

Round Table Discussion on Implementation of National Building Code

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Keynote Paper on National Building Code and Its Implementation

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Abstract

BNBC was first drafted in 1993 but not formally reviewed and updated. In 2006 the Building Construction Act was amended to include a new section 18 A, empowering the government to promulgate the building code as a legally binding document. Further in December 2009 the House Building Research Institute (HBRI) involved leading experts from BRTC, BUET and outside to update the code and act within a year and make it available to all.

The present paper gives a brief account of the history of urbanization in Bangladesh to emphasize the need for a building code. Analysis of relevant Acts and Codes those are essential in understanding the formulation and implementation of the BNBC is also discussed. Example of disasters from faulty construction, lack of enforcement of codes and laws, malpractice etc. are also included in the paper.

1.0 BACKGROUND

In 1993 the Bangladesh National Building Code (BNBC) was made to regulate the technical details of building construction and to maintain the standard of building construction with the following two main objectives;

- To provide safe and healthy habitat by regulating all activities related to buildings such as planning, design and construction.
- To provide guidance for a uniform start of practice in planning, design, construction aspects as well as service facilities such as electrical, mechanical, sanitary and other services.

The Code has been notified by gazette of the Government of Bangladesh and is a comprehensive document that can be used for legally binding codes of development in urban areas of Bangladesh. It covers planning administration and enforcement, general building controls and regulations, requirements for different uses, fire protection, building materials, design and services. Importantly, it also considers building use (occupancy classes), density and building height.

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2.0 BANGLADESH & URBANIZATION

Bangladesh is still a relatively low urbanized country compared to other Asian countries but the country experienced a remarkable rate of urban growth both in terms of urban population after its independence in 1971. Level of urbanization and Urban centers in Bangladesh grew at a sluggish rate up to the 60s and flourished in the post liberation period.

Despite a rapid pace of urbanization in Bangladesh in recent years only a little over a quarter of the population live in urban areas. The dynamics of this rapid urbanization in Bangladesh should be attributed to its demographic, economic and social fabric. The over populated rural areas, burdened with natural calamities, landlessness and poverty will push more people towards the cities. The consequent swelling of urban areas without planning of the cities is now a major problem of urbanization in Bangladesh.

The 2001 census placed the population of the country at 123.1 million while the current population is estimated at over 136.40 million. The total urban population according to the census of 2001 was 28.81 million. After the independence of Bangladesh, urban population growth received a momentum from 6.27 million in 1974 to 28.61 million in 2001². A revised of the national population growth and urban population between 1951 to 2008 is shown in table below;

Table 1 : Growth of national and urban population (Million)in Bangladesh, 1961-2001

Census Year	Total National Pop ⁿ	Annual growth rate of national Pop ⁿ	Total urban Pop ⁿ	Urban pop ⁿ as % of total Pop ⁿ (level of urbanization)	Decadal increase of urban Pop ⁿ (%)	Annual (exponential growth rate of urban Pop ⁿ) (%)
1951	44.17	.50	1.82	4.33	18.38	1.69
1961	55.52	2.26	2.64	5.19	45.11	3.72
1974	76.37	2.48	6.00	8.87	137.57	6.62
1981	89.91	2.32	13.56	15.54	110.68	10.03
1991	111.45	2.17	22.45	20.14	69.75	5.43
2001	123.10	1.47	28.61	23.10	37.05	3.15
2008 ³	136.40	1.47	35.47	26.00	-	3.50

Source : Bangladesh Population Census 1981, Report on Urban Areas, 1987 and preliminary Report, Population Census 1991 and BBS, 2005. For 2008, estimated by CUS, 2008.

Although the national population growth rate has declined considerably over the last few decades, it still stands at around 1.4% per year. Urban population growth rate was extremely high in the 1980s and 1990s at over 7 percent annually. It has however fallen since then but still remains at about 4 percent per year.⁴ Even at a somewhat declining rate, urban population is likely to be 39 million by 2011, about 50 million by 2021 and may exceed 60 million by 2031.

