

# BUILDING A SAFER FUTURE

## ISET-NEPAL'S GREEN SPACE INITIATIVE IN DISASTER MANAGEMENT



### BACKGROUND

Urban open spaces, such as parks, plazas, streets, and seating areas, are publicly accessible areas free from dense structures. They serve dual purposes: enhancing community well-being and strengthening emergency preparedness and response. In disaster management, these spaces provide critical evacuation zones, temporary shelters, and aid distribution hubs during crises like earthquakes, floods, and landslides, which are hazards to which Nepal is highly vulnerable. Beyond disaster response, open spaces contribute to climate change mitigation, flood alleviation, ecosystem services, social cohesion, and public health, aligning with global frameworks like the Sustainable Development Goals (SDG 11: Sustainable Cities and Communities). Rapid

urbanization, population growth, and inadequate infrastructure exacerbate disaster risks, particularly in urban centers. Challenges such as unplanned development, poor construction standards, and limited resources hinder effective disaster management, compounded by Nepal's rugged terrain, complicating relief efforts in isolated areas. While disaster management policies have improved, gaps in implementation, infrastructure, and community preparedness underscore the need for practical solutions like open space mapping. These spaces are vital for emergency response, environmental sustainability, cultural preservation, and economic development, contributing to long-term community well-being.

### A SYSTEMIC APPROACH TO RESILIENCE

ISET-Nepal initiated its Multipurpose Open Space Management (MPOS) efforts in 2019 through the "Safer Cities" project with a consortium of ADRA Nepal, Dan Church Aid Nepal, Lutheran World Relief, and World Vision International Nepal. The project was implemented in Lalitpur Metropolitan City-9, ISET-Nepal, and focused on enhancing Sankamul Park by providing technical and material support, including installing hexagon concrete blocks for multipurpose paving and landscaping. The landscape and the shed built by the Ward Office created a versatile space for residents, serving as an emergency shelter, a site for mourning rituals, and a recreational area.

In 2021, ISET-Nepal expanded these efforts to Changunarayan Municipality in Bhaktapur District through the NEXUS Project supported by DCA. Changunarayan Municipality, blending traditional heritage with dense settlements, faces challenges like space constraints, encroachment, and insufficient open spaces. The project identified and mapped available open spaces to develop MPOS, catering to diverse community needs such as temporary shelter, clean water, sanitation, and accessibility for vulnerable groups. MPOS also promotes social cohesion through community activities like sports and events.



*Multi purpose open space, Shankhamul*



Open space map book of ward no. 2.



Drone used to map open spaces.

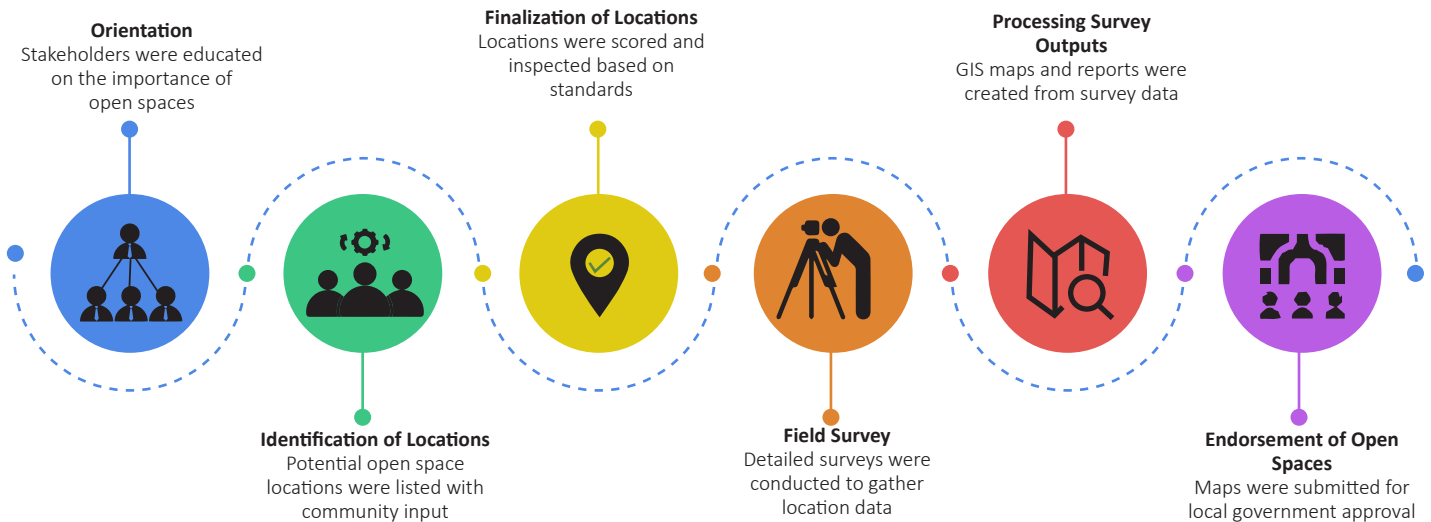
ISET-Nepal collaborated with NAXA Pvt Ltd to utilize drone technology to map open spaces in Changunarayan Municipality. We successfully mapped open spaces across all wards and established a planning framework to assist disaster-affected populations, aligning our efforts with internationally recognized humanitarian standards.

