

Management of Public Land for Urban Open Space:

In case of Disaster Risk Reduction

Sanjaya MANANDHAR, Janak Raj JOSHI

sanjayasurveyor@gmail.com, janakrajjoshi@hotmail.com

Key Words: Public land management, Urban open space, Disaster risk reduction

SUMMARY

Being a hotspot for geophysical and climatic threats, Nepal seriously faced recent 'Earthquake Disaster-2015', and the citizens of Nepal realized mostly absence and low adequacy of open spaces for temporary residence and shelter for aftershock period. They strongly felt the importance of open spaces for reduction of risk on such disasters in crowd and un-managed cities. The risk is believed to be increasing very rapidly mainly due to the growth in population, informal settlement and lack of urban built-up standards especially in urban and urbanizing areas.

Public lands are generally badly managed throughout the world because of its low national primacy agenda and insufficient policy, process and institutional framework. Badly managed state land and low primacy agenda is not only decreasing its efficiency but increasing encroachment options also. Public land management is a critical factor for ensuring better Urban Open Space -UOS management. Public land management is important part to providing adequate access of land to plan standard urban design, which can able to manage standard requirement of open spaces for urban cities. The management of public lands not only supports in management of open space but can support in Disaster Risk Reduction -DRR with providing the necessities of smart cities. This paper try to discuss on significance of public land management in minimum requirement of open space for such Disaster Risk Reduction -DRR.

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1 Recent Earthquake in Nepal

Two major earthquakes smash this year-2015 in Nepal, first on April 25th in Gorkha district, and later on May 12th with the epicenter in Sindhupalchowk district about near location of capital city Kathmandu valley. These two major quakes and numeral of unceasing reverberations have extremely foiled the life of publics. The data distributed by International Organization for Migration, IOM-2015 shows that more than 8800 people died. More than 8.1 million persons are directly affected 39 districts of Nepal's 75, around 2.8 million people living in the 14 most severely affected districts, over 1279,330 houses damaged and 505,577 houses destroyed.

1.1 Lack of Information about suitable open space to quick shelter

There has seen the lack of information and communication about suitable open space to quick shelter. Getting to know, that where are these open spaces located? Beforehand can save lives and increase communities resilience to disasters. When disaster hit, people can immediately go to these sites to get the aid they need. Further investment in establishing a better management of open spaces shall include organized and well equipped sites. These open spaces should go beyond just allocating the space and focus on the underlying risk even in non-affected areas to develop a holistic approach for risk reduction in Kathmandu Valley.

1.2 Feeling requirement of open space

After the devastate quake, people often get confused of sheltering their houses for their suspected residential structure, which may not be earthquake proof and resistant. So, after people whose houses are not damaged or partially damaged lived in a tent in front of their house, whereas the people whose houses were partially or completely damaged or reside in a risky area ran to all the identified open spaces or any other open areas. But they have no alternate to living in open space with running from concrete crowd and low strength and suspected high rise buildings. Then they feel the role of open spaces, which play crucial requirement in increasing population and settlements.

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People has acknowledged that the availability of these open spaces provided them with immediate safety. Slowly, those people living in rented houses started returning back to their houses in districts outside Kathmandu Valley because of the fear of another major earthquake, or their rented house being cracked or destroyed. Some returned back to accompany and rescue their family in the earthquake hit districts. After the first earthquake, International Organization of Migration Nepal-IOM conducted a rapid assessment of open spaces in Kathmandu and found that about only 83 open spaces in Kathmandu Valley. Another rapid assessment was conducted by IOM from 29 to 30 April after the fifth day of the earthquake. It was found that 33 open spaces were still being used holding 30,904 internally displaced populations from 5,529 Households.

These open spaces gave shelter not only to the people from Kathmandu Valley but also of residents who have fled from other districts, with the majority of residents from Sindhupalchowk, Dolakh, Kabhre, Dhading, Nuwakot and Gorkha. So, it is clear that how open space helps community resilience with physical resilience, holistic well-being of individuals and helping them recover from the earthquakes.

