Open Space Management of Dhaka City, Bangladesh: A Case Study on Parks and Playgrounds

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Abstract

Open Space is an exigent element for providing better living environment in urban life. It is also helpful for maintaining ecological balance. But the populations of Dhaka city divests of its proper facilities as a result of mismanagement of it. Hence this study aims to assess the management system of the open spaces i. e., parks and playgrounds. This research focuses on the existing open spaces management system, major weakness of the existing management and finally propose a better management approach which will be helpful in future management. The main findings in the management of open spaces were that management system varies according to ownership, spatial location and authority. Different authority manages open spaces but there is a lack of coordination among these authorities. Again proper management were not functional in the existing management system. Due to lack of proper management system, most of the open spaces face safety and security, environmental, design and aesthetic, managerial and institutional, facility and quality of facility related weakness. So, proper implementation of the proposed management approach becomes urgent requirement for maintaining the existing open spaces and also create a new dimension in the existing management system.

Keywords: Open space, OSMMC, Management indicator, Dhaka city, Bangladesh.

Introduction

Dhaka is one of the fastest growing mega cities in the world and the capital of Bangladesh. It has covered about 350 square kilometers with about 1.7 crore population and ranked the most populous city in the world[1]. Due to rapid urbanization, there is huge encroachment upon open spaces which contributes towards deforestation, water logging, flooding and pollution of water, soil, air etc. that, causes serious ecological imbalances in the city[2,3]. According to Dhaka Metropolitan Development Plan (DMDP), any portion of zoning plot essentially free of structures which serves the purpose of visual relief and buffering from building and structural mass is called an open space[4]. The great impact has been observed in the urban open spaces including urban forestry, parks, playgrounds, domestic gardens, roadside open spaces and urban vegetation etc. It is indubitably said for attaining good environment and live-able city existing open space preservation and maintenance is badly in needed. Like other sustainable city, Dhaka needs a huge stock of open spaces for urban services or utilities and circulation for environmental stability. Open spaces are one of the most significant components of urban environment that is of great importance for the people who lives in urban areas[5].

At present there are about 54 registered parks and 11 playgrounds are under Dhaka City Corporation (DCC). But these parks and open spaces make up only an average of 14.5% of total land area whereas any city requires 25% for fresh environment and to maintain a sustainable ecosystem[1].

According to World Health Organization, there should be 9 sq. meter green space per city dweller for ensuring better life. Rahman and Ahmed pointed out that Dhaka city has 21.57% open space of which city parks occupy 0.89%, urban forestry 0.02%, gardens 0.90% and 12.12% belongs to agriculture[6]. According to Chowdhury, Dhaka city needs approximately 6 sq. miles areas for recreational purpose[7]. But, the Dhaka city accommodates parks and gardens which are not capable to meet the demand of the population[8]. Preserving and maintaining open spaces in urban environments is now considered a crucial aspect for the fulfillment of environmental quality and attaining a live-able city[9]. The preservation of more open space is necessary to ensure sustainable supply of ecosystem services and environmental benefits[10]. Increasingly, it is understood that healthy cities must include, among many other aspects, viable and accessible open space. Open space can also influence aesthetic values and the broader perception of the city. Therefore, urban planning and design should take into account for preserving and maintaining these spaces[11].

Dhaka structure plan suggests that, open space should be at least 20%. But in Dhaka urban greenery, park greenery or tree-covered spaces constitutes less than 15% of the city landscape. According to the Dhaka Metropolitan Development Plan, old Dhaka has only 5% and new Dhaka has about 12% open space[4]. The total amount of open spaces including roads, footpaths, parks, playground, lakes and ponds are 17-18% of the city area[8]. Besides these, existing open spaces suffer from mismanagement, insecurity, poor conditions with lack of

infrastructure facilities, mugging and anti-social activities[2]. For this, existing management system need to be improved. Regarding these aspects, the present study focuses on the present condition of the open spaces in the study area, existing open spaces management system and find out the weakness of the existing management. The study also recommend an approach for future better management of the open space in Dhaka city.

