

Assessment of the Public Space for Disaster Risk Reduction in Kathmandu Valley, Nepal

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Abstract - The main objective is to identify current situation of public spaces in Kathmandu Valley and assess provisions in public open spaces for DRR. It has used non-experimental/exploratory research followed by a participatory approach for qualitative data and direct observation and KII are used for quantitative data based on the theoretical framework. The level of understanding of disaster risk reduction is quite demoralizing despite of working groups efforts and investment as three quarter of people slim or do not have its understanding. The current condition of the public space found to be good due to the government initiative to stop encroachment, investment and understanding the importance but huge leap needed in order to rise the women visitors and make disable friendly. Although, the infrastructure in public space is either in good condition or in construction phase, the detailed care in quality as well as allocation of budget for future repairs and O & M is required. The government has solely management of public space. Due to the fact that lack of transparency, ownership as well as willingness to contribute in government managed public space is observed hence this research finds management approach such as Public Private partnership or community management should be introduced and their detailed opportunities as well as challenges needed to be discussed. This finding could be used for policy making and management committee for sustainability of public space and private sector as well as community to envisage the public space management opportunities. The level of understanding of disaster risk reduction is quite demoralizing despite of working groups efforts and investment as three quarter of people slim or do not have its understanding. The current condition of the public space found to be good due to the government initiative to stop encroachment, investment and understanding the importance but huge leap needed in order to rise the women visitors and make disable friendly. Although, the infrastructure in public space is either in good condition or in construction phase, the detailed care in quality as well as allocation of budget for future repairs and O & M is required. The government has solely management of public space. Due to the fact that lack of transparency, ownership as well as willingness to contribute in government managed public space is observed hence this research finds management approach such as Public Private partnership or community management should be introduced and their detailed opportunities as well as challenges needed to be discussed.

Keywords - Public space management, Disaster Risk Reduction, Infrastructures

1 INTRODUCTION

An open space is any area in which any kind of structures such as buildings are not developed and accessible to public. In urban context, the public open spaces include parks, schools, streets, public seating areas etc. Public open spaces enhance the sustainability of city. It also increases the quality of life, aesthetic value, environmental health, economic growth and disaster resilience. Public spaces have been composed in both planned ways and unplanned neighborhood in terms of their quantity and quality [1]. Similarly, [2] states that the "open spaces are a key component of disaster response as they are safe locations and offer spaces for community that enables mutual coping among members and directly or indirectly affect the people's perception of seismic risk.

The open space for Kathmandu per unit has not known and it is shrinking day by day due to unplanned housing [3]. The public space in Kathmandu is decreasing day by day due to illegal encroachment as well as ineffective prioritization of government [4]. The reason behind the illegal encroachment and what is the government doing to address it is still

unknown. Therefore, this research tries to figure out what is going on to address the decreasing amount of public space. The research in public space of Kathmandu is limited many cause and effect, existing and possible future condition and scenario as well as how the public space has support the environment. Social, health, safety aspects of inhabitant are still unknown. Likewise, the reason behind the shrinking of public space, encroachment, and weak management has needed to assess.

The open space concept, initially starting in 2009 following the Koshi Flood Response and activation of the cluster approach in Nepal has developed into being the only project of its kind in the developing world. Each open space has allocated with suggested applications to accommodate for the projected needs following a disastrous event in the Kathmandu Valley, following series of consultations and exercises with the concerned stakeholder. A total of 83 open spaces were identified to provide initial framework for Government in case of earthquake [5].

The sustainable development goal 11, i.e. Make cities inclusive, safe, resilient and sustainable target has identified creating a green public space as the tool of tackling poverty,

especially of urban slums in urban context (SDG 11). It also promotes average share of public open space for public use by all sex, age and person with disabilities [6]. The Sendai Framework for Disaster Risk Reduction 2015–2030 aims to protect lives, health, livelihoods, ecosystems, cultural heritage, and critical infrastructure from natural and human-caused hazards over the next 15 years. It seeks to bring about “the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries”. To achieve this major ambition, the UN general Assembly has endorsed the Sendai Framework and its set of seven clear targets and four priorities for action, which has adopted by the UN Member States at the Third United Nations World Conference on Disaster Risk Reduction in Sendai, Japan, in March 2015 [7].