² BBS, 2005

³ Estimated

⁴ UN 2004

Table 2 : Urban population projection in Bangladesh 2000-2015

Census Year	Total National Pop ⁿ	Total urban Pop ⁿ	Urban pop ⁿ as % of total Pop ⁿ (level of urbanization)	Annual Urban Growth (%)
2000	141.1	37.3	26.4	4.8
2005	155.8	46.4	29.8	4.4
2010	170.5	56.8	33.3	4.0
2015	184.6	67.9	36.8	3.6

Source : World Bank, Bangladesh Economic and Social Development Prospects (Report No. 5407), April 1985 p 126, Table 9.8

3.0 ANALYSIS OF RECENT ACTS & POLICIES INCLUDING BNBC

A brief review of the various laws, Acts, specifications which are relevant and related to urban development and also to the BNBC are briefly discussed here;

- a. The Building Construction Act, 1952⁵
- b. The Town Improvement (TI) Act 1953
- c. Building Construction Rules 2008⁶
- d. Bangladesh National Building Code (BNBC) 2006
- e. Land Development Rules for Private Housing 2004

a. Building Construction Act 1952

The Act provided regulations regarding set backs, building heights etc. in urban areas. The act also provided for prevention of haphazard construction of buildings and excavation of tanks which are likely to interfere with the planning of certain areas in Bangladesh and enables government through Section 16 to make any substantial rules for carrying out the purposes of this Act.

b. The Town Improvement Act (TI), 1953

It is the first statute which recognized the need for planning approach and created a special agency⁷ for development such as preparation of master plans, improvement schemes, their implementations. The objective of the TI act, 1953 is to;

- Develop, improve and expand city of Dhaka by opening up congested areas
- Laying out of altering streets
- Providing open spaces for the purpose of ventilation or recreation
- Demolition or construction buildings
- Acquiring land for the said purpose and for
- Re-housing of persons displaced by the exclusion of improvement schemes.

c. Building Construction Rules 2008⁸

These rules superseded the previous Building Construction (BC) rules of 1984. These rules seek to control development plot-by-plot and case-by-case. It controls

⁵ EB Act II of 1953. After independence of Pakistan in 1947 the cities were growing rapidly. The 1932 Bengal Municipal Act, 1932 was the only regulation for building control. To address the situation the government promulgated the EBCC ordinance, 1951 which was later re-enacted as the EBCC Act, 1952.

⁶ Amended in 1952, 1984, 1996, 2006, 2007

⁷ Created an efficient, autonomous agency which was Dhaka Improvement Trust (DIT) in 1956 and became RAJUK through an amendment in 1987.

⁸ Amended in 1952, 1984, 1996, 2006, 2007.

development by imposing conditions on set backs, site coverage, construction of garages, access to plot, provision of lift, land use of that particular plot and height of building. Restricting the height of a building in BC Rules 1996 helps to control the density of an area and manage the growth of the city in some way⁹.

The Dhaka Metropolitan Building Construction Rules 2008¹⁰ superseded the earlier set of rules issued in 1996 for the Dhaka Metropolitan Area and provided more authority to RAJUK in the following way;

- Clear-cut responsibility to monitor the development of the city,
- Spread out the responsibilities to various actors,
- Spelled out responsibilities of building designers, structural engineers, site supervisors and their penalties etc.

One of the most significant improvements is the introduction of Floor Area Ratio (FAR). To manage the growth of the city it provides rules of building coverage area, allowable floor space and relation among building height - road width and plot size.

Effectiveness of the new BCR rules will depend on how successfully implementation of these rules can be effected by RAJUK in a transparent way and keeping themselves away from corruption.

d. Bangladesh National Building Code (BNBC)¹¹

In order to ensure optimum return of substantial portion of national resource invested in building construction, in both public and private sectors and to achieve satisfactory performance of any building, construction needs to be controlled and regulated.

These instruments needed updating, rationalization and unification. It was therefore felt that a comprehensive building code would serve the purpose of a uniform national standard. The work to develop the Code began in 1992 and was completed by the end of 1993.

Purpose of the Code

The purpose of the Code is to establish minimum standards for design, construction, quality of materials, use and occupancy, location and maintenance of buildings within Bangladesh in order to safeguard, within achievable limits, life, limb, health, property and public welfare.

Scope

The provisions of this code shall apply to the design, construction or occupancy, alteration, moving, demolition, repair of any building or structure and to any appurtenances installed therein or connected or attached thereto, except such matters as are otherwise provided in other ordinances and statues controlling and regulating buildings. It is stated that the provisions of the code are applicable to all persons of Bangladesh.