Methodology

The study was conducted on December 2014, based on both primary and secondary data. Both qualitative and quantitative data were collected for carrying out this detail study. The variable of the qualitative data were converted into quantitative value for analysis. The management systems have been assessed through field survey, personal interview and focus group discussion (FGD). For Interview and FGD both male and female of 25-65 years, but not more than 15 people have been chosen. For collecting data simple random sampling technique were applied. Total 5 parks and 5 playgrounds were taken and assessed are shown in figure-1. Total number of 200 user's survey, 5 authority survey and 20 in each parks and playgrounds have been conducted for knowing the user perception about management system.
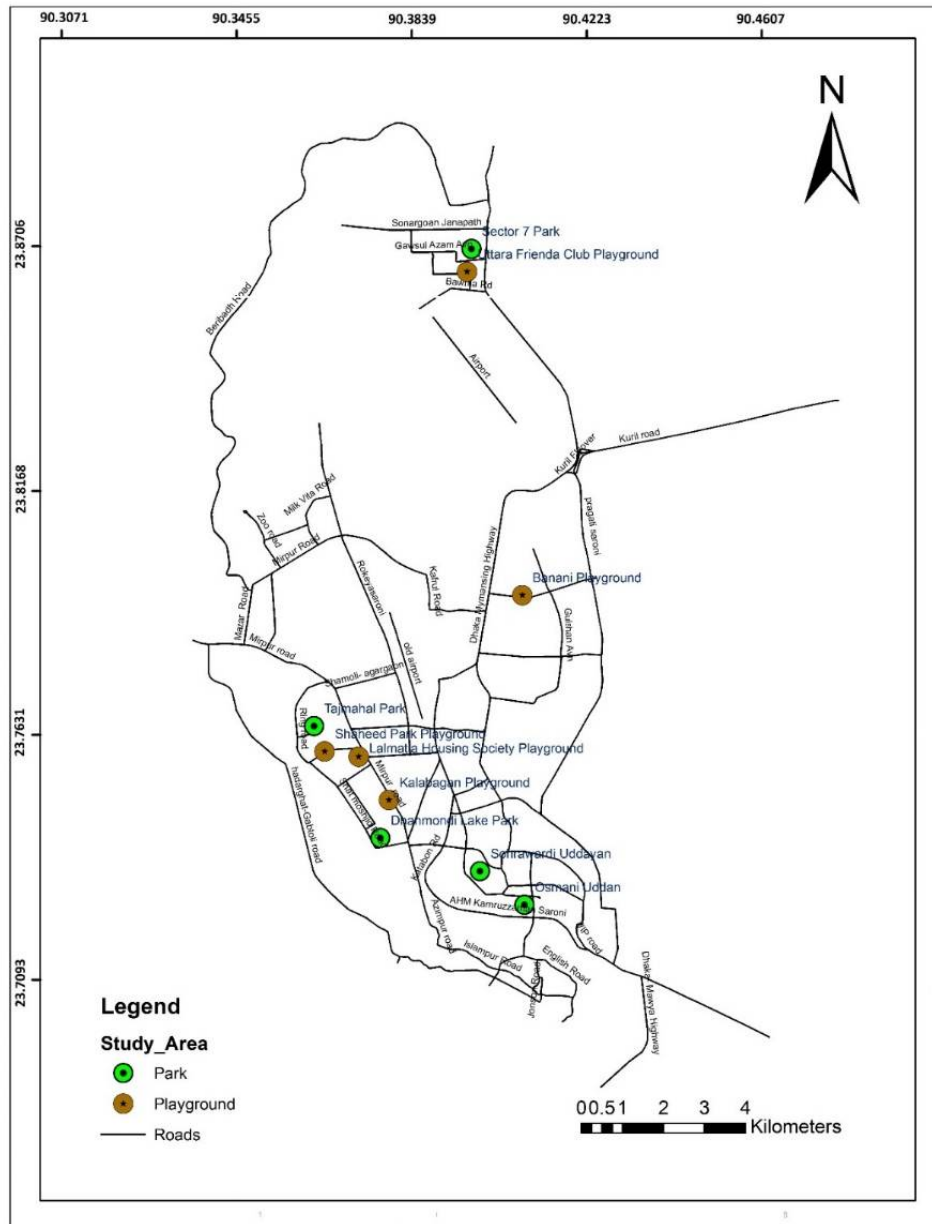