A major initiative is needed to make city resilient and achieved through the increased collaboration among stakeholders and urban systems research. It also emphasis on national resilient cities initiative for natural hazard mitigation [8].

The open spaces provided a need of residents and will enhance the pleasant needs of the community. The quality of open spaces is determining by functional factors, semantic factors, environmental factors, social factors and forms factors. There is actual need of expanding the actual standard of open space in relation to residential complex [9].

Urban development plan does only address mitigation plan and only address preservation of open spaces. Preservation of ecosystem of open space has discussed but not incorporated in recovery plan. The open space is a second city which contribute to daily life and have the capacity to support response and recovery needs after disaster so the integration of recovery planning and urban design is needed [10].

Urban resilience and human well-being could be enhanced through strengthening the network of urban green spaces through linkages between various components, sequential restoration of existing urban forests and developing them into a multifunctional ecosystem, enveloping connectivity, as far as possible, among backyard habitats, urban domestic gardens, and public parks, integrating urban forest planning into regular master plans and urban development projects, maintenance of species diversity and spatial heterogeneity by planting three-tier vegetation (herbs, shrubs and trees): no more than 30% from one family, no more than 20% from one genus, and no more than 10% from one species, designing and implementing the programme for local monitoring and local enforcement of locally-made rules for the management of urban forest [11].

In emergency situation shelter space is crucial for people affected by natural hazards. The public space plays vital role for it whose suitability is measured based on qualitative evaluation criterion and manageability. Out of 410 open

spaces in Kathmandu 12.2 per cent i.e. 50 have considered not suitable for emergency response. And 28.3 per cent i.e. 116 open spaces has found suitable for emergency shelter [12]. One of the important strategies to improve disaster risk reduction is identification and provision of suitable areas for emergency response [13]. The public open space study is important from disaster management point of view particularly focusing to Kathmandu Valley, Nepal.

The specific objectives of this study are as follows:

- To identify current situation of public spaces in Kathmandu Valley.
- To assess provisions in public open spaces for DRR.

2 METHODOLOGY

This is a non-experimental/exploratory research which follows a participatory approach, whereby three case study has used to illustrate current conditions, policies, plans and priorities. The theoretical framework as shown in fig 2.

Figure 2.1: Theoretical framework for the study

The sample represents the characteristics of the population it purports to represent, i.e. in measurement term it should be valid. The validity of the sample depends upon the accuracy and precision [14]. The field study area is unique in many ways. Ratnapark located at the center of the city with access to huge population is maintained by Kathmandu Metropolitan City. It has a good access road and nearby pond (Ranipokhari) for fire related emergency, nearby hospital (Bir Hospital), government offices (Nepal Electricity Authority), and security forces (Nepal Army and Nepal Police). It is well maintained at present condition with security fences installed, improved hygiene condition and greenery.

Guita Domar Disaster Management Park is based in Patan that is under reconstruction with the support of JICA under “Quick Impact Program”. It has good access in road, lies in the densely populated area and most of the emergency services like hospital are within the radius of 100m. A two-storey building for a disaster management center has been constructed, along with a toilet, one amphitheater, 20 units of toilet, 3 septic tanks and soak pit, an 80,000-liter surface water tank and a 1,500-liter water tank separately for the toilets. It is the most sophisticated study area for disaster risk management.

Sallaghari Tinkune is open space in Bhaktapur adjacent to Arniko highway with no infrastructure inbuilt. It has no infrastructure and services required for disaster preparedness is beyond the radius of 100m. The present condition is worst, as it has been used as a collection site. The nearby neighborhood is unplanned burst of new settlement. The sample size for the study is 113.