2 Review on role of public land management

Public land management is a critical factor for safeguarding good governance in the land administration of a country. Weak governance in managing public property resources shows unlimited consequences on various sectors i.e. economic development, poverty alleviation, the environment, political legitimacy, peace and security, and development cooperation (Zimmermann, 2008). Land management is broader than land administration. It covers all activities associated with the management of land and natural resources that are required to fulfill political objectives and achieve sustainable development. Land management is then simply the processes by which a country's resources are put to good effect(UNECE, 1996).

One of the best ways to understand a system is to disturb it(Bryant & Allan, 2013). The calamities shows the system problems and need of modification of system. We should able to get positive learning from it. The rush for searching open spaces for shelter during earthquake disaster shows clear essential of open space. Well-maintained parks and open spaces enhance the quality of life by providing picturesque views and refreshment opportunities. As a result, nearby landowners also gets an increase in real property values and marketability for their property also. State Land Management is the management of all State /public land(Thiel, 2009). Public land is base of development of any country to its social, economic and environmental perspective. Public land is highly important for public benefit. If it is properly managed and preserved, it can be an important resource for inhabitants and allow for sustainable development based on a fair balance of social needs, economic activity and environmental management(Grover, 2008).

Open Space can be define as any parcel of land maintained in a basically unbuilt state and reserved for public or private uses, including, but not limited to habitat protection, water quality protection, passive recreational uses, livestock grazing or field crop production(Services,

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2006). Disasters have always been a result of human communication with nature, technology and other living entities. Sometimes unpredictable and sudden, sometimes slow and lingering, various types of disasters continually affect the way in which we live our daily lives(USAID, 2011). There are mainly two classes of open space, one is natural open space and another is developed open space whose main source may be public land. The ecological resilience approach is a good model for public space design because, even though it may entail a lot of design research, it suggests that interferences can be battered and relatively minimal, generated from the bottom-up, with whatever is at hand. This kind of design is about adjusting, encouraging innovation and redundancies, making space, exploring new ways and relationships between community and place(Bryant & Allan, 2013).

3 Public land requirement assesment methodology

This paper is based on spatial data of public land of study area. It uses the limited questionnaire to support qualitative data for public land requirement assessment. It uses related cadastral maps and imagery to create public land database.

3.1 Study Area and data collection

The study area was selected in Ward no 11 of Banepa Municipality. It was suitable for the

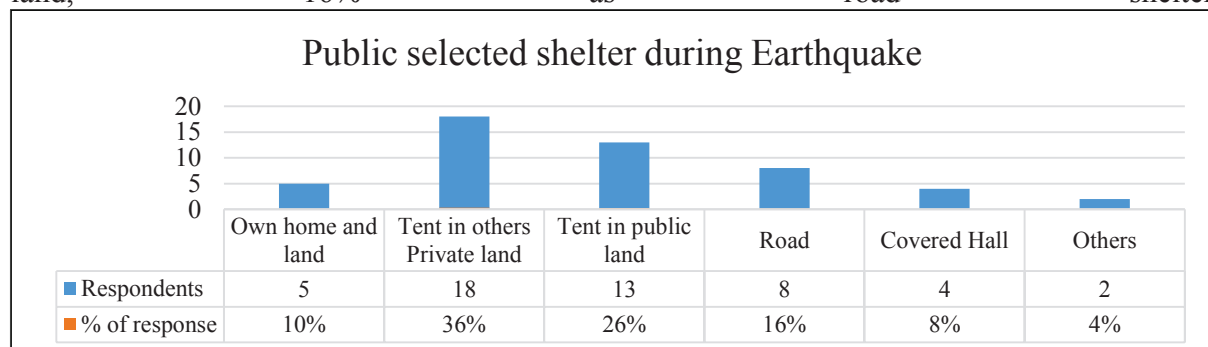


Figure 3-1: Study Area

study because the area is located between two major earthquake epicenters and today's it is growing as emerging urban settlement near capital city of Nepal. Banepa, the historical town, about 26km east from Kathmandu situated in Bagmati, Central, Nepal and geographically locates on 27° 38' 0" North, 85° 31' 0" East, which is shown in Figure 3-1.