Figure-1
Map showing the study areas in Dhaka city

The management system was assessed by the five indicators using the selected variables. Which includes; i. Managerial and institutional indicator, ii. Facility and quality of facility indicator, iii. Design and aesthetic indicator, iv. Safety and security indicator and v. Environmental indicator etc. Managerial and institutional indicator includes; standard and maintenance of open space element, care and protection of open space element, standard of cleanness, responsibility performed by authority, overall maintenance, maintenance of broken element, up keeping vegetation, nature conservation, landscape performance, expenditure on management, internal management and public complaints, professional maintenance staff etc. as variables. Range of visitor facilities, facilities and services provided children and parents, sitting arrangement, playing instrument, physical exercise equipment, children amusement equipment, transportation, car parking, walk way, lighting, food, toilet facility, water availability etc. were considered to study the facility and quality of facility indicator. Design and aesthetic indicator includes; visual quality or aesthetic, accessibility and connection, diverse activity, design and appearance, recreational facility, signage information board, varied topography and plant, design of walking, relaxing and exercise etc. to study the design and aesthetic condition of the open spaces. Besides, safety and security indicator includes the variables are; mugging, drug dealing, anti-social activity, begging, eve teasing, hawker etc. Environmental indicator includes air quality, odor, noise, crowdies, temperature, mosquito vegetation etc. as variables of the environmental management of the open spaces. All these variable were assessed on a 5 point scale 1=Very bad, 2=Bad, 3= Moderate, 4=Good, and 5=Very good according to the user opinion. The mean value of each indicator has been calculated to find out the overall management condition by using the following;

Total point = $\sum$ (Frequency $\times$ Weightage of acceptance level) (1)

Each variable mean: Total point/Total frequency (2)

Indicator mean= All variable mean/ Total no. of variables (3)

The calculation of all indicators mean was assessed by using the appointed weightage in table-1.

Results and Discussion

Indicators of the Management System: The management of the open spaces were measured by observing the five indicators. These indicator mean of the studied park and playground were assessed by using the appointed weightage and given in table-2 and table-3. For finding indicator mean total point and mean value of each variable were calculated. For example; Managerial indicator mean of Dhanmondi Lake Park was to be calculated by following; Total point for standard and maintenance of open space element in Dhanmondi Lake Park;

= $\sum$ (Frequency $\times$ Weightage of acceptance level)

= (2×1) + (6×2) + (6×3) + (6×4) + (25)
= 76

Mean of standard and maintenance of open space element in Dhanmondi Lake Park was calculated following the equation (2)
= Total point/Total frequency
= 76/20
= 3.8

And finally, indicator mean was calculated by following equation-3.
= All variable mean/ Total No. of variables
= (3.8+ 4.1+ 3.9 + 3.85+ 3.65+ 3.55+ 3.65+ 3.6+ 3.6+ 3.5+ 3.7+ 3.6+ 3.55)/12
= 3.70

3.70 is the managerial and institutional indicator mean of Dhanmondi lake park which mean this park condition in maintaining open spaces element is between moderate and good. Following this system rest of the indicators such as design and aesthetic, facilities and quality of facilities, safety and security, environmental indicator mean were assessed for studied parks and playgrounds.

