

Revisiting Planning Standards for Open Spaces in Urban Areas from Global and National Perspectives

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Abstract

Open space are regarded as an integrated part of urban areas for providing recreational benefits as well as maintaining ecological balance. However 'how much open space should be designed for urban areas' – have been a topic of discussion among planners and policy makers across the world over the years. Different countries have adopted various standards for designing their urban areas considering their own contexts. However, proper understanding of open space standards followed in various cities and countries around the world is quite important for development of planning standards for sustainable cities and settlement. This paper primarily focuses on open space standards followed in various cities and countries in the world as well as open space standards adopted in various plans and projects in Bangladesh. The research is based on secondary information supported by a review of literature for a better understanding of the planning standards for open space across global cities. Planning standards and provisions regarding open space facilities practiced for urban planning for various cities in Bangladesh in respective master plans, structure plans or any other relevant plans have been explored. The paper reveals that there are no universal standards for open space provisions in the urban areas. An appropriate standard for open space based on the contextual situation of an urban area may, however, guide development of required recreational facilities. It is imperative that such planning standards are followed through proper development and implementation of physical plans of cities.

Introduction

Open space provisions are integral part of city planning because of the overall impact that it generates and eventually perpetuates through the city fabric and city life. Proper planning of open space and recreational facilities in cities, therefore, demands greater attention and care for ensuring vibrant city life for urban dwellers. Recreational facilities includes various types of facilities, but the major types that draw particular attention for city planners while preparing physical plans for cities mainly include open space, park, play field, playground, play lot, etc. Identification of proper standards for these recreational facilities always poses challenges for urban planners and policy makers because of the limited availability of lands and their higher values in urban areas. As a result, setting appropriate planning standards for parks, playgrounds and open spaces are of paramount importance for providing proper recreational facilities to ensure vibrant urban life. In addition, Bangladesh, being a developing country, faces the challenges of providing proper open space and recreational facilities adequately and with appropriate quality to its urban dwellers as well.

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“How much space should be reserved for open space in an urban area?” This always poses a major question to the planners while planning and designing facilities for development in the urban areas. Different countries have adopted various standards for designing their urban areas considering their own contexts. Nevertheless, open space standard per one thousand population has long been adopted as a customary standard for recreational planning in various cities and countries.

It is widely accepted that searching for a universal standard for open space is not a right choice for urban planners while designing their particular cities. However, proper understanding of open space standards followed in various cities and countries around the world is quite important for development of planning standards for recreational facilities in Bangladesh. This paper primarily focuses on open space standards followed in various cities and countries in the world as well as open space standards adopted in various plans and projects in Bangladesh.

Methodology of the Study

The research is based on secondary information supported by a review of literature for a better understanding of the planning standards for open space across global cities. Planning standards and provisions regarding open space facilities practiced for urban planning for various cities in Bangladesh in respective master plans, structure plans or any other relevant plans have also been explored. In order to get an overall picture of planning standards and provisions of open space in urban areas of Bangladesh, various categories of urban areas have been selected for this study to represent each category of urban areas. Moreover, study areas are purposively selected across various regions of Bangladesh for proper representation of various types of urban areas in Bangladesh.

Six major Metropolitan Cities of Bangladesh have been selected in addition to the four ‘A’ Category, Three ‘B’ Category and Three ‘C’ Category Paurashavas have been selected for an analysis of open space provisions in different categories of urban areas in Bangladesh.

Table 1: Urban areas selected for the study

Metropolitan City	Paurashava / Municipality		
	A Category	B Category	C Category
Dhaka, Chittagong	Savar (Dhaka)	Daudkandi (Comilla)	Nageswari (Kurigram)
Rajshahi, Khulna	Jhenaidah, Gopalganj	Bajitpur (Kishoreganj)	Kasba (Brahmanbaria)
Barishal, Sylhet	Bhairab (Kishoreganj)	Pirganj (Thakurgaon)	Melandaha (Jamalpur)

Definition, Importance and Classification of Open Space

Definition of Open Space

Rogers (1999) described urban open space as an important part of the urban integration required to achieve a quality environment. He described it as “a clear articulation of public spaces that connects neighborhoods to connect to each other and link people within localities to their social institutions. They do not provide outdoor areas to relax and enjoy the urban experience, venues for activities and places for walking and sitting-out, but they also establish a balance between people and their environment”.

Open space includes all private and public lands that are open in character and can be used as a place for open air recreation that may include from a small play lot to vast hunting grounds. More than just parks and play fields, open spaces consist of all “wanderable” land as may be found on college campuses, school campuses or agricultural areas (Nabi, 1978).

In New York State Open Space plan, it is defined as land, which is not intensively developed for residential, commercial, industrial or institutional use. It can be publicly or privately owned and includes agricultural and forest land, undeveloped shorelines, undeveloped scenic lands, public parks and preserves. It also includes water bodies, such as lakes and bays (Open Space Plan, New York State, 2009).

DEAT (Department of Environmental Affairs and Tourism, South Africa) describes open space as vegetated area (green areas) within an urban environment, such as: nature reserves, private and public gardens, golf courses and other sports and recreational grounds, cultivated, derelict and undeveloped land and even roadside, rail verges and transmission line servitudes as well as any open hard surface area (brown areas), such as shopping malls, plazas and other paved and concrete areas (Jahan, 2014).