3 RESULTS AND DISCUSSION

3.1 Level of Knowledge of Disaster Risk Reduction

After establishment of disaster management unit in Kathmandu and Lalitpur metropolitan in concern of earthquake 2015, government has invested huge sum in understanding of disaster management via trainings, public awareness etc, not limited to this, different NGOs and Red cross has devoted huge chunk of budget projects like safer cities, Strengthening Urban Resilience and Engagement – SURE. However, disaster management unit not establish in Bhaktapur but one DRR focal person has been signed. With all these sweats from government and non-governmental organizations, and learning from last disaster, it is apparent to anticipate the understanding of DRM is quite high but the result is very demoralizing and disappointing. About 83 percent of respondent did not know about the disaster. Around 9 percent understood DRM as a shift to safe place, 6 percent described DRM as information to preparedness & 2 percent mentioned DRM as preparedness as shown in Table (3.1).

Table 3.1 Knowledge of DRM (N=113)

Parameter	Frequency	Percentage	Remarks
Shift to Safe Place	10	9%	
Preparedness	2	2%	
Information to Preparedness	7	6%	
Don't know	94	83%	

Source: Field Survey, 2019

3.2 Safe Place during disaster

The perception of safe place during disaster revealed that the entire respondent found the open space to be the one. Although the entire respondent could not move or temporary settle in public, space but found it to be crucial in reverberation of disaster. After the earthquake, field study area has accompanied more than 150 HHs and 2000 people despite the unavailability of basic facilities like WASH & shelter. Most the respondent revealed that the public space during the disaster provided the meeting as well as socialization place. Around 100percent of respondent found the public space as a safe place during disaster (Table 3.2).

Table 3.2 Safe place during Disaster (N=113)

Parameter	Frequency	Percentage	Remarks
Open space	113	100%	
Total	113	100	

Source: Field Survey, 2019

3.3 Concept of Open Space

The public in all three municipalities lies under the Environment Department. Hence, the budget is allocated in environment prospect and preserves the existing park only rather than developing it. The public space has simply understood as a park or land mass, which is not inhabited. Even the authorities do not understand open space around temples, school spaces along the bank of river as public open space. Most unpredicted finding was the people determine spaces as open spaces based on the ownership. For example, the open space near Hyatt regency was understood to be the private property, so not categorized as open space but in reality, it is an open space but might not be public open space. Based on the survey 42per cent people know about public open space, 56per cent people do not know about it whereas only 2per cent do not know about it all as shown in Table (3.3).

Table 3.3 Understanding of Public Space (N=113)

Parameter	Frequency	Percentage	Remarks
Yes	48	42%	
No	63	56%	
Don't Know	2	2%	
Total		100%	

Source: Field Survey, 2019

3.4 Reason to go to Public Space

The urban life is so hectic and tiring; thus, it is hard to squeeze to the leisure time in between. People are seeking different modes to be relax and joyful regardless of massive problems like unemployment, costly life style etc. The survey revealed that 27per cent of respondent go to public space for spending time with friends, 26per cent to spend leisure time, 11per cent to get entertain, 34per cent have no specific reason be there and only 4per cent don't go to public space at all as shown in Table (3.4).

Table 3.4 Reason to go to Public Space (N=113)

Parameter	Frequency	Percent	Remarks
To get entertain	12	11%	
Stay with friend	30	27%	
Spend Leisure Time	29	26%	
Don't go	4	4%	
Don't Know	38	34%	
Total		100%	

Source: Field Survey, 2019

3.5 Level of Satisfaction among the Respondents

The field study area has chosen that they would represent the public space of Kathmandu Valley. Ratnapark has well

managed by KMC, Disaster Management Park at Lalitpur is under makeover with the support of JICA & Sallaghari Tinkune is vacant and unmanaged area. Thus, the satisfaction with Ratnapark is very good, disaster Management Park is happy and Sallaghari Tinkune is unhappy in general. The result shows that 5 percent of respondent are very happy, 27per cent are happy, 21per cent are unhappy and 46 percent do not know at all as shown in (Table 3.5).