Drone technology offers enhanced visualization of ground features and rapid deployment in disaster-affected or hard-to-reach areas. High-resolution images and maps, captured using

the advanced WingtraOne survey-grade drone with a 7 cm/ pixel ground sampling distance (GSD).

Regular drone-based assessments could monitor land use changes, encroachment, and open space availability, aiding in action plans and preservation regulations. By adopting drone technology locally, communities can independently assess disaster impacts, plan mitigation strategies, and make informed decisions, highlighting its critical role in enhancing disaster resilience and sustainable urban development.

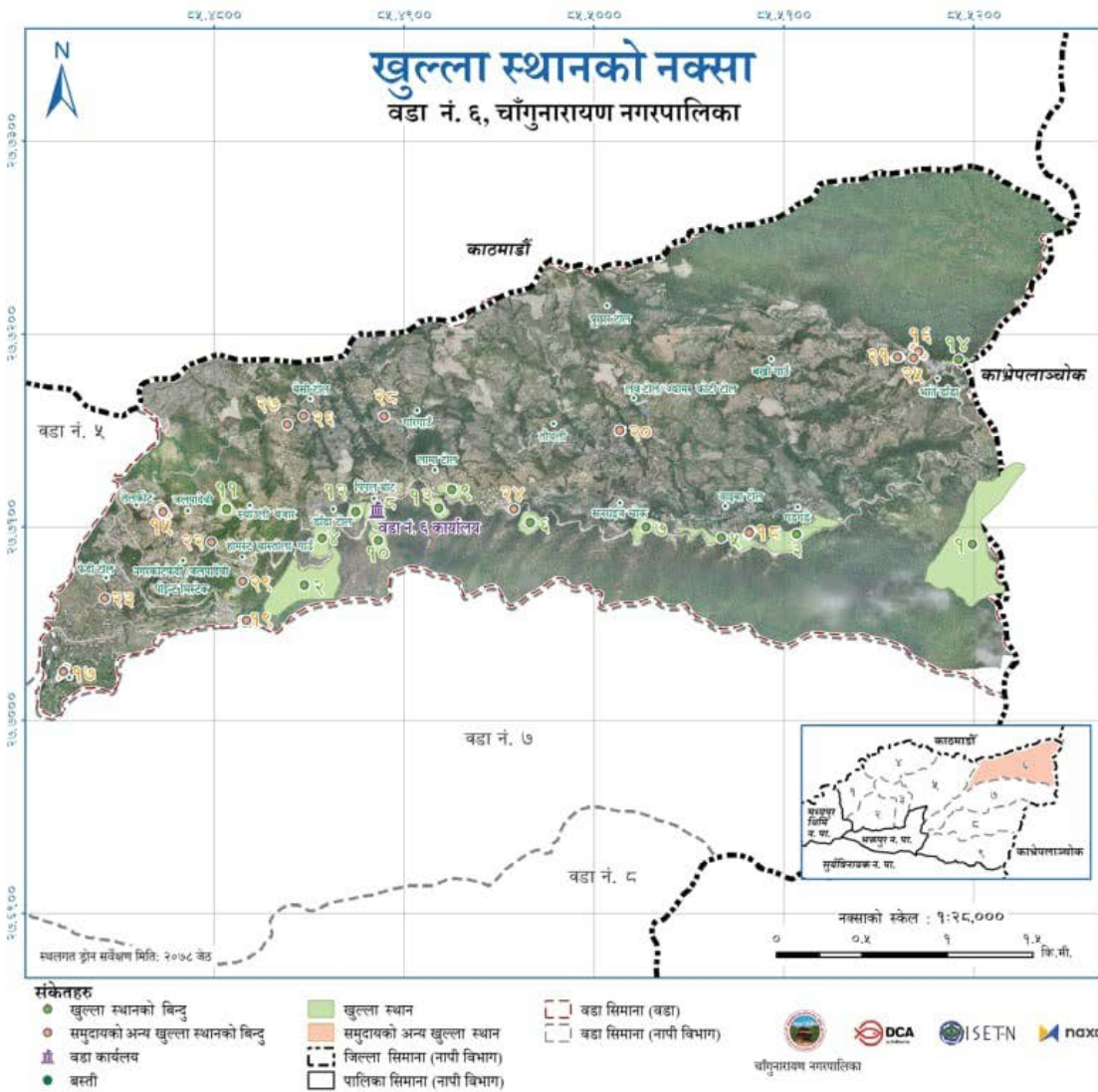
## PROCESS USED FOR IDENTIFYING AND MAPPING OPEN SPACES



