

Decentralization for Sustainable City Environment: A Case of Solid Waste and Transport Footprint of Dhaka City

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The theme of world town planning day 2013, “Planned Decentralization: Aspired Development” is very crucial for ongoing development trend of Bangladesh. Bangladesh is going through major political and economic changes in present years. In this context major cities of Bangladesh is working as development engines, showing high urban concentration with unplanned growth pattern. Despite the fact that cities and towns are both legacies and achievement of civilization but exploiting the capacities of cities over and over make cities dysfunctional to live. Here the impulse of planned decentralization could enhance the livability of major cities and also ensure equity and sustainability throughout the nation.

Bangladesh's urban population has been growing at a yearly average rate of 6 percent since independence, at a time when the national population growth was 2.2 percent. As a result, urban population has grown six-fold, compared with a 70 percent increase in rural population (World Bank, 2007). Bangladesh has one (1) mega city, three (3) metropolitan cities, seventeen (17) cities, one hundred and twenty six (126) medium size town and three hundred and ninety (390) small towns (BBS, 2008). Among all these urban areas Megacity Dhaka itself contributing to accommodate 37% of total urban population; three metropolitan cities are accommodating 19% of urban population and rest is in municipalities and other urban areas (BBS, 2008). The urban concentration of the country can be simply determined by the relative primacy rate it is the proportion of urban population to the largest city of the country (Henderson, 2000). In case of Bangladesh it is 37, based on the urban population share of Dhaka. This shows the very high concentration of urban growth in Dhaka city. Excessive growth in one city often leads to lowering the livability of the city area. This phenomenon is clearly evident, according to 2013 Economist Intelligence Unit's (EIU) Global Livability Survey; Dhaka is ranked as second least livable city in the world (Daily star, 2013).

Several studies have identified some major reasons for high urban concentration at the megacities, for developing countries some common reasons are population migration, economic investment concentration, industrial foci, political and

administrative headquarters deliberation and lucrative urban amenities and so on. For Dhaka all these reasons are valid. As a capital city of Bangladesh it is the focus of most of the political, administrative and economic functions. Dhaka works as migration magnet for numerous reasons. New arrivals are pouring in at the rate of 5 lakh a year (Daily star, 2009). In recent times climate disrupted victims largely migrated to Dhaka in search of livelihood. Economic investments are also focused on Dhaka. For instance; RMG sector playing a major role in national economy and most of the RMG factories are located in or around Dhaka city; this attracts a lot of village labors to come, work and live in Dhaka. Besides private housing or real estate sector is another major contributors to national GDP and it is also based on Dhaka and its surroundings. In addition to migration and economic foci; this city is also the political and administrative hub of the country. The national assembly is located in it, causing the huge influx of political activities in the city. Moreover all the departments of government have headquarters at Dhaka as well as the private sectors officials' headquarters are located in this city. Comprising all these effects of migration, investment impulses, political and administrative complexity Dhaka has become an outlier compared to national average in context of environment, economics and functionality.

This high unplanned urban concentration in Dhaka is resulting in several civic problems and those in turn lowering the livability. Among numerous problems some major aspects are related to city environment and functionality of transportation sector. Due to excessive urban concentration the city environment is being polluted in several ways beyond the control of the city authority; solid waste, river pollution, ground water depletion, air pollution, heat island effect, flood vulnerability increase; are some common types of environmental problem in Dhaka. This is also summing health, climatic and economic vulnerabilities to most of the low income people of the city; they are about 3.4 million, living in 5000 slums of Dhaka city (Islam, 2005).

Besides environmental degradation, transportation system of Dhaka city is one of the most important concerns for its inhabitants. The transport conditions in Dhaka are characterized by chronic traffic congestion and delays, low quality of public transport service, lack of comfort and safety for pedestrians and growing air pollution (World Bank, 2009). Here traffic congestion cost Tk 19,555 crore (nearly \$3 billion) financial loss, wasted time on the streets accounts for nearly Tk 11,896 crore followed by environmental cost Tk 2,200 crore and business loss of passenger transport and freight industries Tk 2,000 crore each. Excess fuel (at the rate of CNG price) eats up Tk 575 crore and accidents Tk 50 crore. It also cost 3.2 million business hours are lost every day, which is about one hour per working people (The Daily star, 2010).

Considering environment and transport sector; planned decentralization for short and long term period could be sustainable solution for this city to enhance the environmental condition and to achieve sustainable transportation system. Compared to other metropolitans and urban areas several types of decentralization aspects are discussed in this paper from environmental and transportation system context. From environmental and transportation point of view only solid waste, carbon footprint are considered for this discussion.

With large city area and mammoth population it is inevitable to have huge solid waste generation and larger carbon footprint for transport travelling in the city area. But optimum distribution of population can solve these problems, for which decentralization is required. Now if we consider the solid waste point, it is seen that Dhaka city alone responsible for producing 34.76% of solid waste per day among all the urban centers of the country. Table 1; is showing the production of solid waste for different urban centers of Bangladesh.