Table 3.5 Satisfaction with Public Space (N=113)

Parameter	Frequency	Percent	Remarks
Very Happy	6	5%	
Happy	31	27%	
Unhappy	24	21%	
Don't Know	52	46%	
Total		100%	

Source: Field Survey, 2019

3.6 Condition of Public Space

Although among three-study area, Ratnapark is only the place that is well managed; respondent found that the condition of public space is good. Most of the constructive response was heard in Ratnapark followed by Disaster Management Park and Sallaghari Tinkune respectively. Around 27per cent of respondent found the condition is very good, 28per cent good, 24per cent neutral, 12per cent bad and last 8per cent established it very bad as shown in Table 3.6.

Table 3.6 Condition of Public Space (N=113)

Parameter	Frequency	Percentage	Remarks
Very Good	31	27%	
Good	32	28%	
Neutral	27	24%	
Bad	14	12%	
Very Bad	9	8%	
Total		100%	

Source: Field Survey, 2019

3.7 Quality of Public Space

It has observed that 57per cent of respondent has been satisfied, 19per cent not satisfied, 21per cent do not know and 4percent did not responded as shown in table 3.7.

Table 3.7 Satisfaction with Quality of Open Space (N=113)

Parameter	Frequency	Percentage	Remarks
Yes	64	57%	
No	21	19%	

Don't Know	23	21%	
No response	5	4%	
Total		100%	

Source: Field Survey, 2019

3.8 Protection of Public Space

The open space is always in attempt of encroachment by both public and private entity. Due to hassle in judiciary process, linkage to top level political leaders, it is almost impossible to bring back the annexed land from encroacher. Therefore, to protect the public space government has been put effort to border the space. From the survey, it has found that 75per cent of space it provided with boundary wall, 4per cent provided plantation, 14per cent is open & 6per cent is fenced as shown in table (3.8).

Table 3.8 Protection of Public Space (N=113)

Parameter	Frequency	Percentage	Remarks
Fencing	7	6%	
Open	15	14%	
Plantation	5	4%	
Wall	86	75%	
Total		100%	

Source: Field Survey, 2019

3.9 Challenges of Public Space

During KII with concern authorities explained that the major challenges of three sites, which are similar and some are unique too. For case of Ratnapark, major challenge is supply of drinking water, prostitution & illegal activities in the periphery. For case of Disaster Management Park, it lacks enough funding for management, though it is under change by support from JICA. It has shrine due to road expansion and it possible of reduction in size too. The challenges for Sallaghari Tinkune are very immense. Government prohibit it from the planning and financial access in this area as they return worthless. Likewise, there are no infrastructures except ongoing boundary wall. The surface is very rough and no drain system. The government is not reluctant for ownership. It has found that 98per cent did not know about the challenges and 2per cent found no challenges as shown in table (3.9).

Table 3.9 Major Challenges for Public Space (N=113)

Parameter	Yes	No	Don't Know	No Response
Frequency	0	2	111	0
Percent	0%	2%	98%	0%

Source: Field Survey, 2019

There are many works required to be carried out in order make the public space. Most essential is plan, budget allocation, ownership, monitoring and evaluation. For HHs 3per cent has found that security, 17per cent sanitation & 80per cent have no idea about it as shown in table (3.10).

Table 3.10 Sustainable Management of Public Space (N=113)

Parameter	Frequency	Percentage	Remarks
Security	4	3%	
Sanitation	19	17%	
Don't Know	90	80%	
Total		100%	

Source: Field Survey, 2019

3.10 Public Space Management

Management of public space has always been critical especially in the context where government emphasis on other priorities like infrastructure development. The key findings during survey were the governments do not propose to invest to the degree possible due the low rate of return. Therefore, the public space remains unmanaged and overlooked. After the endless lobbying of NGO & others, government has started to allocate the limited budget in public space. This budget can only cover the staff salary and minor maintenance works. In recent year due to unprecedented encroachments, government compellingly allotted the economy for boundary structures and layouts. The survey found that government has managed 100per cent of public space and 96per cent don't know who can management better, 1percen teach vowed government & community is better at management of Public space as shown in Table 3.11.