Open Space Mapping (OSM) could be a strategic tool for the Changunarayan Municipality to reduce the impact of disasters and build resilient communities. By integrating these spaces into urban planning, the municipality can enhance its capacity to respond to crises, protect its residents, and preserve its cultural and natural heritage, making it a model for sustainable urban development in Nepal.

Following identifying open spaces in each ward, ISET-Nepal prepared a MPOS Guideline 2081 to help the local government prepare a Standard Operating Procedure (SOP) to maintain the identified open spaces. Preparing the MPOS Operating Guideline 2081 involved a mixed-method approach, including focus group discussion, key informant interview, and field observation, ensuring its relevance to Changunarayan's local context. It aims to create multipurpose public space for disaster preparedness. ISET-Nepal employed a rigorous, participatory methodology to map open spaces and draft the MPOS Operating Guideline 2081.



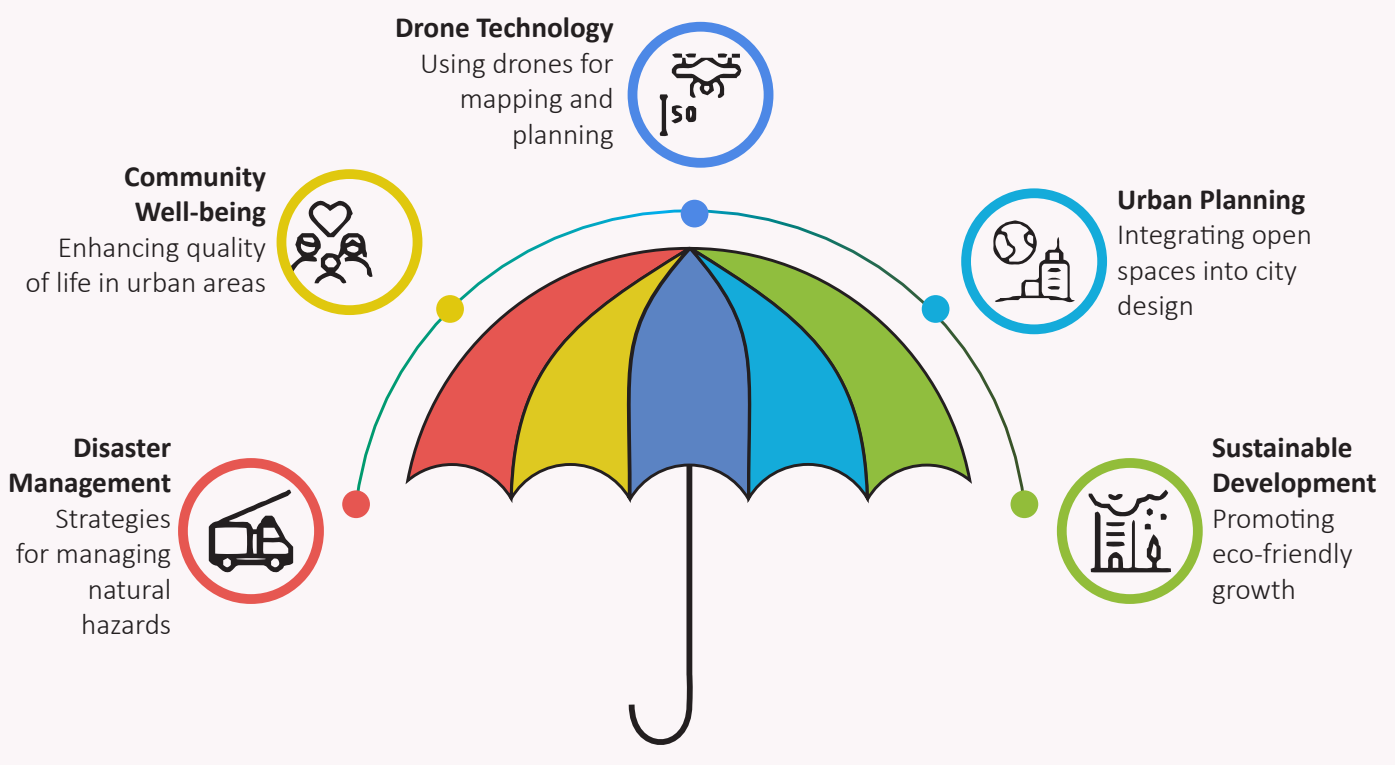


संकेत नं.	खुल्ला स्थान
१	भगेरी दरवार ब्यारेक
२	ऐन डाँडा पिकनिक स्पोट
३	रिम्पुच्चे गुम्बा चिहान डाँडा
४	मदन भण्डारी स्मृती पार्क
५	चुनदेवी माध्यमिक विद्यालय
६	गंगा देवी मन्दिर क्षेत्र
७	शान्ती डाँडा उद्व्यान
८	वडा कार्यालय हेल्थ पोस्ट
९	खानेपानी तालिम केन्द्र
१०	खानेपानी मुहान
११	च्यान डाँडा
१२	कालिका माध्यमिक विद्यालय
१३	माउन्ट एभरेष्ट फुटबल ग्राउन्ड
१४	भट्टी डाँडा नगरकोट बस पार्क

संकेत नं.	समुदायको अन्य खुल्ला स्थान
१५	जालपादेवी मन्दिर