Table-1
Rating of the acceptance level of indicator

Acceptance Level	Rating Point
Very bad	1
Bad	2
Moderate	3
Good	4
Very good	5

From table-2, it is observed that, environmental indicators ranked the highest value (3.86) and safety and security ranked the lowest value (3.31) in Dhanmondi Lake Park. Others indicators values were also < 4, which indicates the moderate level of management system. Following this Osmani Uddyan indicators trend also the same as before but, the overall management system fall in bad category. But, Uttara Sector-7 Park is more secure than others park, which indicators value is 4.02, and facility and quality of facility consists the lowest value (3.27). Moreover, the management system of Tajmohol Park in Mohammadpur is so poor, as all the indicators values are < 3, due to lack of managerial and institutional lacking. Design and aesthetic (3.07) and environmental (3.02) indicators of Sohrawardy Uddayan is better than others indicator. But, the overall management systems are not satisfactory. The open space was ranked according to management system, which management authority is Dhaka South City Corporation

(DSCC), Dhaka North City Corporation (DNCC) and Public works. The overall management condition of the Dhanmondi Lake Park is much better than all others studied park, managed by DSCC have possessed the highest rank (figure-2) and the order of management condition is Dhanmondi lake park>Uttara Sector-7 Park> Sohrawardy Uddayan > Osmani Uddayan >Tajmohol Park (figure-2).

Table-2
Indicator mean of the studied parks

Indicators	DSCC		DNCC		Public Works
	Dhanmondi Lake Park	Osmani Uddayan	Uttara Sector-7	Tajmohol Park	Sohrawardy Uddayan
Managerial and institutional status	3.7	2.96	3.59	1.75	2.54
Design and aesthetic	3.71	2.97	3.28	2.01	3.07
Facilities and quality of facilities	3.84	2.9	3.27	1.5	2.66
Safety and security	3.31	2.85	4.02	2.63	2.67
Environment	3.86	3.24	3.75	2.57	3.02

Source: Field survey, 2014

Table-3
Indicator mean of the studied playgrounds

| Indicators	DSCC	DNCC		PWD	RAJUK
	Kalabagan	Uttara Friends Club	Shaheed Park Playground	Lalmitia Housing Society	Banani
Managerial and institutional Status	3.5	3.4	2.65	2.37	2.1
Design and aesthetic	2.95	3.07	2.76	2.18	2.05
Facilities and quality of facilities	2.89	3.12	1.76	2.07	1.48
Safety and security	4.31	3.89	3.39	3.57	2.88
Environment	3.5	3.63	2.91	3.25	3.01