Table 3.11 Management of Public Space (N=113)

Respondent	Parameter	Government	Community	Private	Don't Know
Frequency	Management	113	0	0	0
Percent		100%	0%	0%	0%
Frequency	Better	4	1		108
Percent	management	3%	1%	0	96%

Source: Field Survey, 2019

3.11 Entry Fee

Ratnapark, a field study area charges entry fee of NPR 25 from every visitors excluding elderly people. The earnings yearly counted NPR 11,800,000 last year, out of which 5,400,000 was the expenditure in management, so remaining amount has utilized by KMC in different activities under annual plan. This query has asked in this field area only. The result shows that 34per cent of respondent found the entry fee

be expensive, 15per cent fair, 18per cent cheap and 46per cent did not know whether it was cheap or expensive.

3.12 Service and O&M Charge

The public space is managed by government, it is found that there is no service charge and O & M during KII but household survey exhibited that 96per cent don't know whether they have paid service charge or not, 4per cent did not pay service charge and only 1per cent paid service charge. Likewise, 96per cent don't know whether they pay O & M or not & remaining 4percent did not pay O&M fee.

3.13 Women & DAG Participation

The public space management committee is essential for sustainability. The women participation in decision-making is more vital for empowerment and equity. The women actively engaged in the politics are interested in the management committee whereas working women and remaining no either no interest or time for that. The ongoing project gave emphasis to the women in every portfolio but the engagement in not up to the expectation. Likewise, government also launched campaigns for women engagement but due to cultural, social and religious bounds; the return on investment has not satisfactory. The field survey revealed that 7per cent supposed none participation, 12per cent assumed less than 33per cent, 18 percent believed 33per cent or more and 64per cent don't know about proportions of women participation in public space management. Similarly, respondent argued that 16per cent of women don't participate due to lack of time, 11per cent due to lack of commitment, 9per cent due to family priority and 64per cent did not know the reason behind that as shown in table 3.13.

Table 3.13 Women Participation (N=113)

Parameter	Frequency	Percentage	Remarks
Lack of Commitment	12	11%	
Family Commitment	10	9%	
Lack of Time & Dedication	18	16%	
Don't Know	73	64%	
Total		100%	

Source: Field Survey, 2019

The public space has not found disable friendly, i.e. no ramp, no guiding rail etc. so the disabled people were not observed during the field visit. Government has also put no effort in making it friendly. The government and NGOs have given no sight in the disabled participation. The survey showed that 8per cent catches less than 33per cent participation & 92per cent did not know the proportion of disabled people in management.

Correspondingly, 4per cent believes the reason behind not participation of disabled person in management is due to physical challenge, 1per cent due to lack of time and dedication, 1per cent due to lack of commitment, 2per cent due to family commitment & 92per cent did not know the reason behind it as shown in Table 3.14.

Table 3.14 Disable Participation (N=113)

Parameter	Frequency	Percentage	Remarks
Lack of Commitment	1	1%	
Family Commitment	2	2%	
Lack of Time & Dedication	1	1%	
Physical Challenge	5	4%	
Don't Know	104	92%	
Total		100%	

Source: Field Survey, 2019

Amazingly, 100 per cent respondents did not know whether they have special encouraged at all as shown in Table 3.15 below.