So it can be said, open space is any piece of land that is used as parks, community gardens, schoolyards, playgrounds, areas of water body such as rivers, canals, lakes which offer opportunities for sport and recreation. It provides recreational areas for residents and helps to enhance the beauty and environmental quality of neighborhoods.

Importance of Open Space

According to Hossain (2002; cited in Jahan, 2014), open spaces can meet human and environmental needs. Human needs are relief from congestion, physical need for health and happiness, psychological need for openness and recreational and leisure need. Environmental and ecological needs consist of protection of historical and other important urban sites.

Nabi (1978) explained that open spaces are linked between man and nature. They give relief from urban monotony of urban life. They are the main solution of the recreational problem that exists in the urban life. Open spaces are required for at least they can absorb sustainable amounts of rain water and flood water and it also has importance in the event of earthquake.

It provides a number of environmental, social, and economic benefits to communities (Jahan, 2014). The environmental benefits of preserving open space include natural water filtration, removal of air pollutants, habitat preservation, groundwater recharge and temperature reduction. Social benefits include noise reduction, recreational and educational value, historic preservation, and quality of life. Open spaces can provide a buffer between housing developments and busy roadways. Trails for hiking, biking, and walking provide recreational opportunities and can create stronger community ties. Open space can provide economic value through added property value, less investment in engineered systems for storm water management and utility infrastructure, reduction in heating and cooling costs, and tourism attractions.

Classification of Open Space

Parks and open space vary in size and form and the functions that they perform. A strategic approach is needed in assessing the needs of a community and planning an open space network. Public open space is usually categorized into a hierarchy of neighborhood, district and regional open space and can be used for either passive or active recreation (Thompson, 2008). The hierarchy as mentioned by Thompson (2008) is Neighborhood parks and District and Regional parks. However, functionally it can be classified in eight categories- Recreation Trails and Parkways, Stream and Canal Corridors, Natural Resources, Public Space, River and Stream Parkways, Historic or Archeological Sites and Areas that Shape Community Character or Design (Sacramento County, 1993; as cited in Jahan, 2014).

Classification of Open Space according to Regional Development Plan (Draft RDP), 2015 – 2035, for Dhaka City

Regional Development Plan (Draft: 2015 – 35), of Dhaka city states that based on primary use character, some open spaces can be termed as active and some are passive. Active ones typically encompass more heavily programmed and organized activities, such as athletic activities, parks and other intensive programs like, stadium, swimming pool, etc. The passive open space primarily, consists of less structured and less formal activities, like, play lots, picnic areas, historic/cultural sites, amphitheaters and natural resource areas. This group also includes the Trails and Streetscapes / Scenic Roadways. The secondary characteristics are also important in classifying spaces, like cultural / historical character that defines space like sites of historic, archaeological and/or cultural interest; and educational character that defines school sites, other educational facilities. Categories of open space as per RDP are park, playground and sport facilities, urban development open space, functional open space, streetscape, trails and buffer, urban forests and natural park and protected areas.

Planning Standards for Open Space at Different Cities in the World

Planning Standards for Open Space: Search for Origins

Planning standard for open space generally varies for different countries according to their particular planning context and it is noteworthy that standards of any country cannot be replicated to another country without detailed assessment of demand of that particular locality or group of people for whom it is going to be applied.

The rule which is generally adopted now in the re-planning of British cities is to provide 7 acres (2.83 ha) of public open space per 1,000 persons and the continued use of this standard is considered appropriate where no other basis has been established (Veal, 2008). It is generally accepted that the provision of open space ranges from 10 square metres to 28 square metres per person (Daley, 2000). In the United States, the National Recreation Association advocates neighbourhood parks and recreation areas on a basis of ten acres (4 ha.) per 1,000 persons (recommended) and five acres (2 ha.) per 1,000 persons (minimum), or at least 10 per cent of the neighbourhood area (Brown and Sherrard, 1951).

In the absence of an existing approved plan, where open space is required from a parcel of land to be subdivided, the amount of unencumbered open space required is not less than

6% of the site area (JVMAH, 1989). No basis is offered for this 'fall-back' recommendation, only that it has been adopted 'after careful consideration'. The widespread practice in the cities of New South Wales (NSW) in Australia is to divide 2.83 hectares into 1.21 hectares for 'active' open space (that is, sports fields) and 1.6 hectares for 'passive' open space (for informal recreation). As with the overall standard, no documented rationale for this division has been identified (NSW Department of Planning, 1992). In British Columbia, Vancouver's standard of 2.75 acres of neighborhood park space per 1000 population is based in part on the observation that requests for additional park land come largely from areas with a lesser amount of park space. World Health Organization advocates for 9 square metre open space per person within 15 minute walking distance and UN-Habitat suggests that open space should be accessible within 800 meter. Table 2 presents various standards for open spaces followed in UK and Australia as well as standards suggested by UN-Habitat and World Health Organization.