१६	गङ्गुडे आधारभुत विद्यालय
१७	गिता मन्दिर
१८	कालिका मन्दिर
१९	मुहान पोखरी
२०	तौथली च्यान पाटी
२१	थिङ टोल चिहान डाँडा
२२	बास्तोला कुल देवता मन्दिर
२३	नगरकोट आधारभुत विद्यालय
२४	लामा टोल बौद्ध गुम्बा
२५	हेक्वाप हेल्थ पोस्ट
२६	लब टोल खुल्ला ग्राउन्ड
२७	चेतना आधारभुत विद्यालय
२८	तौथली आधारभुत विद्यालय
२९	बास्तोला गाँउ (होमस्टे सामुदायिक भवन)

Open space map of ward no. 6, Changunarayan Municipality

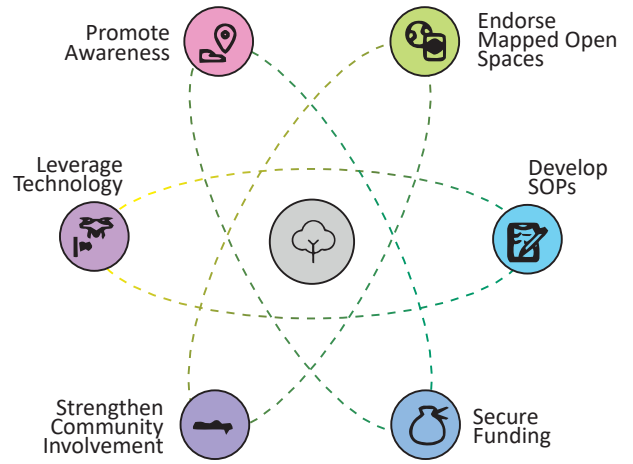
## MAPPING OPEN SPACES FOR DISASTER RESILIENCE



# RECOMMENDATIONS

To maximize the impact of this initiative, ISET-Nepal recommends the following actions for Changunarayan Municipality:

1. Humanitarian zone: Officially recognize the guideline as a humanitarian zone and for its effective protection, and include it in the red book.
2. Use of guideline: Effectively use the open space management guideline outlining the stakeholders' role.
3. Secure Funding: Allocate a budget for MPOS development (e.g., green spaces, lightning, and accessibility features) and seek support from development partners.
4. Strengthen Community Involvement: Establish local committees to monitor and maintain open spaces, fostering civic ownership.
5. Leverage Technology: Continue using drone surveys to monitor land-use changes and update maps periodically. It provides precise urban planning, infrastructure development, and disaster preparedness datasets.
6. Promote Awareness: To ensure widespread use disseminate maps and guidelines through community events, schools, and digital platforms.