Table 3.15 Special Encouragement (N=113)

Parameter	Yes	No	Don't Know	No Response
Frequency	0	0	113	0
Percent	0%	0%	100%	0%

Source: Field Survey, 2019

3.14. Monitoring of Public Space

There are no such monitoring events in calendar but government officials and other visit the site on regular basis. For Ratnapark there is seven delegated staff for management, monitoring events. For other sites there are delegated person to oversee the construction activities but no delicate monitoring personnel. Disaster Management Park is under user committee, so they monitor the site on need basis. For Sallaghari Tinkune, construction activity is being supervised by ward office but after completion of construction, there is no defined monitoring event scheduled. Therefore, HHs extract that only 3per cent participate in monitoring event, 53per cent did not, 42per cent do not know about it at all and 2per cent did not respond as shown in fig. 3.6 below.

3.15 Interest in Management of Public Space

The management committee composes of elected leaders, political leaders, civil society and associated organizations. Most of the community members are unaware of the committee, their works and legislation. Equally, the community member did not show any interest in the management. Survey revealed that 4per cent showed interest in management, 64per cent had no interest in management committee, 3per cent had no information on management

committee, 27per cent did not know whether they wanted to be in management committee or not, lastly 2per cent did not response as shown in figure 3.7 below.

3.16 Government Challenges & Opportunities

The major challenges for government are limitation of fund, ignorance of senior management, encroachment, public opposition and lack of vision. The opportunities for government are most of public space can be planned from the scratch, support from NGOs, make influential impact on the society, create an illustrative work, learn from international deeds, implement the international practice and model i.e. locally adapted, transform to smart sustainable city. The main challenges during HHs surveyed found were 6 percent unemployment, 3per cent people not good, 9per cent no response & 82per cent do not know. Similarly, for opportunities none respondent know about the opportunities of government as shown in table 3.16.

Table 3.16 Government Challenges & Opportunities (N=113)

Parameter	Frequency	Percentage	Remarks
Unemployment	7	6%	
Not good people	4	3%	
Don't Know	92	82%	
No Response	10	9%	
Total		100%	

Source: Field Survey, 2019

3.17 Community Challenges & Opportunities

The management of public is merely in the hand of community in the local context. Although the community possess great potential of management, due to unwillingness, legal constraint, capacity & lack of process of transfer, community are not in sight in management of public space. The busy schedule in urban area, self-centered thought, hardship of earning living expenses, lack of ownership are the major challenges. Likewise, government also doubt in handover to community as per their experience, community will try to find the earnings from it, which in turn promote in construction of temples, community shelter and rental agreement with private & public entity. The community member believes that the management of public space is works of politician and found it very much problematic and stressing. Hence, they have tried to engage in this type of hurdle.

The opportunity for community is immense. Unpackaged opportunities include capacity development, preserve indigenous technology, and transfer the knowledge, community engagement, social participation, rituals preservation, linkage to the government, preparedness for

disaster and many more. It also creates a social harmony and provides a forum to fight against the inequality, social misconception.

For the HHs survey, 4% believe that government is not good, 89% did not know & 4% did not response at all. In case of opportunities, no one could figure out the opportunities for community.

3.18 Private Sector Challenges and Opportunities

All three municipalities are promoting private sector in different sector and engaging in the different portfolio. KMC has been practicing management contract and public private partnership and have a unit dedicated for it. LMC is following the same path and encouraging private in this matter. However, in the case of Bhaktapur Municipality they are still in dilemma either to promote the private sector or not due to experiences. A proposal from private firm for management of Ratnapark and use it as humanitarian area in case of disaster in BOOT (Build - Own- Operate-Transfer) has been circumstantial phase.

The major challenges for private sector are to own the trust of government and people that they will remain with the contractual agreement without influencing the political leaders and parties. They also make the authority suspicious by nature of profit motive, which is against the principle of public space to serve the community. Different extrusion and treat from different groups create hostile environment. Hidden corruption, motives from different parties and well as legal issues are also challenges.

The opportunities for private sector are of wide range from risk transfer to capacity building. The private sector could earn contractual settings, capacity enhanced, risk transfer and many more.