Table 1: Solid waste generation and GHG emission potential at different urban centers in Bangladesh in 2005

City/ Town	No. of city/town	Population (2005)	Average total waste generation per day (ton/day)	GHG emission potential, million ton CO ₂ eq/ year
Dhaka	1	6,728,404	4,634.52	0.76
Chittagong	1	2,622,098	1,548.09	0.25
Rajshahi	1	468,378	172.83	0.03
Khulna	1	967,365	321.26	0.05
Barisal	1	437,009	134.38	0.02
Sylhet	1	386,896	142.76	0.02
Pourashavas	298	15,214,306	4,678.4	0.77
Other urban centers	218	9,217,612	1,700.65	0.28
Total	522	36,042,067	13,332.89	2.19

Source: Waste concern, 2009

Here, Dhaka city potentially can produce 0.76 million ton CO₂/ year; this in turn produces a carbon footprint of 239,592.704 gha (global hectares) (Ewing, Moore, Goldfinger, Oursler, Reed, & Wackernagel, 2010). While the second highest city Chittagong; can produce one third of Dhaka. So, it is clear that from solid waste generation point of view, Dhaka's environment is much more vulnerable to pollution

than other cities. Now if we look at the population portion Dhaka's population can be considered as outlier than other city areas. Hence redistribution could be desirable. Due to excessive generation of waste in Dhaka the waste management process cannot adequately manage wastes and in many cases we observe the open dumping of waste in surround water bodies of Dhaka, result in the degradation of water quality. Solid waste is often also responsible for contamination of ground water table due to percolation of leachate in landfill areas. Besides from the landfill site generated gas from solid waste is diminishing the air quality. Moreover the waste generated from hazaribagh tannery is mainly killing the river Buriganga. High level of investments now requiring managing such vast amount of waste generated in Dhaka. While this can be easily managed if; the population and infrastructure concentration are not reaching beyond the city's natural capacity. The ecological footprint of 239,592.704 gha for solid waste shows it require 5.28 time Dhaka to absorb the carbon dioxide effect produced form solid waste (Dhaka's physical footprint is 360 square kilometers equivalent to 45360 gha, BBS, 2008).

Dhaka is the most active activity hub of the nation. Numerous trips are made every day to meet the drive demand of transportation. Keeping pace with the increasing demand, supply of transport infrastructure and vehicles are also increased. More and more motorized vehicles are running on the city streets. Due to huge influx of private vehicles, most of the city's major arterial channels are often being facing low level of service and causing traffic congestion. Managing such large number of vehicles is also become difficult for the management authorities. Mainly from environmental concern, ecological footprint of transport sector of Dhaka is indicating the in sustainability of this sector, on an average 2,806,992 ton CO₂/ year is produced form transport sector; this exceed the biocapacity of Dhaka by 90.86 times and around 19.58 times of Dhaka is required to absorb the CO₂ produced by transport sector (Labib, 2013). Besides large ecological footprint for transportation sector only, this sector is also responsible for severe air quality degradation and increasing the probability of traffic accidents within city area. Despite large number of flyovers are being created Dhaka's transport sector is still facing deficiencies as the solution remain in other sectors such as land use planning, trip management ect. But above all the concentration of activity is mainly causing the most problems. More and more official location in Dhaka is attracting more and more trips to Dhaka and within it. While other districts of Bangladesh are lagging behind in terms of physical investment in transportation system.

Dhaka based concentration of development activities and investments are making Dhaka as a bright city to more migrants to come and live in this city. As a result this city is becoming more and more dysfunctional day by day in spite of lot of initiatives

to control the life standard of this city. Solid waste and transportation clearly show that; this city is becoming more unsustainable due to over exploitation of its natural capacity. Here we need some short and long term decentralization interventions, some of possible decentralization interventions are briefly discussed here.

From administrative decentralization point of view, it is necessary to relocate some of the officials units both governmental and private to other officials' zones in other districts. For this development of communication system in other districts should also be simultaneous. Some administrative power could be shifted from the central authority to the divisional authority in order to make work more flexible in divisional area. Good governance promotion and strengthening the local government could also reduce the pressure of official work on Dhaka; this in turn could help to shift of population form this city to other areas.

Many families and students migrate to Dhaka in search of better education facilities. It would helpful if, some major universities could be built in other districts and maintain the education quality. Redistribution of school system in other districts could help to reduce the pressure of school and college going students in Dhaka.

From fiscal decentralization view point; more and more budget could be given to municipalities to increase the quality of urban services which would create other urban areas lucrative to live and reduce the pressure from Dhaka.

Market decentralization could help to achieve the main goal of decentralization; if investments are made in other districts than Dhaka more and more labor will be attracted and need to migrate. Relocation of hazaribagh tannery, RMG factories could promote the decentralization of market forces towards other districts than Dhaka. Only if RMG factories are relocated to other areas with better connectivity, a huge pressure of population would be released as lot of migrated works in Dhaka would be shifted to other areas. Besides new industrial districts need to be promoted in areas like Chittagong, comilla, rangpur, Khulna to attract the investors and the climate change migrants in order to work in those areas instead of coming towards Dhaka.

When political, administrative, fiscal and market decentralization would together and proper power shifting is occurred, the population pressure on Dhaka city could be released to considerable level. The solid waste generation and management would be more efficient and would be within the city's natural capacity and transport sector would become more functional. The ecological footprint of Dhaka for solid waste and transport could be sustainable only if proper deconcentration of population occurs. Otherwise the excessive investments would bring low results and would not

solve the problem of low livability score of the city. To promote such decentralization the cities outside Dhaka, have to become more attractive. In this case devolution; the transfer of governance responsibility for specified functions to sub-national levels, either publicly or privately owned, that are largely outside the direct control of the central government (Ferguson and Chandrasekharan, 2004) could be helpful as a part of long term decentralization. Integrated use decentralization in national policy could ensure the livability of large cities and it could promote the sustainability of city environment.

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