Source: Field survey, 2014
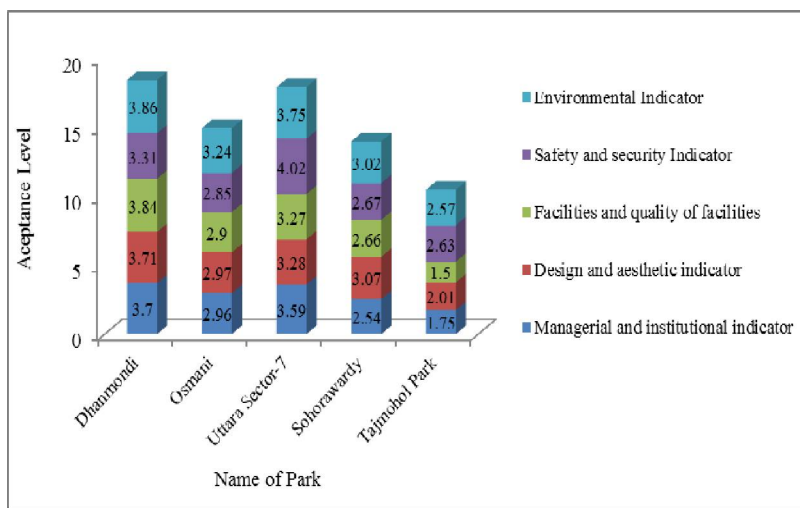
Figure-2
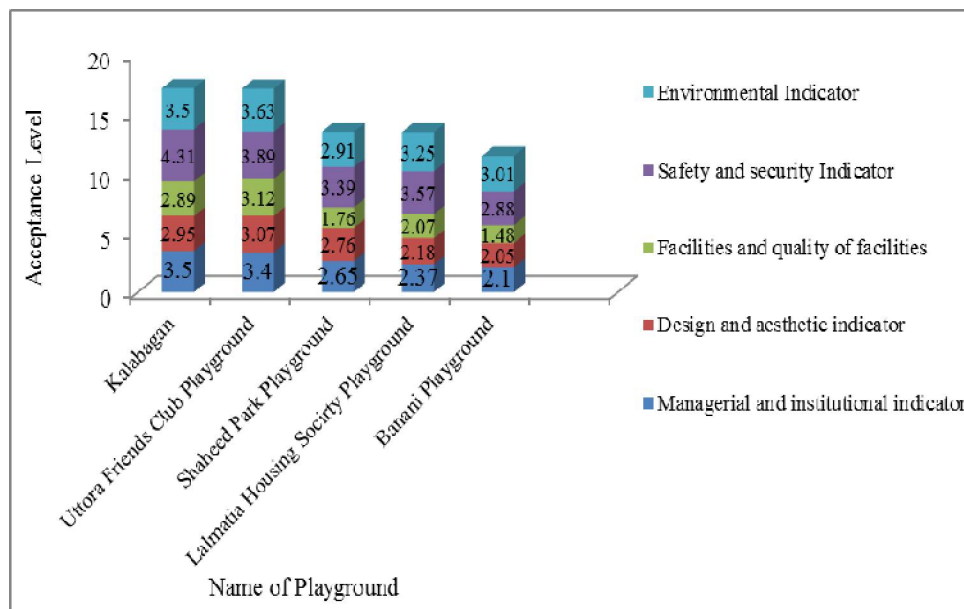**Variation of management system of the studied parks**

Figure-3
Variation of management system of the studied playgrounds

On the other hand, in case of playground management, the safety and security indicators are much better and the worse situation occurs due to others facilities (table-3). In the playground management it have been noticed that most of the playground are leased to different sports club. The responsible authorities are RAJUK, Public Works, Local Club, DNCC, DSCC etc. In figure-3 it has seen that, of Uttara Friends Club Playground managed by Friends Clud have possessed the highest rank, the second position possessed Kalabagan Playground, 3rd, 4th, 5th position were possessed successively by Shaheed Park Playground, Lalmatia Playground and Banani Playground.

Existing Management System of Open Space: Public works maintained park management system is not well functioning and different problem are faced by user at present management system. Among the three authority, DSCC maintained park is well functioning. Dhanmondi Lake Park is good as it is maintained by a private organization which is leased by DSCC. It can be the potential in another park management in Dhaka city. That govt. agency leases private organization for maintenance and fund is provided from government agency. The DNCC maintained park is also not well functioning, due to lack allocate of separate funds for the management of the open space. Table-4 describes the strength and weakness of all parks of the study area.

But, in case of playgrounds management authority it was seen that the DNCC management system is good though this playground is not maintained by the DNCC it is maintained by the Uttara Friends Club. Shaheed Park Playground which is maintained by DNCC its management system bad. DSCC maintained Playground has got the second position. Its

management system is also good; though it is not maintained by the DSCC. Public Works maintained playground also not in good condition. RAJUK maintained playgrounds management system is very bad has got 5th position from the 5 parks due to lack of maintenance (table-5).

Weakness of the Existing Management: Existing open spaces are faced several weakness for proper management system. If management is good people are willing to use the open spaces. Major weaknesses that are found in open Spaces management are; i. Lack of coordination among different authority ii. Development activities of developer without considering the creation of new open space iii. Inapt lease of playground to different sports club by government agency iv. Funding limitations v. Lack of proper implementation of different open space related policy vi. Poor organizational structure vii. Conversion and misuse of open spaces viii. Mismanagement and inequities in maintenance of the authority ix. Lack of facilities and presence of blighted facilities x. Poor Infrastructure system xi. Safety and security related weakness xii. Environmental pollution xiii. Illegal Encroachment and xiv Inadequate lighting facility at night. The user perception of the weakness in open spaces management, for which they don't eager to use these areas are in figure-4.