⁹ RAJUK, 1996

¹⁰ Amended in 2006, 2007.

¹¹ Legislative measure for such control has been taken in the Building Construction Act of 1952 and other acts, ordinances and regulations, and are supplemented by local and development authority rules.

Existing Building

Buildings which are in existence on the date of promulgation of this Code may have their use or occupancy continued without undergoing any alteration, abandonment or removal unless in the opinion of the authority such continued use is hazardous to life and property and provided such use or occupancy was legal on the promulgation of this Code.

PRELIMINARY REVIEW OF BNBC 1993

Bangladesh National Building Code (BNBC) of 1993 came into effect with a gazette notification issued on November 15, 2006. It has been made mandatory to comply with in any building construction under the Building Construction Act of 1952 to ensure accountability in the management of overall building construction and safety of the buildings.

As per section 2.1 of chapter 2 of part 1 of the BNBC 1993 the Government is under obligation to establish a new or designate an existing agency responsible for the enforcement of this Code with a given area of jurisdiction. However, the Government is yet to set up any Code Enforcement Authority. Thus, absence of regulatory authority to care for all safety aspects of building as per BNBC is a major concern.

The BNBC 1993 has dealt only with construction, structure, material, geo-technical, seismic aspects, etc. of development. The BNBC has left out the planning aspects of development as is evident from section (f). All these planning and development factors need to be incorporated in the BNBC, if it is to produce a safe and livable environment at all.

Apparently existing BNBC, 1993 provides insignificant consideration on environmental influences on planning, design, construction and selection of construction material for buildings.

In exercise of power under Section 18A of the Building Construction Act, 1952, the Government of Bangladesh made the Bangladesh National Building Code in 1993, which came into effect with a gazette notification issued on November 15, 2006.

Section 2.6 of Part 2 of the BNBC only provides that violation of the Code will be an offence and the authority shall take legal action. However, it prescribes no procedure for institution of legal proceedings, which need to be addressed.

In view of the above, the provisions of the Building Construction Act, 1952 along with the Code need to be updated considering the present socio-economic situation of the country.

e. Land Development Rules for Private Housing 2004

This is a legal instrument for controlling land development in private sector housing. It provides procedures and guidelines for land development protecting the environment. It also spells out the percentages of land that must be kept for community facilities, amount of land to be sold out, school sites, road hierarchy and importantly planning standards, for example, allocation of land per 1000 population.

4.0 CURRENT EXAMPLES OF DISASTER

April 11, 2010 marks the fifth anniversary of the collapse of the Spectrum/Shahriyar Sweater factory in Bangladesh, which killed 64 workers and injured 80 persons and below are list of more recent disasters in Dhaka.



BEGUN BARI _ June 1, 2010

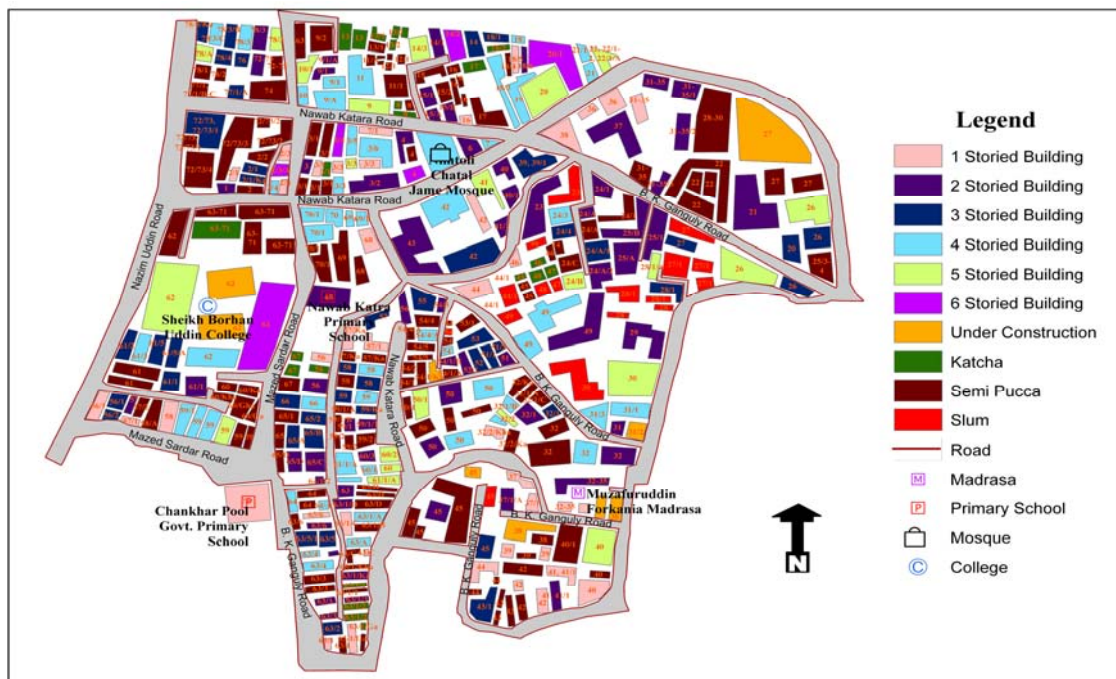
A five-storey building toppled onto three tin-shed houses in Begunbari area at night on 1 June, resulting death to 23 people.