Table 2: Standards for open space in various cities and countries

City / Country	Criteria(cited in Veal, 2008)	Standard
UK	British cities	seven acres (2.83 ha) of public open space per 1,000 persons
	post-war city planning	varies from 6½ acres (2.6 ha.) to 9 acres (3.6 ha.) per 1,000 of population.
	Cumberland County Council, 1948: 136	the Cumberland plan endorses a 6 acre (2.43 ha.) standard for open space 'within neighbourhoods'
		the internal open space standard within neighbourhoods requires ¾ acre (0.3 ha.) for children's playgrounds
		2¼ acres (0.91 ha.) for neighbourhood rest parks and minor playing areas.
		remaining 3 acres (1.21 ha.) per 1,000 should be of wider use and planned to consolidate requirements of adjoining neighbourhoods
		its standard rises to 10 acres (4 ha.) only when golf courses are included
	Cumberland County Council, 1948: 136	The Cumberland Plan may also be the origin of the division between 'active' and 'passive' open space
		although the ratio given here is different from the ratio referred to in the later NSW documents.
Australia		
Australia	Daly, 2000: 15	2.83 hectares per 1,000 population
		10 square metres to 28 square metres per person.
Canberra		open space standard of 10 acres (4 ha.) per 1000 population
Canberra		Playing fields 1.8 ha./1000 people
		Local neighbourhood parks 1.2 ha./1000 people
		Town and district parks 0.4 ha./1000 people
		Ancillary space. 0.4 ha./1000 people
		Demand space 0.2 ha./1000 people

City / Country	Criteria(cited in Veal, 2008)	Standard
Canberra		'Ancillary' space is for such things as landscaping and screening
	NCDC, 1981: 10	'Demand' space is land set aside for 'organised recreation purposes on sites to be developed subsequent to the initial development of each neighbourhood',
		Demand space includes such facilities as: 'tennis courts, swimming pools, bowling greens and squash courts'
	NCDC, 1981: 10	An unspecified area for golf course provision is discussed but is additional to the standard
		This is because golf courses are not seen as a 'municipal facility' but are operated on lease
Cumberland- 'Sydney metropolitan area'	Shiels; 1948 County of Cumberland Planning Scheme	6 acres (2.43 ha.) per 1,000 population for district needs
		2¼ acres (0.9 ha.) for sports fields
		3 acres (1.2 ha.) for rest parks
		¾ acre (0.3 ha.) for children's playgrounds
		A further 4 acres (1.6 ha.) is required for golf courses, both public and private, bringing the aggregate standard to 10 acres (4 ha.) per 1,000.
New South Wales	Environmental Planning and Assessment Act (Dept of Environment and Planning, 1981)	Under the heading local open space, New South Wales identifies land that is required to satisfy the general day-to-day needs of the local area population. (NSW government's Guidelines for the Administration of Section 94)
		2.83 hectares per 1,000 population is the commonly accepted rate
		The 10 and 28 square metre standards
		1 ha. and 2.8 ha. per 1000 population respectively
		The source of the 1 ha. per 1000 population is not clear, but it could refer to the existing provision of open space in some high density inner city council areas.
NSW	NSWPEC, 1975: 13; NSWDEP, 1985: 11.	Division of 2.83hectares of Open Space :
		1.21 hectares for 'active' open space (that is, sports fields
		1.6 hectares for 'passive' open space (for informal recreation)
		the division had been abandoned in 1992 , being described in the 1992 Guidelines as 'inaccurate and misleading'
James Daly's Recreation and Sport: Planning and Design	a set of guidelines by the South Australian Department of Sport and Recreation in 1995	only commercially published Australian textbook on planning and design in the field and currently in print

City / Country	Criteria(cited in Veal, 2008)	Standard
Playground Association of America (1906)		Playground space equal to 30 square feet per child
World Health Organization	WHO	Nine square meter per person within 15 min walking distance
UN-Habitat		Open Space should be accessible within 800 meter

Source: Veal, 2008 (compiled by Author)

In 1906, Playground Association of America called for playground space equal to 30 square feet per child. In the 1970's and early 1980's, the first detailed published works on these topics began emerging (Gold, 1973; Lancaster, 1983). In time, "rule of thumb" ratios emerged with 10 acres of parklands per one thousand population becoming the most widely accepted norm. Other normative guides also have been cited as "traditional standards," but have been less widely accepted.

In 1983, Roger and Lancaster compiled a book called, "Recreation, Park and Open Space Standards and Guidelines," that was published by the National Park and Recreation Association (NRPA). In this publication, Mr. Lancaster centered on a recommendation "that a park system, at minimum, be composed of a core system of parklands, with a total of 6.25 to 10.5 acres of developed open space per 1,000 population (Lancaster, 1983). The guidelines went further to make recommendations regarding an appropriate mix of park types, sizes, service areas, and acreages, and standards regarding the number of available recreational facilities per one thousand population. While the book was published by NRPA and the table of standards became widely known as "the NRPA standards," these standards were never formally adopted for use by NRPA.

Since NRPA Standards of 1983, various publications have updated and expanded upon possible "standards," several of which have been published by NRPA. Many of these publications did benchmarking and other normative research to try and determine what an average "Level of Service (LOS)" should be. Table 3 shows different standards for open space in USA and Canada.

