

DISTRIBUTION AND CHARACTERIZATION OF OPEN SPACES IN DHAKA, BANGLADESH USING SATELLITE IMAGE AND TOPOGRAPHICAL MAP

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1.Introduction

Open spaces in cities exist mainly as semi-natural areas, managed parks and gardens, supplemented by scattered vegetated pockets associated with roads and incidental locations. The need for open space is generally appreciated, and efforts are underway to preserve green areas, cover walls with greenery, and conduct city planning in accordance with the natural environment. However, there are few longitudinal studies on the distribution and changes in open green spaces in cities and their surrounding areas. For that reason, it is necessary to conduct research on comprehensive open space planning in the context of high-density development. Dhaka, the capital city of Bangladesh, is selected as a study case for its high density and insufficient green cover. This research attempts to focus on the following issues. (1) Identification and characterization of open space pattern (2) Developing an open space map and analyzing characteristics.

2. Study area

Dhaka is located at 24° 0' N and 90° 30' E. Area of Dhaka is 815.8 sq kilometers and population is about 12 million. The whole area is divided into **10** zones which are again divided into **90** wards. The river Buriganga, Turag and Lakkhya run throughout the periphery of the city.

3. Methodology

The adopted methodology in this study is as following- ;(1) Field survey and collect photographs of different open green spaces ; (2) Open space type analysis from base map and sixty centimeter Quick Bird image (3)Extract open space pattern through mapping using GIS.

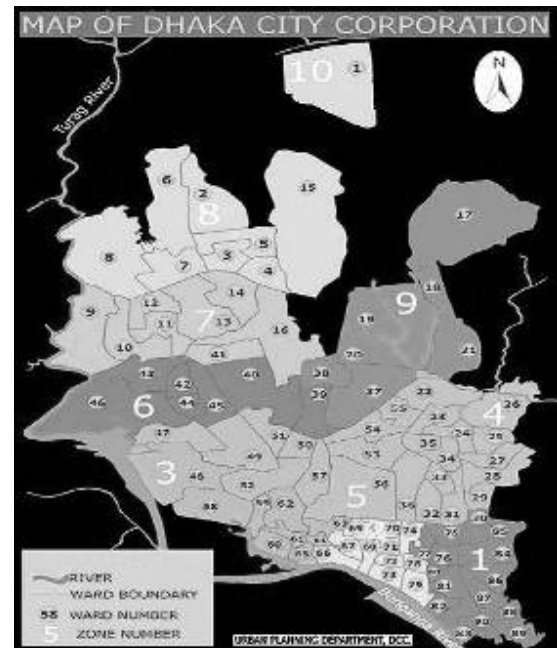


Fig 1 : Major divisions of Dhaka city

1) Field survey

An intensive field survey is conducted at different zone of Dhaka city where different pattern of open space has been found . Photographs of these different open spaces is taken on september,2007.

2) Preparing open space maps

Base map of different ward of Dhaka is prepared by GSRC (Geographical Solutions Research Center) under Urban planning Department of Dhaka city Corporation . The survey period was from October 2004 to February 2005. These maps are collected and open space mapping is created using GIS with the reference of Photographs and sixty centimeter resolution Quick Bird image .