Open Space Mapping is a strategic tool to reduce disaster impacts and build a sustainable Changunarayan. By adopting these recommendations, the municipality can enhance its disaster preparedness, capacity to protect residents, respond to crises, and preserve its unique heritage. ISET-Nepal stands ready to support SOP development and implementation, ensuring Changunarayan becomes a model for urban resilience in Nepal.

# KNOWLEDGE PRODUCTS

**Concept and process**  
Open spaces can be utilized as recreational places during normal situations and provide shelter during emergencies. Open spaces are getting scarce in urban areas, especially in Kathmandu and Lalitpur Metropolitan, where buildings have overcrowded the cities. Due to population densification and land encroachment, many of the previously existed open spaces have already been disappeared or are very limited. The necessity of free space is felt more after the earthquake in 2015. During the 2015 earthquake, many people took shelter in all available open spaces. The Kathmandu Valley lies in a seismic active zone and recurrent disaster areas therefore, there is an immediate necessity to manage and develop open spaces for the people to take shelters during disasters. Disasters such as urban floods and fire incidents are likely to increase annually due to climate change and other natural and anthropogenic factors.

Ward number nine of Lalitpur Metropolitan City has established a multipurpose open space in Shankhamul with financial support from the Lalitpur Metropolitan City Office and ISET Nepal. The open space provides shelter during emergencies and serves as a venue for mourning rituals for World number nine. The Ward officials designed and executed the plan for open space development.

ISET Nepal was working with Ward office number nine in the Safer Cities Project when the ward office requested ISET Nepal to provide funding to develop the land in a Shankhamul multipurpose area. ISET Nepal agreed to support soil fill-up, landscaping,

Open space has no densely built structures or buildings. They are identified and mapped primarily to strengthen the emergency preparedness and response initiatives of government authorities and emergency responders.

**Urban Resilience**  
Nepal is prone to multiple disasters due to its increasing population, rapid urbanization, steeply terraced, and fragile geology. The vulnerability is further compounded by the impacts of climate change and weak disaster preparedness and management practices. As the urban areas are multiplying, it has brought new challenges in managing disasters. Cities are places where stresses accumulate or sudden shocks occur, resulting in social breakdown, physical collapse, or economic destruction. About 54% of the world's population lives in cities, and the number is expected to increase to 68% by 2050 (United Nations World Urbanization Prospects 2017, MUDI, GON). Kathmandu Valley, which is rapidly urbanizing, is at high risk of multiple hazards. Low and middle-income populations are highly vulnerable to such disasters. The increasing frequency and intensity of the climatological hazard risk people's lives in the cities, leading to loss of natural resources, food insecurity, health impacts, and even displacements. With the scenario provided by IPCC, in AR5 in Climate Change Science, more recurring disaster events will continue to happen, and are likely to bring more challenges to humanitarian agencies.

Incorporating urban disaster risk management in urban planning is one of the key responsibilities of the local government. Risk assessments and measures to reduce disaster risks are vital as it enables the resilience of cities to absorb and manage risks. Resilient cities create, enable, and sustain the services and institutions required for basic ongoing survival and characterized by their ability to generate new opportunities for their residents by adopting a broader, integrated approach.

This publication is a product of the project 'Risk to Resilience through Collective Local Action', implemented by the Institute for Social and Environmental Transition and Nepal. It is led by the Project Director of the National Disaster Preparedness Centre, Lalitpur, Nepal, in collaboration with the Municipality of Changunarayan, Lalitpur, Nepal. The project promotes resilient and sustainable urban growth, including the National Framework for Disaster Risk Reduction (DRR) provision through collective local action.

These knowledge product can be downloaded at [www.isetnepal.org.np](http://www.isetnepal.org.np) and <https://www.youtube.com/user/ISETNepal>

<p>©ISET - Nepal Lalitpur, Nepal PO Box 3971 Kathmandu info@isetnepal.org.np www.isetnepal.org.np</p>	<p><b>Contributors</b> Kanchan Mani Dixit Ashok Maharjan</p>	<p><b>Layout &amp; Design</b> S.M. Pre-press Solution Dhobighat-3, Lalitpur</p>
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