Table 3: Standards for open space in USA and Canada

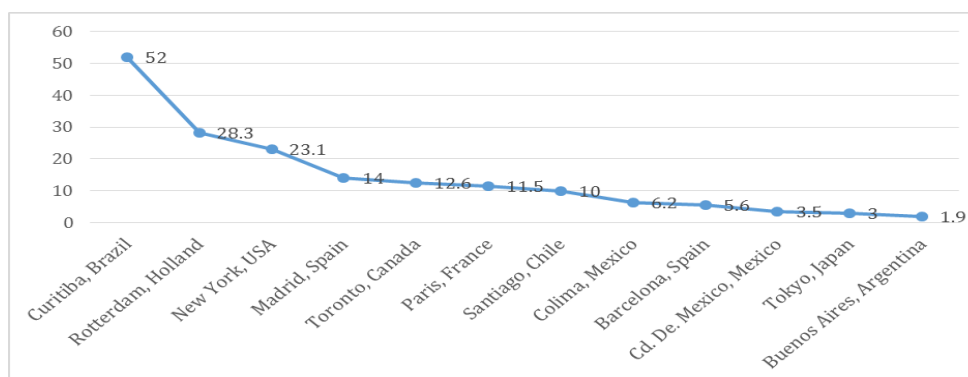
City / Organization	Types/criteria	Standard
Vancouver, British Columbia, Canada		2.75 acres of neighborhood park space per 1000 population
NRPA (USA)	neighbourhood park and recreation areas	ten acres (4 ha.) per 1,000 persons (recommended)
NRPA (USA)		five acres (2 ha.) per 1,000 persons (minimum)
NRPA (USA)		at least 10 per cent of the neighbourhood area (Brown and Sherrard, 1951: 149-150). Brown and Sherrard also discuss further the implications of the area-percentage standard. the amount of unencumbered open space required is not less than 6% of the site area (JVMAH, 1989: 75)

City / Organization	Types/criteria	Standard
Lacey	Industrial / Commercial Plots	10 % Area for Open Space
Bellevue	Industrial / Commercial Plots	one acre per 500 employees
Issaquah		8 acres per 1000 employees plus some facility development

Source: Compiled by Author.

Provision of Open Space Per Person in Different Cities of the World

Amount of open space available for city dwellers generally varies greatly among various cities in the world. Figure 1 presents per capita open space in different cities in the world with reference to the minimum of 9 m² open space per person referred by World Health Organization (WHO). According to this figure, Curitiba city of Brazil has 52 m² open space per person followed by Rotterdam of Netherland (28.3 m²), New York of USA (23.1 m²), Madrid of Spain (14 m²) which are above the WHO standard of 9 m² per person. However, Colima city of Mexico offers 6.2 m² open space per person in a city which lies below the standard of WHO followed by Barcelona of Spain (5.6 m²), Tokyo of Japan (3 m²) and Buenos Aires of Argentina (1.9 m²).



Source: Sustainable Cities Network, 2011.

Figure 1: Green space provisions (per capita open space in square meter) in different cities of the World

For mega city Dhaka, in terms of the vital need for parks and open space, Detailed Area Plan (DAP, 2010) proposes an insufficient quantity, and fails to set aside the required land for urban open space. The proposed allocation in DAP (2010) is only 0.13 acres of parks and open space for 1,000 persons (0.52 sqm per person as proposed in DAP for future) for the core Dhaka City, far below the WHO recommendation of 4.23 acres/1,000 persons for parks and open space (Bari, Efrogmson, 2009). Meanwhile Hong Kong, the most crowded city on earth, provides on average 0.71 acres/1,000 persons, or more than five times the amount proposed by DAP. Table 4 presents a comparison of standards between Dhaka and Hong Kong.

Table 4: Standards of open space per person in Dhaka and Hong Kong cities

City/Agency	Standard of Open Space Per Person
WHO	Minimum of 9 m ² of green space per person. An optimal amount might be between 10 and 15 m ² per person (Sustainable Cities Network, 2011)
Dhaka	According to detailed area plan, 0.52 m ² per person would be available in Dhaka city in future (Bari and Efroysmon, 2009)
Hong kong	In the urban areas, including the Metro Area and the New Towns, the standard for provision of open space is a minimum of 20 ha per 100 000 persons i.e. 2m ² per person (Planning Department of Hong Kong).

Source: Compiled by author.

Standards for Different Types of Recreational Facilities in Different Cities

The recommended standards for different types of playgrounds and playfields for different cities vary considerably. In Britain, National Playing Field Association (NPFA) recommended a standard for the open space of about 10 acres per 1000 population, including school playgrounds, public and private playfields and parks. In the United States, the National Recreation Association advocates for neighbourhood parks and recreation areas of 10 acres per 1,000 persons and the minimum area recommended is 5 acres per 1,000 persons (Siddiqui, 1990). The recommended standards for some cities in the world are given in Table 5.

Table 5: Open space standard recommended for different cities

City	Type of open space	Area	Population served
Indian cities	Public play fields	1.5 acre	1000
	Park	2.0 acre	1000
Iraqi cities	School play ground	0.8acre	1000
Pakistani cities	Parks and play fields	1.3 acres	1000
Greater London	Schools	3 acres	1000
	Parks	1 acres	1000
	Play fields	6 acres	1000
Singapore	Open space	2.5 acres	1000

Source: Hamid, 2002 and Keeble, 1969

Standard for open space varies considerably depending upon socio-economic condition, population density and pressure on land which is reflected in Table 6, depicting different standards of open spaces followed in some Asian cities for park facilities at varying scales.