From the figure-4 it is found that 26% people think there is lack of facilities in the open space. On the other hand only 16% people have given the opinion that the open space is engaged with various anti-social activities. Only 7% people think that there is lack of information about the sites. Here 6% people expressed their idea that they do not come in open spaces due to lack of better quality of facilities. Some people also have given opinion about presence of disabled facilities.

Table-4
Management strength and weakness of the studied parks

Name of Parks	Rank	Strength	Weakness
Dhanmondi Lake Park	1st	a. Location and design is good b. Adequate fund c. Maintained regularly d. Maintenance work performed by private organization e. DSCC monitor the maintenance	a. Safety and security becomes bad at night b. Lake were not clear regularly
Uttara Sector-7 Park	2nd	a. Sector Kallyan Somiti is active in management b. Activity performed properly c. Location is good d. Environmental condition is good e. Walkway is good	a. DSCC cannot provide any fund b. Inadequate size according to public demand c. Water logging in rainy season d. Scarcity in sitting arrangement
Osamani Uddayan	3rd	a. Location and size is good b. Design and aesthetic is good c. Adequate greenery and finance	a. Maintenance is poor b. Fence is broken through which illegal activist entered. c. Pond are not maintained properly d. Sanctuaries of floating people, sex worker, addicted at night
Sohrawardi Uddayan	4th	a. Location and design is good b. Size is adequate c. Good walkway d. Adequate fund e. Adequate greenery and sitting arrangement	a. Maintenance work are not performed by the authority b. Facilities are not good c. Toilet is absent as a result dumping ground
Tajmohol Park	5th	a. Noise condition is good	a. No maintenance work performed in the park b. Design, size and location is not good c. Facilities are very poor

Source: Field Survey, 2014

Table-5
Management strength and weakness of the studied playgrounds

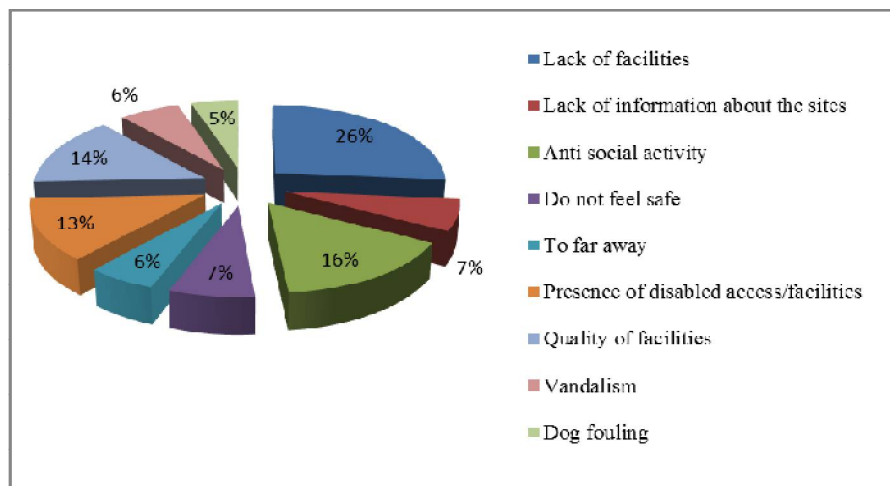| Name of Playground	Rank	Strength	Weakness
Uttara Friends Club	1st	a. Adequate fund b. Maintained regularly c. Facility is good d. Drainage condition good	a. Inadequate sitting bench b. Playground lacking of grass
Kalabagan	2nd	a. Available fund b. Activity performed properly	a. Walkway is bad b. Sitting arrange inadequate
Shaheed Park Playground	3rd	a. Location is good b. Size is good	a. Maintenance is poor b. Fund problem
Lalmatia Housing Society Playground	4th	a. Location is good b. Size is adequate c. Walkway is good	a. Maintenance work are not performed by the authority b. Facilities are not good
Banani Playground	5th	a. Location is good b. Design is good	a. Maintenance activity is not performed. b. No maintenance work in the playground