There performed randomly cluster sampling questionnaire method to get information about shelter options in 50 households. There found

that, mainly 36% households selected tent in others private land, 26% selected as tent in public land, 16% as road shelter



option during earthquake as shown in Figure 3-2. Figure 3-2: Public selected shelter during Earthquake

3.2 Data presentation and analysis

There are 126126 m² public land in study area. In which only 56111 m² are found as barren or open public land. There is also sloppy forest in north side of study location as area of 1041566

S.N.	Public Land Type	Area/m ²
1	Barren(Open public Land)	56111
2	Road	34192
3	Stream	22786
4	Pond	2172
5	Building	2670
7	Nursery	8194
	Total	126126

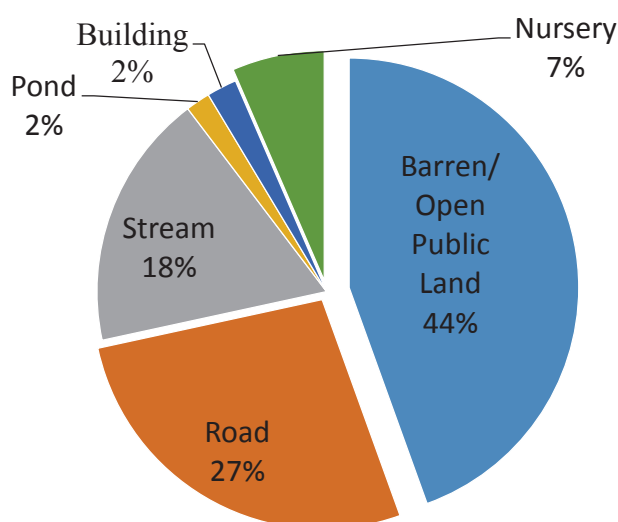


Figure 3-3: Pie chart of public land

m². But the legislation of Nepal, it is classified as state land and no public can directly use and enjoy it. Forest are restricted and protected resource in Nepal and committed to maintaining more than 40% area of national land area. In total public land about 44% land exist as Barren or open public land, 27% consist as road, 18% as stream, 2% as pond and government buildings and 7% used and bounded in purpose of Nursery, which is shown in Figure 3-3. In study area, the suitable open space for use in disaster is barren land. The listed road, stream, pond, building, nursery and forest are low or not suitable in case of sheltering in pre and post disaster period. There are easy access of highway and roads in about more part of public land in study area. They are also suitable to sheltering and performing different social recreational activities. But most of public land including forest area are out of access of road, inaccessible of services and slope ground nature.

Table 3-1: List of total used public land

FID	Description	Area(m ²)
0	Vegetable Market and Covered Hall	7320
1	Red cross Building and Office of Journalist	6905
2	Animal Development Area (Pashu bikash Ratmate)	1445
3	Bhakteshor School	1112
4	Road	672
5	Ward Office	165
6	Road	1162
7	Kavre Multiple Campus	3615
8	Road	1598
	Total Area	23994

Table 3-2: List of total remained open space

FID	Description	Area(m ²)
0	Chandeshori Stream (Khola)	58
1	Kuikel Village (Gau)	7393
2	Kuikel Village (Gau)	711
3	Kuikel Village (Gau)	565
4	Chandeshori forest east	8864
5	Khatri Village (Gau)	1667
6	Ratmate- Punyamati Riverside	700
7	Vegetable Market and Covered Hall	1266
8	Red cross Building and Office of Journalist	5166
9	Kavre Multiple Campus	2979
10	Chandeshori forest east	2748
	Total Area	32118

But lack of sustainable vision of local government, communities and stakeholders, the suitable