Table 6: Standard for open space in different foreign cities

Amenity (population served by an acre of land)	Hong Kong ¹	Kuala Lumpur ²	Karachi ³	Delhi ⁴
District Park (Open Space)		2,024	11,561 -16,260	418
Neighborhood Park	4,046	2,024		4,048
Local Park	4,046	4,000		
Local Play area		4,065		4,048

¹Planning Information and Technical Administration Unit, 2008

²Pejabat Menteri Kementerian Wilayah Persekutuan, 2004

³Master Plan Group of Offices, 2007

⁴Delhi Development Authority, 2008

Source: Compiled by Author.

The 'Indian Town Planning Institute' suggested one acre for neighborhood playground for a population of two thousand and a play lot of 2000–5000 sq ft for 100–200 families. The recommended standards for recreational facilities for urban areas in India are shown in Table 7.

Table 7: Standard for open space recommended by Indian Town Planning Institute

Type of Open Space	Area	Population served
Play lot	2000-5000 sq.ft	100-200 families
Neighborhood play ground	1 acre	2000 population
Play field	12-20 acre	4-5 neighborhood
Park	2.5 acre	1,000 population

Source: Hamid, 2002

As stated earlier, standard for park and open space varies greatly in various cities and countries due to varying national, regional or local context and scenarios. Table 8 shows standards for open space per thousand population recommended in different cities of the world.

Table 8: Standards for open space in various cities on the basis of population

City	Acre per 1,000	City	Acre per 1,000
Greater London	10	Kanasas	9
Washington	9.5	Bristol	2.5
Los Angels	12	Public Playing Field in India	1.5
Edinburgh	7.16	Parks in India	2
Minneapolis	5.5	Parks and Play Field in Pakistan	1.3
Cambridge	11.35		

Source: Khan, 2012.

However, Keeble (1969) expressed his concern for setting standards by allocating space as it is difficult to translate the standards to the actual number of children being served as different games need different space standards and numbers of players. He cited the example of four people who have a game of tennis in a total area of about 780 square yards or 195 square yards per person, but 22 people, require about 15,000 square yards for cricket, about 680 square yards per person. He also noted that there are some seasonal games such as badminton which many people enjoy playing in winter. In this respect, he suggested identifying the proportion of population for different games at different times and the spaces required for that before allocating a space standard for the community. Keeble (1969) also suggested having playgrounds and parks mingled in one space to have greater flexibility in the use of land. For example, in the evenings, the playgrounds can be used for exercising, flying kites, etc. In this way concentration of playgrounds can be reduced and a much greater feeling of spaciousness is produced, particularly where there is a scarcity of open space.

In Europe, there was increasing recognition about the children's right to play and the government has responded positively through the establishment of a national agency with responsibility for increasing public awareness and understanding of the importance of play in child's development.

Open Space Standard in Hong Kong

Hong Kong is a densely populated country in the world which is facing similar problem of land scarcity like Bangladesh. Hence planning standards for recreational facilities followed in Hong Kong might provide some directions for city planning of our country.

Hong Kong Government has formulated a set of guidelines on the planning, layout and design of open spaces under the "Hong Kong Planning Standards and Guidelines (HKPSG)". According to the HKPSG, open spaces are generally divided into "Recreation Open Space" and "Green Space" while the former is subdivided into 3 hierarchies: "Regional Open Space", "District Open Space" and "Local Open Space". Generally speaking, "Regional Open Spaces" are large sites (at least 5 ha, for example the Victoria Park with an area of about 19 ha) to serve the wider recreational needs of the territorial population and tourists. "District Open Spaces" are medium-size sites (at least 1 ha) to meet the needs of a district's population. "Local Open Spaces" are smaller sites (if possible, at least 500m² for those within the urban areas) to serve the neighborhood's population.

In the urban areas (including the Metro Area and the New Towns), outlying islands and rural townships (such as Sai Kung etc.), the standard for provision is a minimum of 20 ha per 100,000 persons (i.e. 2m² per person), among them at least 10 ha should be "District Open Space" and 10 ha should be "Local Open Space"¹.

According to the above planning guidelines, Hong Kong Government has been sparing no efforts in providing open spaces for the public or reserving suitable land for recreation use in order to meet public needs. At present, there is at least one town park

¹ 'Planning of open space in Hong Kong' is available at - www.prdbay.com/htdocs/20110330140004e (Source: Planning Department, Hong Kong).

in each new town in the New Territories and more than 80% of the territorial population are living within a radius of 400 metres of various types of open spaces. If the "Country Parks" and the "Special Areas" are taken into account (such areas cover 40% of the area of 1,100 sq. kilometres of Hong Kong), then nearly 90% of the population are living within a radius of 400 metres of open space in a broader sense. Furthermore, the parks located in the urban area generally are within 10 minutes walking distance from the MTR stations/public transport terminals and are easily accessible by the public.

Open Space Standards in India

The term open space, within the context of physical planning, means the land covered and used by nurseries, schools, play lots, playgrounds and parks, etc (Hamid, A. 2002). The Indian Town Planning Institute recommends following standards for recreational facilities for Indian cities.