Keywords: Dhaka; Green space; GIS

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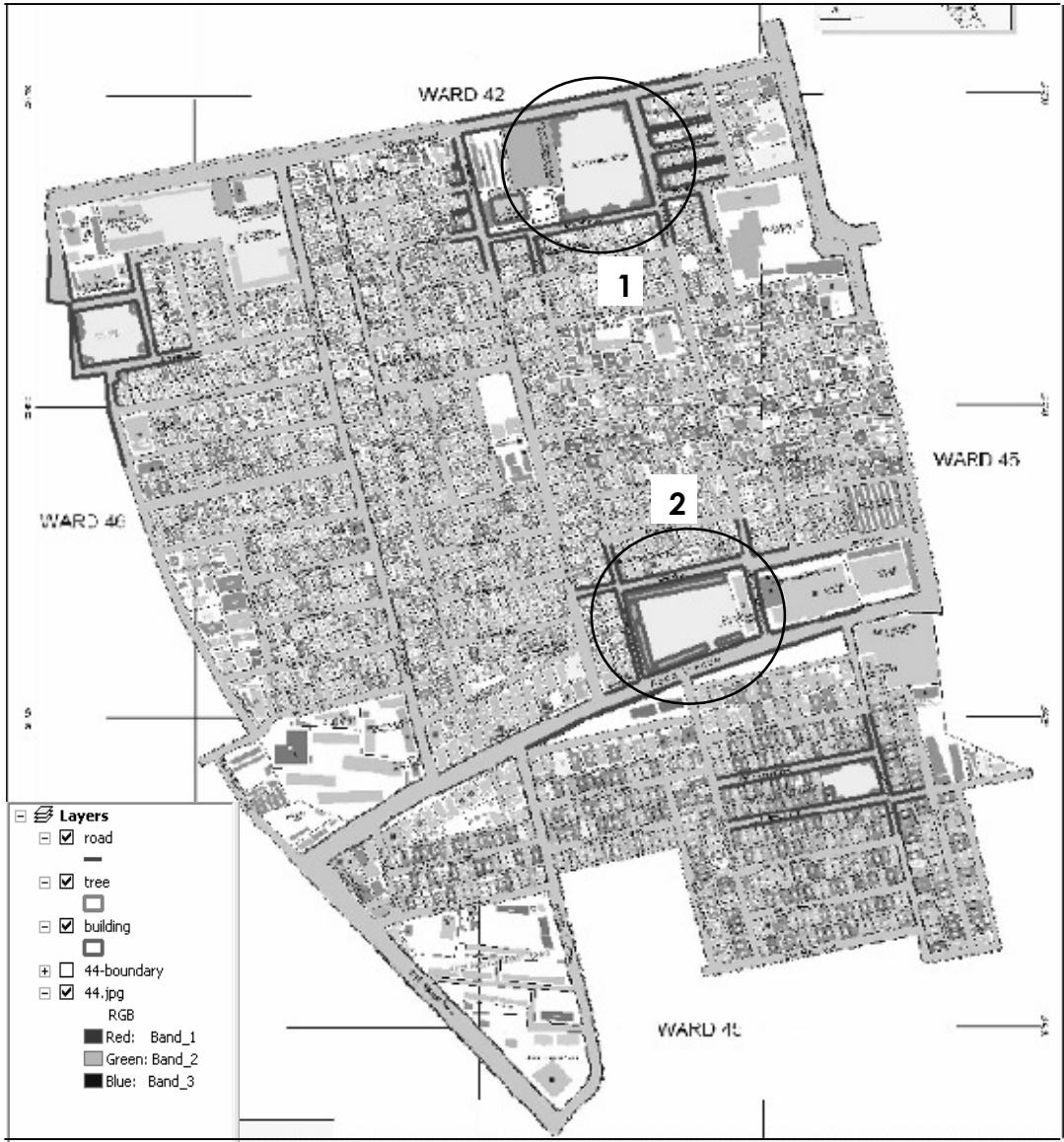


