Rethinking the Residential Building Setback Rules of BNBC for a Sustainable Development of Chittagong City

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Abstract—Bangladesh National Building Code is a comprehensive document used for legally obligatory codes of development in urban areas to enrich citizens’ living environment. Due to the rapid urbanization, cities have been changed its natural eco-system and overlooked the existence of green spaces, whereas quality of urban life requires a greater degree of naturalized surroundings. Green spaces generally is used as an enhancing indicator of the living environment quality that making cities more sustainable and livable. In Chittagong city, a lack of environment-friendly planning with an absence of sustainable mindset has decreased with high level of green spaces. The main concern of this paper is to address the rethinking of residential building setback area of BNBC for the sustainability of the city where they inhabit. The study will not only discover the feasibility of creating green corridor spaces but also indicate a sustainable approach to boost the quality of urban neighborhoods.

Keywords—BNBC, Green Corridor, Building Setback, Sustainability.

I. INTRODUCTION

The urban living environment quality depend a big deal on the quality of infrastructure and their appropriate management [1]. Over the last decades, for the hasty globalization in urban neighborhood, our cities have been changed its natural ecology and ignored the existence of green spaces, whereas quality of urban life requires a greater degree of naturalized surroundings [2] & [3].

In Chittagong City is not only the second largest city but also the commercial capital of Bangladesh where various authorities have made some efforts to increase social or urban neighborhood facilities. However, the tremendous population pressure has far exceeded these facilities, which are deteriorating the quality of such services [4]. It is estimated that over 50% [5] of population of Bangladesh will be living in urban areas whereas city’s living environment turns into unpleasant situations.

Like others developing counties, a lack of environment friendly residential area planning with absence of sustainable mindset has decreased high level of green spaces in the Chittagong. In this country’s residential building plots are constructing with individual property boundary line according to maintain BNBC setback rules. The main objective of the study was to create urban green living strategy development into existing and proposed residential areas of the Metropolitan city, Chittagong. It not only aimed to identify and select the indicators of applications of BNBC rules that are implemented already in residential area but also tried to find out the sustainable guidelines for residents where they live in.

II. BNBC

Bangladesh National Building Code (BNBC) was prepared to control the technical details of building construction and to maintain the standard. In 1993, BNBC was first drafted and informally reviewed and updated. The Code is a comprehensive document that is used for legally mandatory codes of development in metropolitan areas of Bangladesh to enrich citizens’ living environment [6]. Due to worldwide climate change and unsuitable geographic setting of Bangladesh, that has affected mostly on the building and construction sector [7].

III. STUDY AREA

The aim of creating a green corridor in residential areas, consider to finding the preliminary data of Detail Area Plan (DAP) of Chittagong. From that review shows, no standards of urban facilities and urban amenities have been determined and needs to be established, whereas, the twenty-eight numbers of major residential areas are undertaken by different organization of Chittagong city. However, the authority will ensure a designated program of tree planting both roadside and within plots [8]. Due to the green initiatives of several authorities of Chittagong city, the study ranges have counted within that twenty-eight major residential zone.
IV. FINDINGS

In this city’s residential building plots are constructing with individual property boundary line according to maintain BNBC setback rules [8]. As a common strategy is to apply for arrangement of plot planning, all plots are not only separated with adjacent plots, but also created a barrier with surrounding neighborhoods. Every building has a front road and each backside is backside of another one. So that the coded setbacks are not properly utilized and proposed setbacks are not fully contributed with its surrounding context sometimes that space is occupied by extension of parking or accommodating with poor greeneries space.

To construction in any contexts especially in residential area, residents follow all kinds of BNBC rules to implement steps by steps. In BNBC [9], the minimum side and rear open space requirements of a plot for buildings of various occupancy classes shall be as specified in TABLE 1.

<table>
<thead>
<tr>
<th>Building of all Occupancy</th>
<th>Plot size (m²)</th>
<th>Minimum Rear Open space (m)</th>
<th>Minimum Side Open space (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 10 stories or 33m</td>
<td>Not Over 200</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>201-275</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>276-300</td>
<td>2.0</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>301 and over</td>
<td>2.0</td>
<td>1.5</td>
</tr>
<tr>
<td>11 stories or more 33m</td>
<td>Any</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

m = meter, m² = square meter.

V. DISCUSSION AND RECOMMENDATIONS

There is no established explanations of a sustainable city, whereas it has arisen with the concept of sustainable development, include the aspects of urban planning and community development [10]. After Local Agenda 21 consultations [11], some cities have been developing their own sustainability guidelines, and adopting quality of life issues in a meaningful approach and have decided to take on different regulatory, administrative, and financial aspects for that. Aspects such as “amount of public green spaces per inhabitant”, “green corridor spaces” and “recreation areas” are often mentioned as key factors to make the city livable, soothing and attractive for its societies. It is strongly believed that “sustainable development of cities is not just about improving the abiotic and biotic aspects of urban life, it is also about the social aspects of city life, that is - among others - about people’s satisfaction, experiences and perceptions of the quality of their everyday environments,” [10] & [12].

In these above situations, the relation between green corridors and city sustainability, building setback rules is one of the vital aspects that should be rethinking of BNBC to proper use as the boost up the quality of the urban neighborhoods, which in turn is a key factor of sustainable development. The minimum side and rear open spaces are respectively shown in previous Table 1; whereas the maximum values have considered for increasing building height more than nine to ten stored with respect its inhabitant’s desire and pressures of urbanization.

The study has introduced four guidelines of side and rear open spaces. These four options have shown two common segmentations with different layout, and one space is for tree plantations and another one is walking way over inhabitants’ utility drainage. Moreover, that passageway can also use for internal community interaction space, children play area, and the dedicated tree plantation spaces can promote green corridor in a residential area. For this purpose, the study area will consider by accommodating into two adjacent building’s setback spaces respectively consider of 3m rear setback and 3m side setback from one plot and another is 2m rear setback and 1.25m side setback. That is followed below in figure:

![Fig. 1. Proposed green spaces in rear setback area with interaction space and drain way (option one).](image1)

![Fig. 2. Proposed green spaces in rear setback area with interaction space and drain way (option two).](image2)
VI. CONCLUSION

The Bangladesh National Building Code (BNBC) was composed with limited chapters on climate change aspects. In the building sector, present code and standards are still based on experimental statistics from the past. As the climate change has been proven a reality now, it is appropriate time to adapt that in the code [7].

Just imagine what our urban neighborhoods would look like and what the authorities would manage resident's living environmental quality issues? If everyone did what they wanted with no reflect for their neighbor, so that the living space qualities of community should be provided for existing and planned residential areas.

By rethinking building setback rules of BNBC, proposed green corridor space opportunities can be integrated into sustainable improvement to provide maximum benefit and amenities. Due to the green corridor promotes an urban nature, inhabitants can fulfill many kinds of social functions and psychological needs, and different age-groups can easily use this space to walk; children can ride their bicycle safely. In that case, new introduction and implementation of green corridor spaces into residential areas, this proposal will have to be coordinated with a fluidity plan and integrated strategy outlining that adopt into BNBC. However, including new policies with environmental and nature protection in the urban territory that will require collaboration programs with government, architects, city planners, civic organizations and private individuals.

REFERENCES


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