- A play lot of 2000 to 5000 sq ft shall be required as children's playground for about 100-200 families.
- For a neighborhood playground – the area is determined either as 4-7 acres or 1 acre per 2,000 population.
- A playfield which should be provided for 4 to 5 neighborhoods. Area will be 12-20 acres or 1 acre for 2000 population.
- A park space shall have to be provided at the rate of 2.5 acres for 1000 population.

Open Space Planning Standards in Australia

In New South Wales of Australia, the persistence of fixed open space planning standards seems to be partly due to the existence of Section 94 of the Environmental Planning and Assessment Act 1979, which allows councils to determine contributions which developers must make to the provision of public infrastructure and services, including recreation. Councils must set out such determinations in a 'Section 94 Contributions Plan' and, since these plans are examined closely by developers and, if challenged, may have to be defended in the Land and Environment Court, they must be very clear, specific and quantitative, which are features of standards. A number of NSW local councils and other agencies continue to refer to standards in their contribution plans.

For example, the City of Hurstville's 2004 Open Space and Community Recreation Facilities Contributions Plan states that the amount of open space required to satisfy the general needs of a community can be assumed to be 28.3 m of open space per person (2.83 ha. per 1000 population), which is the most widely accepted standard in Australia and the United Kingdom for the provision of local open space within a Metropolitan urban context.

Centennial Parklands, a state government agency responsible for a major park complex in central Sydney, recently stated in its magazine: 'The current ratio of open space in the city of Sydney is 2.36 ha. per 1000 people, which is below the widely accepted industry standard of 2.43 ha. per 1000 people'.

Planning Standards of National Playing Fields Association (NPFA), UK

'British standard' for recreational facilities are developed by the National Playing Fields Association (NPFA). NPFA states that, "in 1925, the National Playing Fields Association was founded to help ensure that every man, woman and child in Great Britain and Northern Ireland would have the opportunity of participating in outdoor recreational activity within reasonable distance of home during their leisure hours. The Association urged all local authorities to adopt a minimum standard of provision of 5 acres (2.02 ha.) of public open space for every 1000 people, of which at least 4 acres (1.62 ha.) was to be set aside for team games, tennis and bowls. In 1934, this standard was increased to 7 acres (2.83 ha.) in order to include private playing space and school playing fields. In 1938, the 1 acre (0.4 ha.) of open space, originally included for parks and public gardens, was dropped so that the standard became one of 6 acres (2.43 ha.) applying to playing space only.

The standard was reviewed in 1955, 1971, 1974, 1986, 1989, 1992 and 2001. On each occasion, it was concluded that the effects of such factors as rising living standards (which would have increased the standard), and changing age structure (which, because of the growth in the numbers of elderly, would have reduced the standard) cancelled each other out and left the standard at 6 acres. NPFA standard was based on an estimate of likely participation levels, which can be seen as a needs-based approach.

Open Space Standards for Urban Areas in Bangladesh

Open Space Standards for Metro Areas in Bangladesh

Planning standards for open space or recreational facilities are not present for urban as well as rural areas in Bangladesh. As a result, different organizations usually set their standards while preparing land use plan or master plan for the purpose of that particular plan or project. Over the years, various planning standards have been adopted for preparation of master plans for different cities of Bangladesh. Master Plan of 1959 for Dhaka city adopted a standard of 20 acres of open spaces for a neighborhood of 7500 persons leaving the standard of open space of 2.67 acres per thousand population.

Dhaka Metropolitan Development Plan of 1995 proposes for 4 acres of open space for 25000 people, thus indicating a standard of 0.16 acres of open space per thousand population. Khulna Master Plan of 1961 recommended 4 acres of open space for every 1000 population, however Khulna city Master Plan of 2001 reduced that standard to 2 acres per thousand population. Rajshahi Metropolitan Development Plan of 2004 proposes for 1.5 acres per thousand population whereas Barishal Master Plan recommended for 1 acre of open space per thousand population, as shown in Table 9.

Table 9: Standards for open space (in Acre/1000) in physical plans of metropolitan cities of Bangladesh

Khulna City Master Plan, 2001-2010	Dhaka Metropolitan Development Plan, 1995-2015	Rajshahi Urban Area Plan/Functional Master Plan, 2004-24	Barishal Master Plan 2010-30
2 acres/ 1000 population	0.16 acre/ 1000 population	1.5 acres / 1000 population	1 acre/ 1000 population

Source: DMDP Project, 1995; Khulna Master Plan, 1999; Rajshahi Metropolitan Development Plan, 2004; Barishal Master Plan, 2010.

A standard of 1 acre per 1000 population was fixed by Zila and Upazila Planning project of Urban Development Directorate, 1985. Upazila Town Infrastruce Development Project (UTIDP) suggested 1 acre of open space or neighborhood park space per thousand population for preparation of master plan for Paurashava while District Town Infrastruce Development Project (DTIDP) proposes for 2 acres of park space for 10,000 population, suggesting an standard of 0.2 acres per thousand population. Private Residential Land Development Project Rules, 2004 recommends for 0.20 acres of open space per thousand population of which 0.08 acre for playground and 0.12 acres for park spaces.

Open Space Standard for Dhaka City

1959 Master Plan of Dhaka City

Dhaka Master Plan 1959 was first attempt in Bangladesh to provide a standard for open space. A total area of 4 acres per 1,000 people was proposed. Of these, 2 acres were recommended in the form of park and 2 acres for open space. The Master Plan (1959) recommended 1,184 acres of open spaces of which 291 acres were shown as existing space and 893 as proposed open spaces.