Source: Field Survey, 2014

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Figure-4
Perception of the weakness in open spaces management

Proposed Approach for Open Space Management: Urban open spaces (parks and playgrounds) are very essential element for meeting the recreational need in the urban population. In the Dhaka city it is almost impossible to create a new open space for high land price and inadequate land. Hence it should be taken care of the existing open spaces but existing open spaces face various weaknesses in management due to lack of awareness, maintenance and management. For this reason, there is need for effective management of existing open spaces. For proper management of open space strong coordination among different organizations is mandatory. Figure-5 shows that, there should be some actors who will be responsible for open spaces management. Active coordination and partnership will be created among these actors for better maintenance. Here users such as one who uses open space, local community organization representatives, representative from user group or user organization etc. The management entity will be different private organization, community Based Organization (CBO), Public-Private partnership oriented organization and any type of organization who are associated with management activity. The government agency will be DSCC, DNCC, RAJUK, PWD and Forestry department who are the responsible for managing the existing open spaces. Inclusion of representatives from civil society and environmentalism organization should be ensured in this management. Provision for OSMMC (Open Space Management and Monitoring Committee) will be created for monitoring the whole management system. This committee will be created from the representative of civil society, environmentalism organization, representatives from user group and govt. agency (DCC, PWD etc.).

For management there will be a need of active participation, coordination and partnership among the actors. First of all government agency will lease the open space for 3 or 5 years to the management entity. The management entity will be given supreme power in maintenance activity. The government agency will also provide adequate finance to the management entity for maintenance work. Users will also communicate, participate and dialogue with Management entity. If necessary, Users will also provide finance to the management entity for better maintenance of the Open Spaces. Civil society and environmentalism organizations will also help providing suggestions, criticism and advocacy to the management activity. The management entity will create direct linkage with government agency. The government agency will provide advocacy help in Policy and Tactical level. The policy level is a political level of the government where the decision makers set strategies, allocate resources and make priorities for the work. The tactical level is a professional level it includes planners, professional worker etc. On the operational level is the maintenance level where maintenance work will be done through management entity on a daily basis and management entity will give advocacy to govt. agency in this level. There will be a provision of coordination between management entity and