



Risk Sensitive Land Use Planning (RSLUP) for Urban Risk Mitigation

Risk Sensitive Land Use Plan (RSLUP) for Changunarayan municipality of Bhaktapur district is a product of DCA funded innovation project “Promoting new Resilience Approaches in Younger and Smaller Municipalities” (PRAYAS). PRAYAS augmented on the urban Disaster Risk Reduction (DRR) project “Promoting Resilient And sustainable urban Growth by Augmenting DRR capacity of local authorities Through active private sector Involvement” (PRAGATI) funded by European Union through Civil Protection and Humanitarian Aid (ECHO).

Introduction

Disaster Risk Management is mainstreamed into Land Use Planning to develop Risk Sensitive Land Use Planning (RSLUP)¹. RSLUP identifies safest areas and guides relevant risk reduction measures so as to protect and prioritise investments in urban development and infrastructures². RSLUP reinforces into the conventional land use planning approaches through two additional considerations¹.

- The information on hazard, vulnerability, risk and capacity information are integrated into the conventional land use planning to incorporate risk sensitive element.



Figure 1: Framework and process of RSLUP [Adopted from Bendimerad, 2012]

- Integration into the plans of the government to ensure understanding, acceptance and implementation by enhancing their capacity and fostering the support of all stakeholders.

¹ World Bank and EMI 2014. Risk-Sensitive Land Use Planning Guidebook. Bangladesh Urban Earthquake Resilience Project.

² Jha, A.K., T.W. Miner and Z. Stanton-Geddes, 2013. Building Urban Resilience: Principles, Tools and Practice. World Bank Publication.

³ The project is partially funded by the German Federal Foreign Office through the German Committee for Disaster Reduction (Deutsches Komitee Katastrophenvorsorge e.v. – DKKV)

The Approach

The approach for Risk Sensitive Land Use Planning is relatively new in the DRR and urban planning sector in Nepal. “Mainstreaming Disaster Risk Reduction in Megacities – Applications in Metro Manila and

Kathmandu” is among few significant pilot projects to develop risk sensitive land use plan for Asian cities³. The RSLUP for Changunarayan was commissioned with an objective to “Make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11)”. The approach

adopted comprised of three essential components for a comprehensive RSLUP development: a) Development of municipal baseline information b) Multi hazard risk and Vulnerability Assessment c) Development of Risk Sensitive Land Use Planning.

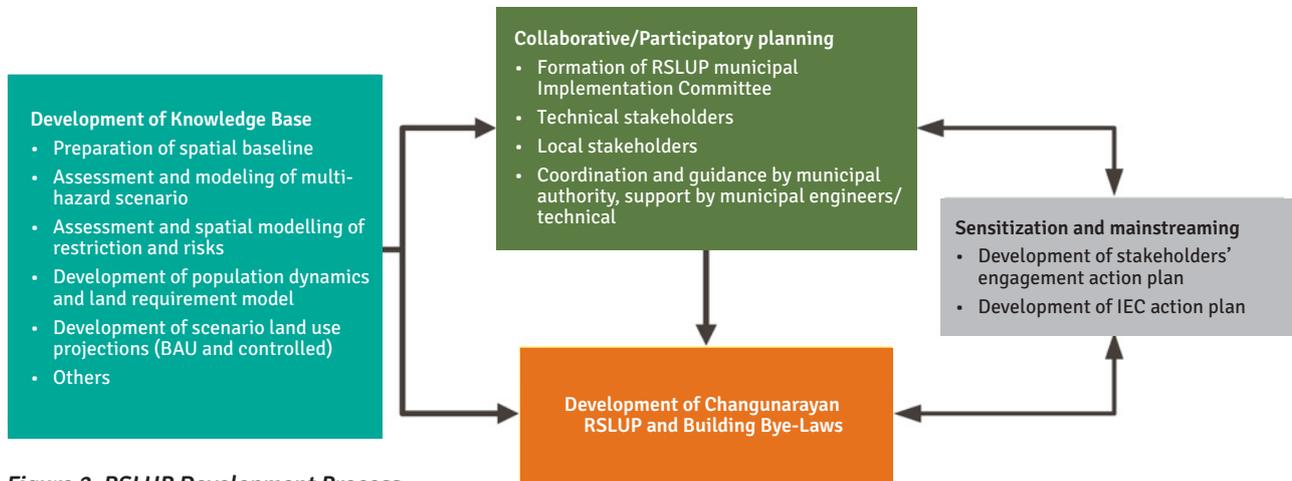


Figure 2: RSLUP Development Process

RSLUP for Changunarayan Municipality

The process of RSLUP for Changunarayan municipality started from collection of relevant baseline information and Vulnerability and Capacity Assessment, then to analysis and recommendations for the development of RSLUP and its implementing tool and bye-laws.