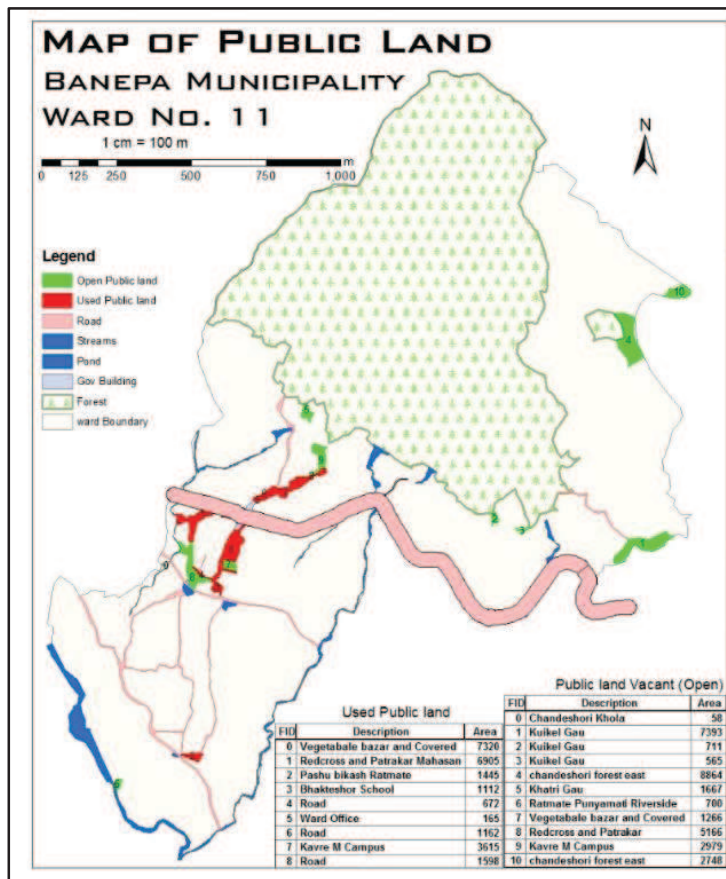


Figure 3-4: Map of public land

for open space public land are allocating in so called different development and local activities. The maximum part of public land suitable for open spaces, parks and recreational area are already covered or used for other purposes i.e. for vegetable market and covered hall which replaced the community football and playground, same as for Red cross buildings and building for Journalist etc. which is shown in

Table 3-1.

There may be distinct positive impact of such allocation of the good characterize public lands in study area. But most of respondent do not agree that ongoing allocation of public land use are sustainable. In study area, about 23994 m² of public land are allocated for different social purposes where 32118 m² public land which locates

in inaccessible and slope nature are remains, which is shown in Table 3-2.

That data table shows that there are inconsistent and no plan in distribution and allocation of public land. The result can be analyze as there may be lack of open space and public land access for purpose of parks, children entertainment spots, recreational area and spots for sheltering when disaster occurs. Figure 3-4 shows map of public land with distribution its use pattern and vacant condition. That map tries to show overall use and allocation of public land in study area. There is clear message that major important portion of public land has been allocated in different purposes but another horizon, there is feeling lack of public land for purpose of open spaces, recreational area and sports grounds. Unfortunately, only sloppy, low productive and far from road access public land are remain which can see in map on Figure 3-4.

4 Discussion on urban open space and disaster risk reduction

Open spaces are defined as those areas of green space where people and companies can spend leisure time, undertake a range of formal and informal events or just have a break. Open spaces, sport and recreation provision strengthens people's quality of life. The development of open space new or improvement of existing spaces, does not simply improve the physical landscape but improves and impacts on the cultural, ecological and economical value of the neighboring area (Council, 2011). Considering the necessity of open space for time of disaster, it values both of pre disaster period and likely as post disaster period.

Efficient public land management supports to allocation of required positional urban space. Effective allocation and use of public land is one of the important tier of land management. So, proper public land management positively supports to urban open space management which is an important part of reduction of disaster risk by providing different shelter options and related services to disaster victims and common public. The relational composition of public land management, urban open space management and disaster risk reduction can see in Figure 4-1.