NIMTOLI_3 June 2010

The flames that gutted eight buildings and over 20 shops and Killed 120 people at Nawab Katra of Nimtoli.

Map : Update of Landuse of Ward 69, DCC¹²



For this observance of national mourning day in memory of the victims of the Nimtoli blaze and Begunbari building collapse was yet more reason and opportunity for the country to reflect on the two tragedies that have left us all scarred and grieving. There is absolutely no excusing the authorities for the gross lapses in the way they have exercised, or not exercised, their responsibilities in ensuring citizens' safety in as densely populated a city as Dhaka.

We have seen a clear absence of urban planning or deviation from codes relating to such planning making casualties of lives and property year after year. It is not acceptable

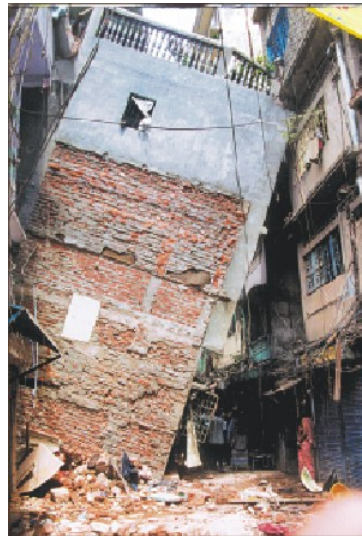
¹² Source : Salma A. Shafi June 2010

because when an individual violates the rules and goes into building a structure in defiance of the rules, it is for authorities such as Rajuk or the city corporation to take swift action. Map of Ward 69 which includes the area of Nimtoli has been closely reviewed and updated by the author. The map produced by DCC is a good example of updated information on building height, structure, land use. Yet people and the government remain unconcerned about the disaster that are invited to happen there. The community and the authorities are equally responsible for the disaster.



PHOENIX GARMENTS_25 Feb 2006

On 25 February 2006 at about 11 hours this 5 storied building complex collapsed living 21 dead and several injured. The building that housed the factory of Phoenix Fabrics a year ago was being converted into a 500-bed hospital. There were also showrooms of Phoenix Fabrics and Phoenix Electronics on the ground and first floors and a number of tin-shed rooms on the rooftop. Experts blamed faulty and unplanned construction for the collapse.



SHANKHARI BAZAR (Building Collapse)

10 June 2004

11 people were killed in a predawn collapse of a six-storey building built on 200-year-old three-storey foundations at Shankhari Bazar in Old Dhaka on 10 June 2004. The building, was among the 32 structures, built without designs, in Shankhari Bazar that Rajuk marked as highly vulnerable.

These disasters have been forgotten because such faulty buildings still continue to be built and used inviting future disasters.