Policies on Open Space in Dhaka Metropolitan Development Plan (DMDP), 1995

The Dhaka Metropolitan Development Planning (DMDP) project recommended two major policies or guidelines for the provision of recreational open space for Dhaka city. These are as follows:

- ***Augmenting the Open Space:*** The Metropolitan Authority would seek to augment the city's existing stock of major recreational facilities by means of exploiting the resource of vacant and /or under-utilized government land within the established urban areas.
- ***Securing Future Open Space:*** The Metropolitan Planning Authority should identify and secure sites for major recreational use in the DMDP structure plan's priority for newly developed areas, particularly Dhaka-Naryanganj-Demra (DND) triangle and Harirampur (north of Mirpur).

In DMDP structure plan, 4 acres park for 25000 people were proposed. But considering population pressure of Dhaka during finalization of DAP, the technical working committee proposed standard as shown in Table 10 for open space in Dhaka.

Table 10: Recommended open space in DAP for Dhaka

Amenity		Proposed Standard
Active	Play Field/ Ground	0.5 acre/25,000 ¹
Passive	Neighborhood Park	1.5 ac/ 10,000 ¹
	Metro Park	25 acre / 100,000 ¹

Source: Report of Technical Working Group for DAP Review Committee, 2009

LGED and UDD Specified Standard for Open Space

Since 2008, Local Government Engineering Department (LGED) and Urban Development Directorate (UDD) have taken master plan projects to develop master

plans for secondary cities or municipalities in Bangladesh. For preparing these plans, standards as shown in Table 11, have been suggested by LGED and UDD.

Table 11: LGED and UDD specified standard for open space

Category	LGED standard	UDD standard
Cinema hall/ closed space	0.5 acres per 20000 population served	0.5 acres per 20000 population served
Sports stadium	3 acres per 20000 population served	3 acres per 20000 population served
Parks and open space	1 acre per 1000 population served	1 acre per 1000 population served

Source: LGED and UDD, 2008

Standards for Open Space Facilities under DTIDP and UTIDP

District Towns Infrastructure Development Project (DTIDP) and Upazila Towns Infrastructure Development Project (UTIDP) under Local Government Engineering Department have been preparing Master Plans for District and Upazila level Paurashavas. These Master Plans serve as a guideline for the future infrastructure development of Paurashavas together with land use control and management of services and facilities in the Paurashavas. Planning standard for preparation of Master Plan for district level Paurashavas under DTIDP has suggested for 10-12% of total land area for open space. Table 12 shows the details of the standards.

Table 12: Standards for open space facilities under DTIDP

Land use category	Percentage use of total land area	Space standard for community facilities
Open Space and recreational	Motel and tourists centre	Minimum land 2 acres
	Play field/ ground	2 acre per 25,000 Population; minimum walking distance 1.5 km
	Park/neighborhood park	2 acre per 10,000 Population
	Open space	1.75 acre per 1,000 Population
	Stadium Sports complex	5 acre per 50,000 Population
	Cinema/ Theatre	0.5 acre 25,000 Population

Source: LGED, 2010

For Planning Standards of preparing the Master Plans of the Paurashavas under UTIDP at the Upazila level, Local Government Engineering Department (LGED) proposes 3 acres of playground for 20 thousand population and 1 acre for park per thousand population and additional 1 acre for 'Neighborhood Park' per thousand population, as presented in Table 13.

Table 13: Planning standards for open space under UTIDP

Land use category	Percentage use of total land area	Space standard for community facilities
Open space	Play field/ Play ground	3.00 acres/20000 population
	Park	1.00 acre/ 1000 population
	Neighborhood park	1.00 acre/ 1000 population
	Stadium/ Sports complex	5-10 acres/ Upazila Headquarters
	Cinema/ Theatre	1.0 acre/ 20000 population

Source: LGED, 2010

Open Space Provisions at Urban Areas in Bangladesh

Open Space Provisions at Metro Cities in Bangladesh

According to DMDP, open space per thousand population should be 0.16 acre for Dhaka city, which is quite scanty if we consider open space standards across various cities in the country, even with the other metro cities in Bangladesh. Total amount of open space in Dhaka city is about 1266 acres, setting 0.19 acre open space per thousand population (Table 14). However, all of these open spaces are not accessible for common people. The open space accessible for common people is only 480 acres (DAP, 2010), thereby open space per thousand population reduces to only meager 0.07 acres.

Table 14: Provision of open space at Metro Cities in Bangladesh

Present	Existing		Future	
	Acre	Acre/Thou	Acre	Acre/Thou
Dhaka	1266	0.19	1590	0.21
	480	0.07	Accessible to common people	
Chittagong	200	0.07		
Rajshahi	132	0.31	882	1.74
Khulna_KCC	128	0.15	2008	1.54
Sylhet_SCC	46	0.08	235	0.19
Barishal	45	0.20	788	1.46
Total	1817	0.16	5503	0.49

Source: Analyzed by Author (data from Development Plan, Structure Plan and Master Plan of respective Urban Areas)

Among the metro cities in Bangladesh, Rajshahi city enjoys relatively higher amount of open space per thousand population which is 0.31 acres followed by Barishal (0.20), Khulna (0.15), Sylhet (0.08) and Chittagong (0.07). By and large, open space per thousand population at present for metro cities in Bangladesh is 0.16 acre, which is quite inadequate according to the planning standards.