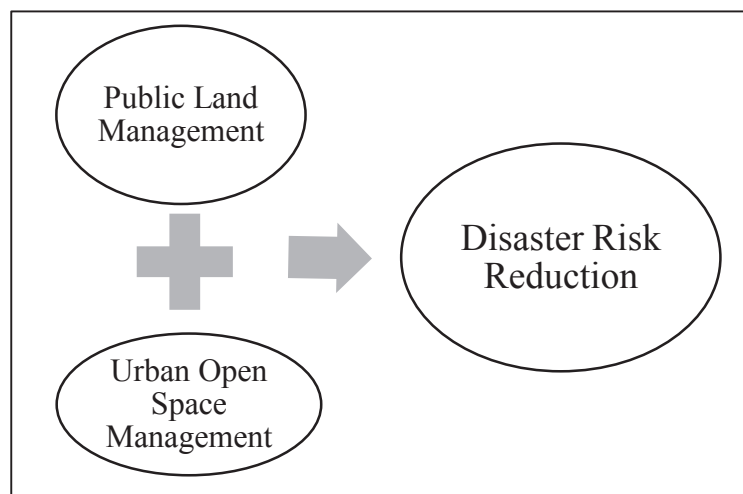


Figure 4-1: Relational Public land management, Urban open space management and disaster risk reduction Diagram.

The social value of public space is the opportunity such places offer for interacting with others. The social relations that occurs in public places is significant as it often represents communication and concession between non-homogenous users who may otherwise have little opportunity or reason to interact. Public

spaces are symbols of the larger collective identity and signal standards and traditions of the culture. They can signal the character of a city as well as provide a source of common character and community superiority for the urban area(Holub, 2011).

Today the idea that high-quality public open space land should be a fundamental right rather than a facility for urban areas. It is a sentiment that is being reflected in cities. Many cities, from the largest to the smallest have placed an increased importance on planning for and executing open space plans (Holub, 2011). Throughout the United States and developed countries, there are broad public support for development of parks and open space protection. The Open Space Strategy is a conceptual framework that offers overall direction for site selection and preservation activities. Sound prevention and reduction of disaster risk are based on risk-informed decision-making, which requires freely available, openly accessible science-based risk information, including on disaster fatalities and socio-economic impact, hazards, exposure and vulnerability(Nations, 2014).

4.1 Disaster risk reduction

The concept and practice of decreasing disaster risks through regular efforts to analyze and manage the fundamental factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for confrontational events(Turnbull, Sterrett, & Hilleboe, 2013).

