Sustainability Related Major Problems and Challenges in Bangladesh

Urbanization has brought remarkable development in Bangladesh, even though it has been a great challenge environmentally, socially, and economically. These challenges have to face efficiently to build a sustainable city. In general, a sustainable city must be economically viable, socially peaceful, and environmentally friendly. More specially, a sustainable city is where people live in peace with sufficient income earning and quality of life, and without social and mental anxiety. Hardoy et al. (1992) note that a sustainable city provides the healthy environment and meets multiple goals, i.e., healthy living and working environments: access to water and sanitation, waste disposal, drains, paved roads, and other forms of infrastructure and services essential for health and for a prosperous socioeconomic base.

These definitions indicate major challenges of urbanizations as well as characteristics of a sustainable city. In the following sections, we try to describe major challenges, particularly in Dhaka city, which are very important for sustainable urban development. Moreover, Environmental problems in the cities constitute air, water, and noise pollution, and also problem-related with solid wastes (toxic or hazardous wastes). The process of industrialization and urbanization leads to deterioration of healthy environmental conditions. Uses of fossil fuels in industry, transportation, and household cause huge contamination of air, water, and soil. For example, 12.60% of the death in Jakarta is related to air pollution causes (World Resources Institute 1996).

Rehabilitation of the urban poor and housing are the major challenges in cities of developing country. In some cities (e.g., Mumbai), informal settlements and slumps, and squatters may form more than 50% of cities population (Islam 2001b). Dhaka city of Bangladesh, almost 34% of the city's 13 million residents live in 5,000 slum and squatter settlements (CUS 2006). The growth of the cities both in terms of areas and population has consistently been faster than the growth of infrastructural provisions and services in Dhaka. Resulting, a large section of the urban population does not have access to basic infrastructure services. However, in the third world cities, the poverty incidence advises that urban is a habitat of extreme opportunities for the riches, but not the poor.

The urban poverty levels are lower than rural poverty levels, but the absolute number of poor and undernourished is rapidly increasing in the cities. The context of poverty, it has been supposed to a key driver of violent crime too. One billion people, about one-sixth of the world population, currently live in shanty towns (by Whitehouse, 2005). These are seen as "breeding grounds" for social problems for example crime, alcoholism, drug addiction, unemployment, and poverty. Also, Flood is also a common hazard in the cities of Bangladesh. Depending on the time of the day, between 45,000 and 86,000 people may perish due to collapse and damage to the structure. The number of critical injuries may range between 110,000 and 210,000, with severe damage to the emergency relief and healthcare infrastructure (Ansary 2004).

5. Conclusions and Policy Implications

Rapid urbanization in the cities of developing countries as Bangladesh has been a dilemma of economic development and environmental sufferings. Our study tries to examine the issue of urban population growth and consequential challenges of urban sustainability and environmental issues in Dhaka city. It is manifest that Dhaka city is gradually going to be suffering from inadequate infrastructural services, social insecurity, natural and human-made hazards, and poor urban governance. This study shows that local government is one of the key factors for the urbanization growth of the Dhaka city. Finally, based on the urban challenges, this paper recommends some good strategies that can be considered to the sustainable urban development and to solve the environmental issues. The local government can increase the public participation in sustainable development for urban growth in Dhaka city. The policymaker can formulate a strategy for urbanization growth and green environment by training on public participation and facilitation for urban people.

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