Open Space Standards in Municipalities in Bangladesh

Open Space in 'A' Category Paurashavas

A category Paurashavas, selected for this study have an average amount of open space of 0.31 acres per thousand population which is slightly higher than the metro cities in Bangladesh, though current provisions are still fairly inadequate. If proposed Master Plans of these Paurashavas are rightly implemented, these Paurashavas will have 0.46 acres of open space per one thousand population as shown in Table 15.

Table 15: Provision of open space in some 'A' category Paurashavas

Area	Present		Future	
	Open Space	Acre/Thou	Open Space	Acre/Thou
Jhenaidah	29	0.27	62	0.38
Gopalganj	30	0.39	56	0.42
Bhairab			109	0.56
Savar	106	0.64		
Total	165	0.31	227	0.46

Source: Analyzed by author (data from Master Plans of respective municipalities)

Open Space in 'B' Category Paurashavas

Planned open spaces or recreational facilities are not usually available in the 'B' or 'C' Category municipalities in Bangladesh; however these urban areas have urban green spaces as passive recreational facilities for the city dwellers. For B category Paurashavas, it has been found that there are 4 acres of urban green spaces are available per thousand population. According to the proposed Master Plans for these municipalities, there would be 1.17 acres of open space per thousand population in future if those plans are duly implemented by the concerned authorities (Table 16).

Table 16: Provision of open space in some 'B' category Paurashavas

Name	Urban Green Space		Open Space			
	Acre	Acre/Thou	Present		Future	
Paurashava	Acre	Acre/Thou	Acre	Acre/Thou	Acre	Acre/Thou
Daudkandi	146	3			95	0.81
Bajitpur	217	6			28	0.62
Pirganj	89	3	6	0.20	62	1.59
Total	452	4			185	1.17

Source: Analyzed by author (data from Master Plans of respective municipalities)

Open Space in 'C' Category Paurashavas

In the case of 'C' Category Paurashavas, urban green spaces per thousand population have been found to be 1.77 acres, yet there is only 0.13 acre of open space available for every thousand population (Table 17). According to the Master Plans of these

municipalities, there would be 0.88 acres of open spaces available for the city dwellers in future.

Table 17: Provision of open space in some 'C' category Paurashavas

Name of Paurashava	Urban Green Space		Present		Future	
	Acre	Acre/Thou	Acre	Acre/Thou	Acre	Acre/Thou
Kasba	243	5.93			45	0.61
Melandaha	4	0.12	16.62	0.54	26	0.76
Nageswari	11	0.15	2.34	0.03	100	1.16
Total	258	1.77	18.96	0.13	171	0.88

Source: Analyzed by Author (data from Master Plans of respective municipalities)

Concluding Remarks

Percentage of open space in urban areas is an issue of debate for urban planners which are reflected in the variations of the standards followed in various countries in the world. World Health Organizations set a standard of minimum of 9 m² of green space per person, however, it also states that an optimal amount would sit between 10 and 15 m² per person. Therefore, 1000 persons require 2.25 to 3.75 acres of open space in urban area. On the other hand, Hong Kong, one of the most densely populated cities in the world, recommended minimum open space standard of 20 ha per 1 lakh persons (i.e. 2m² per person), among them at least 10 ha should be "District Open Space" and 10 ha should be "Local Open Space". Therefore open space per thousand population stands for 0.50 acre for Hong Kong city. Kuala Lumpur city of Malaysia proposes a standard of 1.5 acre, whereas Delhi city of India suggests for 3.137 acre per thousand population (RAJUK, 2014).

Due to the high price of land in urban areas which has made land acquisition so difficult for government organizations as well as because of unavailability of land, any extravagant standard of open space would not be feasible to implement by local level organizations or development agencies. Therefore, assessment of the requirement of open space in urban areas of Bangladesh demands careful and rational considerations as well as current shortfall of recreational facilities should be taken into serious consideration.

In this regard, standard for open space in the urban areas of Bangladesh can be proposed for minimum one acre per thousand population and increased upto 2 acres per thousand population as per the availability of land in different urban areas. In addition, standard of 10 to 15 percent area for Open Space reserve should be considered as well, while planning for urban areas in Bangladesh. This proportion of open space is required for maintaining the ecological balance of nature and appropriate water recharge to maintain the underground water level in urban areas through open spaces including water bodies.

This article reveals that planning standard for open space greatly varies in different cities and countries according to particular planning contexts. The standards of a country cannot be replicated to another country without detailed assessment of contexts and

demand. This paper observes that various planning standards are adopted by different organizations over the years in preparing the Master Plans or Development Plans for different cities of Bangladesh without having consensus on a national policy framework on such matters. Revisiting the various planning standards followed in various cities in the world could be helpful for planning authorities in the formulation of planning standards for recreational facilities and open spaces for urban areas in Bangladesh. Moreover, provision of open space should be ensured in urban areas by proper development and implementation of physical plans following appropriate planning standards for ensuring sustainable development of cities.

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