5.0 Case Study : Japan Garden City

JAPAN GARDEN CITY¹³

Japan Garden City is a private high rise apartment housing complex on a chunk of land measuring approximately 9.78 acre at 24/A Tajmahal Road (Ring Road), Block C,

¹³ Case study on Japan Garden City project quoted from study of Planner Akter Mahmud titled as 'Management of Growth and Planned Development of Dhaka City: The Necessity of Proper Enforcement of Planning Standards '

Mohammadpur, Dhaka. As the company claims in its brochure, only 43 percent of the area is used for residential and commercial purpose and the rest 57 percent for beautifying the environment with a host of recreational facilities. In reality it is a congested, extremely high rise residential complex of 27, 16-storied buildings in monumental scale where there are 1,803 flats for residential use and an ancillary service building with hospital, commercial and other services as part of the complex. The company estimates that this complex will house about 2,490 cars. The flats will house more than 9,000 people and ancillary services will attract another 1,000 people, leading to a population of 10,000 in an area of 9.78 acres. The gross density will be around 1,020 persons per acre which is more than three times the UNCHS standard.



Planning Standards Violation

The master plan shows a playground, lake, garden and fountain at centre of the project area. Field survey found that, this place is nothing but the circulation area of traffic movement. Except one play field in front of the school there is no other open spaces for 10, 000 people. The question is: is only one school play ground of 1.25 acres enough for 10,000 people and at least 1,803 children of the community (if it is assumed that each family would have one child). 27 high rise buildings of 16 stories each constructed very close to the other at distances ranging from 8 to 10 ft. violate setback and height restriction rules. As a result the area has been converted into a high-rise slum complex.

Table 3 : Comparison of Land Use Allocation in Japan Garden City with Land Use Standards According to Private Housing Land Development Rules 2004.

Items (Land Use)	RAJ UK Standards ¹⁴	Provisions in Japan Garden City ¹⁵		
	Facilities (Acres/1000 persons)	Area in Acre	Facilities (Acres/1000 Persons)	Actual Provision as a percentage of required Provision ¹⁶
1	2	3	4	5
Educational (with playground)	0.34	0.05	0.005	1.47
Health Care	0.08	0.00	0.00	0.00
Community Organizations	0.04	0.09	0.009	22.50
Recreation (playground and Park)	0.20	1.25	0.125	62.50
Commercial	0.04	0.70	0.07	175.00
Road	0.34	3.19	0.310	91.17
Net Residential area	1.00	4.50	0.45	45.00
Persons per acre	350	-		1020

Source : Akter Mahmud

¹⁴ Land Development Rules for Private Housing 2004

¹⁵ Field Survey 2006

¹⁶ (Col.4/Col.2) x100

6.0 Conclusion

Chairman of Rajuk Md Nurul Huda said government has formed a committee headed by the chief engineer of Rajuk to identify the risky buildings of Dhaka City and they will take action against the structures as per the rules within a month.¹⁷

An agreement has been signed with HBRI and BUET on the 15th December 2009 to review and update BNBC 1993, review and update the building construction act 1952 and the administrative and implementing provisions of it. A team of 33 experts from BUET and others are gathered for updating the code and the team of BRTC, BUET has submitted the Inception Report in February 2010. Their preliminary comments related to the topic are;

Development Control and Enforcement Landuse and Zoning

The zoning basis for development control is over rigid. The present system is based on the assumption that all land development proposal will be subject to detailed assessment and approval procedures.

There is wide spread disregard for development control rules and RAJUK centralized control structure compounds the problem.

Standards and affordability

- Rajuk should set codes and space standards in conformity with income groups, locations and use type.
- Compliance of such codes and standards is missing
- RAJUK has not declared their plans to deal with informal/unplanned use
- There is a need to involve develop partners to implement DAP. These partners are DCC, NHA, HBRI, PWD, UDD, LGED to start with.
- RAJUK's governance structure, institutional strengthening decentralization of activities etc. is needed.

Development control

Development control is largely hampered by various reasons. We can summarize the problems of development control in the following ways:

▪ **Existing planning rules are not exercised properly**

In RAJUK very few planners are working for a city of more than 12 million people with so many constraints. RAJUK can set up decentralized zonal offices dividing the city in different zones. For demarcation of zones they may think of using the ward boundaries in the DCC area and union boundaries outside the DCC but within RAJUK areas. If it is considered that one planner should work for one lac population, Dhaka City needs at least 120 planners for its planning and growth management. It is not an unrealistic proposal or an impossible one to employ local level planning also. Rajuk's short comings are;

- **Lack of regular supervision of concerned officials**
- **Insufficient number of building inspectors**
- **Absence of database management system and new technology in regular practice**

¹⁷ June 7, 2010

Reference

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- Legal Aspects of planning and development, Dr Mohsin Uddin Ahmed, 2007
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