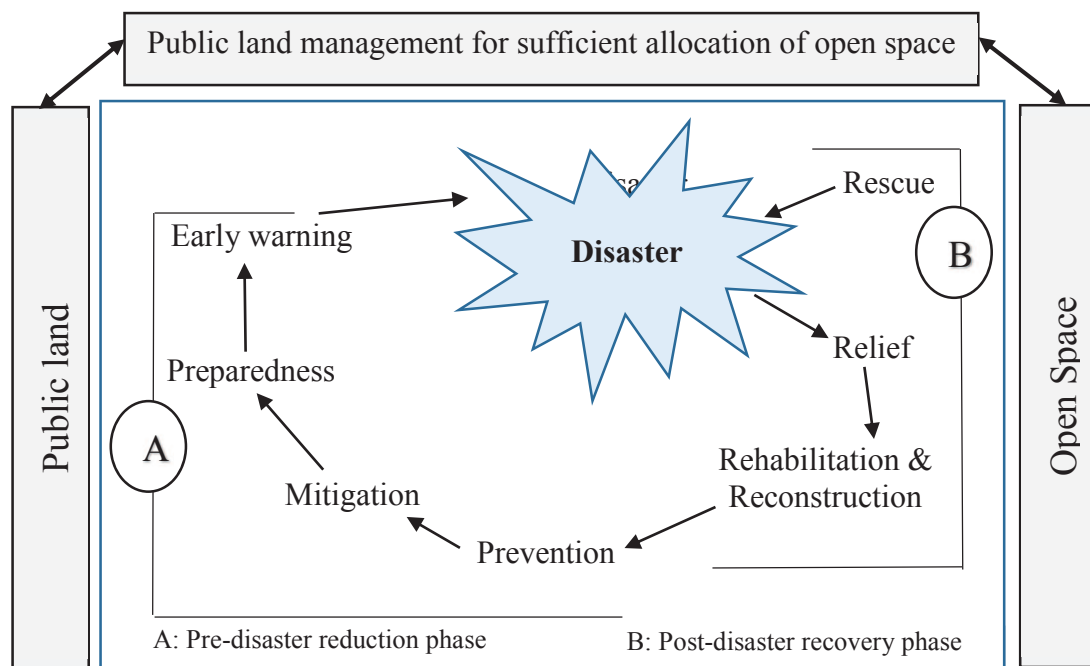


Figure 4-2: Link of public land to open space with the traditional disaster management cycle adapted from(USAID, 2011)

In case of study area, respondent were distressed in selection of temporary shelter during continuous aftershock. They could not found proper shelter to live for disaster period but they were staying anywhere they finds first and changing shelter location optionally. They were enormously feeling lack of proper open space to temporal shelter. Pre-announcement of disaster will help to early warning and it is good aspect to support in rescue and relief in post disaster. The need for disaster risk management to be an essential component of development plans and poverty eradication programs is now well accepted among experts(UNISDR, 2012).

As defined by the South African Disaster Management Act 57 of 2002 about disaster management, it is as a continuous and integrated multi-sectorial, multidisciplinary process of planning, and implementation of measures, aimed to avoiding or reducing the risk of disasters, alleviating the harshness or consequences of disasters, emergency preparedness, a rapid and effective response to disasters and post-disaster recovery and rehabilitation (USAID, 2011). Traditional disaster management cycle includes rescue, relief and rehabilitation and reconstruction in post disaster recovery phase and prevention, mitigation, preparedness and early warning includes in pre disaster reduction phase in a cyclic way which can see in Figure 4-2. The figure shows the importance of public land management for sufficient allocation of open space in cyclic phases of relief and basically in rehabilitation and reconstruction phase. It also plays a vital role in post disaster recovery as prevention, mitigation and preparedness phase.

4.2 Disaster risk and open space governance

In case of disaster risk governance, it is need to be guided by the general principles and objectives of inspiring disaster risk management as a policy priority; creating political commitment as a multi-sectorial accountability, assigning responsibility for disaster losses and impacts. In case of open space governance it is important to allocating necessary open space and related resources for disaster risk reduction which is able to imposing the implementation of disaster risk management and reduction. It is also important the combination of multi-stakeholder involvement, increasing gender understanding, and enabling participation by civil society and the private sector(USAID, 2011).

Developing countries, particularly small islands and least developed countries like Nepal are extremely affected by different disasters in different periods. There was a clear message that developed countries are also vulnerable to such severe disasters with memorizing the Great East Japan earthquake and tsunami. Unsustainable development practices, environment degradation, poverty as well as climate inconsistency and extremes have led to an increase in both natural and man-made disaster risk at a rate that poses a threat to lives and development efforts(UNISDR, 2012).

5 Conclusion

Public land management is a critical factor for ensuring good governance in the land administration of a country. There are common factors involved in poor public land

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management. There is typically ambiguity in authoritative roles and responsibilities, a lack of accountability or methodology in the systems of allocation, appropriation, disposal or use of public land, and a lack of information on state assets. Most of urban open space generates with proper management of public land and some portion may be managed from compulsory purchase and public private partnership.

Proper availability of open spaces i.e. parks, recreational area not only supports to emergency shelter in disaster period but more valuable to increasing urban worth. So, the availability of public land in urban area is important part where the allocation and proper use of public land is most important. It should be consider in sustainable use of public land but not use and waste in unjustifiable activities. To improve accountability, transparency and responsibility in public land assets and associated activities, there should be clear vision for proper use and conservation of public land.

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CONTACTS

Sanjaya Manandhar
Survey Officer, Cadastral Survey Division
Survey Department Nepal
Mob. + 98510-18211
Email: sanjayasurveyor@gmail.com

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