However, from HHs survey it has found that no respondents have an idea about challenges & opportunities of private sector.

Table 3.18 Government Challenges & Opportunities (N=113)

Parameter	Challenges		Opportunities	
	Frequency	Percent	Frequency	Percent
Don't Know	113	100%	113	100%
Total		100%		100%

Source: Field Survey, 2019

3.19 Linkage of Public Space and Disaster Risk Reduction

One of the most astonishing findings was no one could link between disaster management & public space. As mentioned above they could relate disaster management to public space in relief phase only. HHs also found that no one could relate between disaster management & public space (Table 3.19).

Table 3.19 Link between Disaster risk reduction & Public Space (N=113)

Parameter	Yes	No	Don't Know	No Response
Frequency	0	0	113	0
Percent	0%	0%	100%	0%

Source: Field Survey, 2019

3.20 Role of Public Space for Disaster Risk Reduction

The concerned authorities and public too could not directly link the public space in disaster management. They view both entities are completely different but aftermath of disaster is could support each other. They could relate the public only in relief phase but some has views on preparedness too but with no idea. They view the area only for shelter space in relief phase and emphasized that no major works could be carried out in preparedness of disaster. They believe that preparedness in related in firefighting system only. It has revealed that 100per cent have no idea about the role of public space in disaster risk reduction (Table 3.20).

Table 3.20 Role of Public Space in Disaster Risk Reduction (N=113)

Parameter	Yes	No	Don't Know	No Response
Frequency	0	0	113	0
Percent	0%	0%	100%	0%

Source: Field Survey, 2019

4 CONCLUSIONS AND RECOMMENDATION

The dominant numbers of visitors in all three sites are male based in gender and offspring established on household position. Most of the visitors come here to spend the time with friend and others come to pass leisure time. The numbers of visitors are high in Ratnapark due to the well-maintained condition and its centered location followed by Disaster Management Park and Sallaghari Tinkune. The age group of the visitors varies from child to senior citizen but half count for teenager who normally comes after college or school to hang out. As most of the visitors are between the age group of 19-25, the education level of visitors is predominantly high school and university student and marital status is single. Out of three-study area, Ratnapark is in good condition with good quality metal fences for illegal encroachment, black topped access road, nearby hospital for emergency, Ranipokhari in case of fire, government offices and security forces. The surface has covered with green grasses, dedicated pave way for commute and well managed sitting place. It is facilitated with toilet and designated entry and exit points. Disaster Management Park is under massive reconstruction, which in time will turn as disaster management hub with facilities like drinking water, toilet, and office for disaster management, well-paved pathway, and

green surface and mostly importantly facilitated with black topped road and hospital nearby. Sallaghari Tinkune is undermined and lack of budget and vision of government authority has turned into a dumping site. Although the fencing work is underway, but the surface filled with debris where the sitting place is literally hard to find. Adjacent to Arniko highway, it could be the livable public space and source of income generation.

The management of all three parks are handled by government, and to some extent in Ratnapark, government has provided the justice to it. Ratnapark has designated officers for management under Kathmandu Metropolitan City where regular operation and maintenance as well as meetings, repairs and construction is carried out. With entry fee, Ratnapark is self-sustained in terms of budget to execute any plans. Disaster Management Park owned by Lalitpur Municipality City and has an officer to oversee the undergoing construction and its management afterward in planned to be executed by LMC with support from self-help group. Sallaghari Tinkune is under ward no. 1 of Bhaktapur Municipality and it is deemed by authority due to lack of budget. They have no concrete management plans until now and excepting the support of international and national NGOs for future development.

The following recommendations have put forward to improve the policy and practices of public space management in the study area:

- Different programs & people friendly construction should do to increase the number of visitors' especially senior citizen, women and disabled people.
- The budget should allocate for repair maintenance, O&M, protection works and other activity like meetings.
- The allocation of entry fee and designated officers should provision for the management of all parks.
- It should provide the special encouragement for the participation of the local people, women and disabled people in management.
- It should explore the alternative approach for management like community engagement, Public Private Partnership and others for sustainability of the public space management.
- It should user-friendly feedback mechanism for inclusive participation towards the sustainability of public space management.