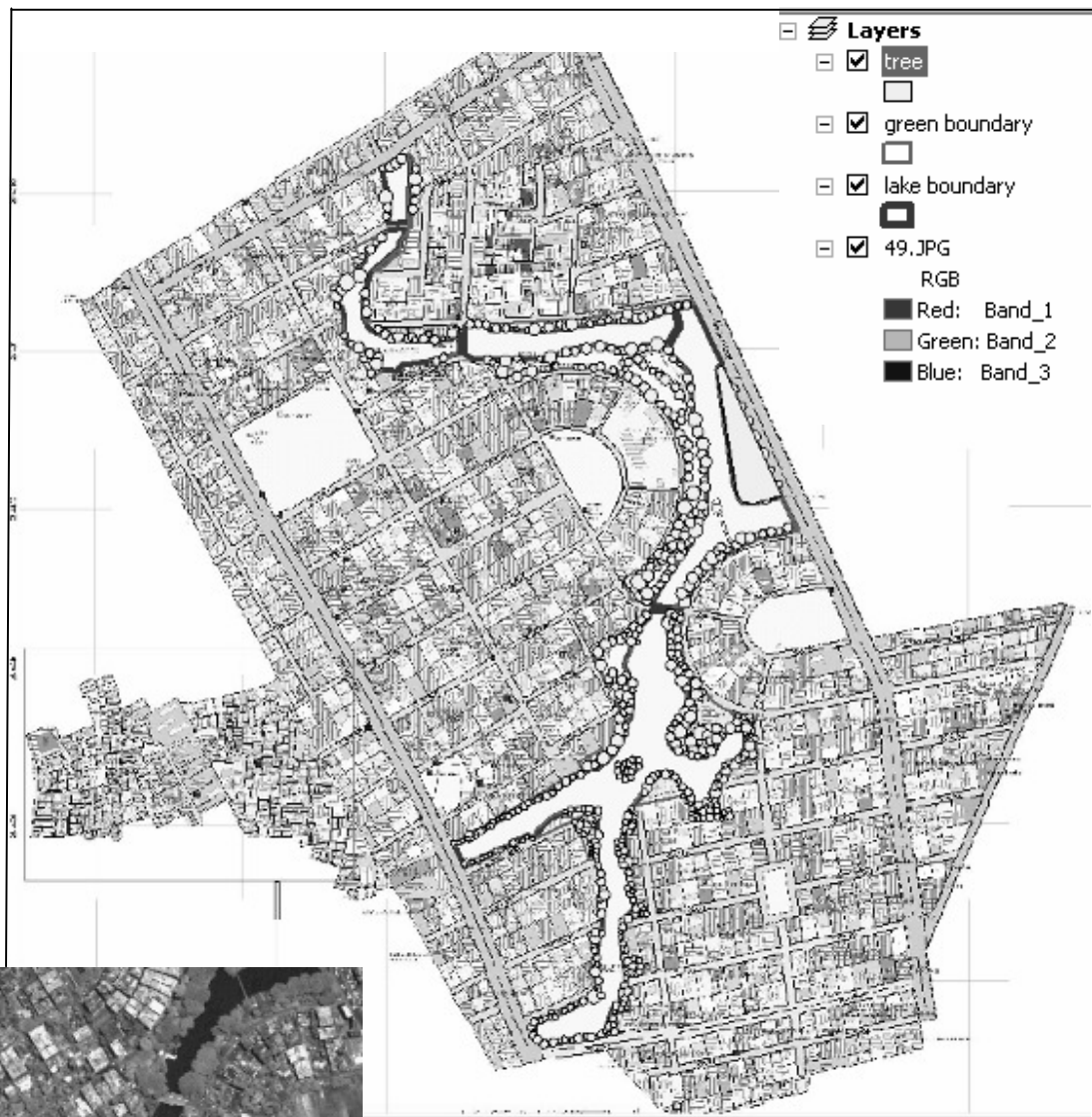
Fig 2: Residential public open spaces; Ward-44



Fig 3: open space of circle 1



Fig 3: open space of circle 2



**Fig 3: Water side open spaces; Ward-49
(Dhanmondi lake)**



**Fig 6 : 60 centimeter resolution
Quick Bird image of Dhanmondi
lake**



Fig 5: Dhanmondi Lake; Ward-49

Results and Discussion :

Several pattern of green spaces presently remains in the Dhaka city. Only two types are described here.

Residential public open spaces Neighborhood scale ,area is small ,Surrounded by roads and residence, significant boundary(see-through or totally closed), trees are few in number, access of common people is limited, multipurpose use(religious or other).

Water-side open space City scale, act as a breathing space for the large community, huge tree, access is easy for the common people, see-through boundary, provided common facilities (seating ,toilet, small restaurant, lighting and security etc.) pedestrian walk-way is provided.

Both of the patterns have significant importance but second pattern is more user friendly than first one. Again small neighborhood open spaces provide opportunities for residence to have day-to-day contact with nature. So several measures should be taken to improve the environmental quality of these open spaces which will be future concern. Also the research will further attempt to answer the following questions (1) How to establish adequate home-juxtaposed open green spaces for residents? (4) How to establish an actionable open space plan at the metropolis (built-up area and the near suburb), city (built-up area) and neighborhood scales? (5) How to devise an acceptable urban development within this green framework?

Conclusion:

With the simple open space classification procedure , an important amount of spatial configuration characteristics could be extracted with the analytical procedure, that, in turn ,may be used in planning and other study purpose.

References:

- 1) Jim C.Y. , Chen S. Sophia : Comprehensive green space planning based on landscape ecology principles in compact Nanjing city,China. Landscape and Urban Planning , No.65, pp95-116, 2003
- 2) Kuwahara Y , Kimura T , Koyanagi T , Shima K: Preparation of time series change information on surficial distribution of green tracts of land-vicinity of Mito City,Ibaraki Prefecture, Papers on Environmental informationScience,No.17,pp23-28,2003