government agency in creating detailed management plan. By considering the decision of policy, tactical and operational level, detailed management plan will be formulated for one year. After formulation of this management plan maintenance work will be performed by the management entity. This maintenance work will be done by the open spaces maintenance workers such as security guard, gardener, cleaner, scavenger and other professional maintenance staff etc. They will be involved in open space construction, maintenance, upkeep and control. Cooperation and coordination between police staff and maintenance entity will be strengthened for safety and security condition. Individual professionals will perform activities in both tactical and operational level. These three level activities are taken through the coordination of both management entity and government agency. Thus the open spaces are managed by the management entity. There will also be created provision for an OSMMC for monitoring the overall maintenance system of the management entity. It will be formed through the active participation of the user representative, government authority personnel and civil society and environmentalism organization personnel.
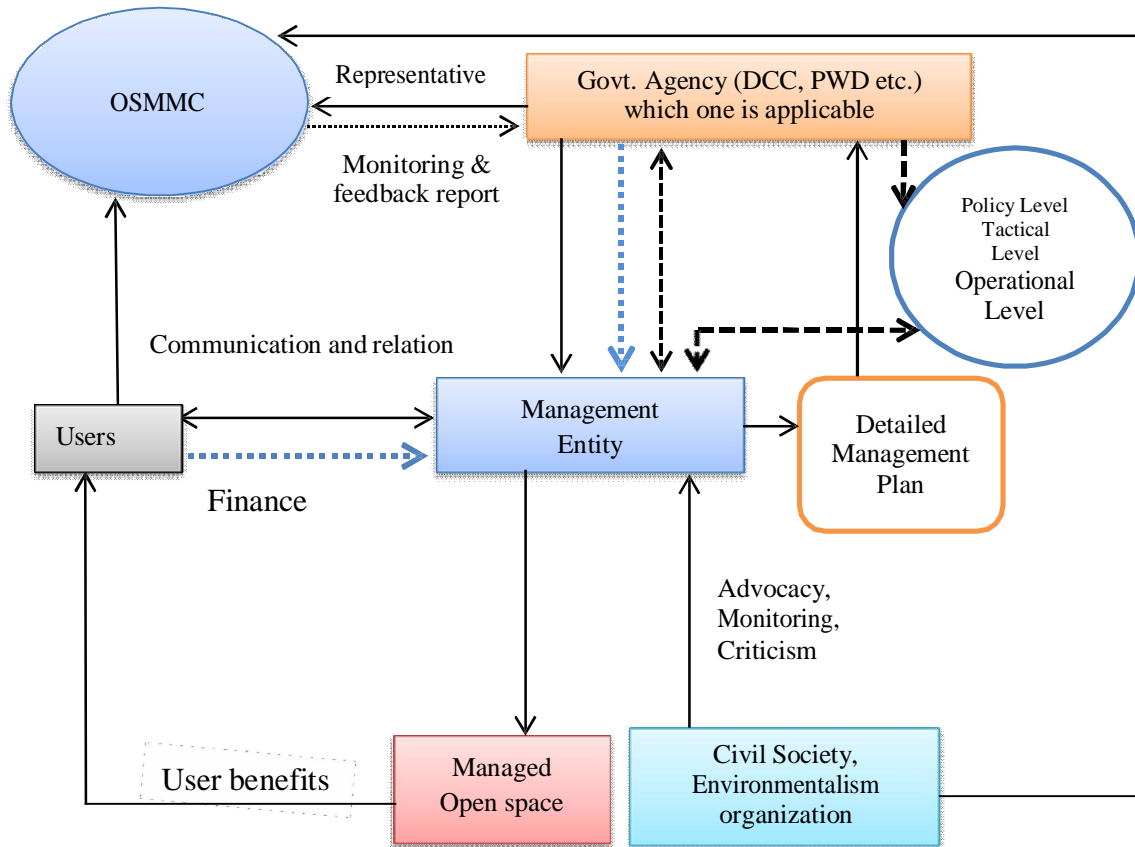
Figure-5
Proposed open space management approach

This OSMMC monitor the whole management mechanism and providing guidance to the management authority and govt. agency. This organization also criticizes and advocates the management system. If any mismanagement occurred in the maintenance activity of management entity then OSMMC informed the govt. agency. Thus respective agency will take adequate action against the entity. For doing this activity OSMMC have to be powerful. Thus through the active participation and guidelines of this actors open spaces will be managed properly and users will get benefit from it.

The significance of this management approach is that, the various actor's partnership and coordination are here specified properly. Users and government agency are responsible for fund provision combindly, and OSMMC will monitor the whole system. In this way, committee plays an active role in the maintenance of open spaces. If this model is applied in open space management of Dhaka city, the existing condition will improve and seems it will be helpful for the proper management of others open spaces.

Conclusion

The study was conducted to assess the management of open spaces. In Dhaka city for increasing population rapid urbanization have given priority. But if the continuous growth of urban areas is given priority without creation of new open space or effective management of the existing one, city dwellers will suffer from different environmental constraints. It is very difficult to creation of new open space for land availability. Hence existing management system should be given priority but the scenario of management is very poor and not well functioning. The existing open space are beset with different problem and people are not willing to use it. Analyzing the situation this research proposes a management approach which will be helpful for improving the existing condition and also to get maximum facilities from the open spaces.

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