References

- [1]. Chitrakar, Rajjan. (2016). Meaning of public space and sense of community: The case of new neighbourhoods in the Kathmandu Valley. *International Journal of Architectural Research*. 10. 213-227. 10.26687/archnet-ijar.v10i1.807.
- [2]. Shrestha, S. R., Sliuzas, R., & Kuffer, M. (2018). Open spaces and risk perception in post-earthquake Kathmandu city. *Applied Geography*, 93, 81-91. <https://doi.org/10.1016/j.apgeog.2018.02.016>
- [3]. Bhattarai, Keshav & Conway, Dennis. (2010). Urban Vulnerabilities in the Kathmandu Valley, Nepal: Visualizations of Human/Hazard Interactions. *J. Geographic Information System*. 2. 63-84. 10.4236/jgis.2010.22012.
- [4]. Chitrakar, R. M., Baker, D. C., & Guaralda, M. (2016). Urban growth and development of contemporary neighbourhood public space in Kathmandu Valley, Nepal. *Habitat International*, 53, 30-38. <https://doi.org/10.1016/j.habitatint.2015.11.006>
- [5]. IOM Nepal. Report on identification of open spaces for Humanitarian purposes in Kathmandu Valley. MoHa: Kathmandu (2015) Retrieved from <https://sites.google.com/site/kathmanduopenspaces/>
- [6]. United Nations. Review of SDGs implementation: SDG 11 – Make cities and human settlements inclusive, safe, resilient and sustainable. United Nations: New York (2018)
- [7]. Wahlström, M. (2015). New Sendai Framework Strengthens Focus on Reducing Disaster Risk. *International Journal of Disaster Risk Science*, 6(2), 200-201. <https://doi.org/10.1007/s13753-015-0057-2>
- [8]. Godschalk David R. (2003). Urban Hazard Mitigation: Creating Resilient Cities. *Natural Hazards Review*, 4(3), 136-143. [https://doi.org/10.1061/\(ASCE\)1527-6988\(2003\)4:3\(136\)](https://doi.org/10.1061/(ASCE)1527-6988(2003)4:3(136))
- [9]. Saiedlue, S., Hosseini, S. B., Yazdanfar, S. A., & Maleki, S. N. (2015). Enhancing Quality of Life and Improving Living Standards through the Expansion of Open Space in Residential Complex. *Procedia-Social and Behavioral Sciences*, 201, 308-316.
- [10]. Bryant, M., & Allan, P. (2013). Open Space Innovation in Earthquake Affected Cities. In *Approaches to Disaster Management – Examining the Implications of Hazards, Emergencies and Disasters* (pp. 183-204). <https://doi.org/10.5772/3355>
- [11]. Lamichhane, D., & Thapa, H. B. (2012). Participatory urban forestry in Nepal: Gaps and ways forward. *Urban forestry & urban greening*, 11(2), 105-111.
- [12]. Anhorn, J., & Khazai, B. (2015). Open space suitability analysis for emergency shelter after an earthquake. *Nat. Hazards Earth Syst. Sci.*, 15(4), 789-803. <https://doi.org/10.5194/nhess-15-789-2015>
- [13]. Thomalla, F., Downing, T., Spanger-Siegfried, E., Han, G., & Rockström, J. (2006). Reducing hazard vulnerability: towards a common approach between disaster risk reduction and climate adaptation. *Disasters*, 30(1), 39-48. <https://doi.org/10.1111/j.1467-9523.2006.00305.x>

[14].Characteristics of good sample. Retrieved from
[https://www.academia.edu/30191766/Characteristics_of_g
ood_sample](https://www.academia.edu/30191766/Characteristics_of_good_sample): Date accessed: 3/4/2019

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