Communities were involved in every step of the process through KII, FGDs and interactive workshops for their historical intelligence, current scenario and perception of the risk for causal factors. Elected representative and relevant departments of the local government participated in consultative meetings and participatory planning works for development of the RSLUP. The risk factors and perception of the communities on their socio-economic aspect were also instigated in the process for an inclusive approach especially of the vulnerable people (elderly, women, PwDs, Poor and food insecure).

Expected Outcome

- Identification of risk and recommendation of mitigation plans for the disaster risks to be embedded in the current land use, and development of practices through building bye-laws and

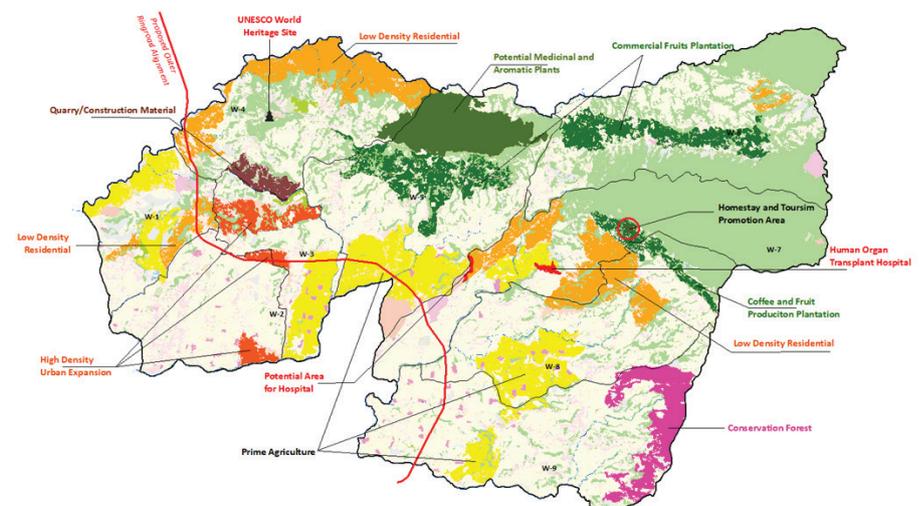


Figure 3: Proposed RSLUP for Changunarayan municipality

- regulatory ordinances for use of land in hazard prone areas;
- Reduction of losses by facilitating faster responses by providing open spaces, well planned evacuation road networks for rescue operations;
- Promotion of controlled urban growth mitigating potential risk through rebuilding and upgrading infrastructure – “building back better” using hazard resistant construction.

Collaboration and information sharing with Kathmandu Valley Development Authority (KVDA), who are developing “Smart City” in the municipality, to complement and support both initiatives.

The RSLUP developed for Changunarayan municipality has categorised four zones

1. Conservation Zone

The land areas lying above 1400m are significantly important for the natural conservation and their link to

the heritage of the local community. The upper portion of Ward 4, 5, 6, 7 and 8 are mostly forest areas. The plan proposes development of Ward 4 into World Heritage Site Village, Ward 5 to Cultural Village and Ward 6 into Eco Village where the sustainable tourism industry could flourish.

2. Agriculture Buffer Zone

Agriculture Buffer Zone will strengthen on the livelihood based on soil conservation and watershed management to encourage sustainable agriculture in the upper and mid areas of the Changunarayan municipality particularly on the lower terraces, open spaces and areas with land degradation. These lands can manage community, and act as high potential housing area and conservation area as well. These areas will promote sustainable agricultural production and small to medium size

enterprises and limit the number of brick manufacturing industry.

3. Environmental Corridor

Environmental Corridors will link natural resources, opens spaces, and other resources like rivers and streams and any other natural features. The plan proposes for
 a) Green Belt to protect from urban sprawl and protect the natural resources and agricultural activities,
 b) River Corridor to protect the natural flow of the rivers and streams by restricting development activities within 100m of river bank.

4. Development Nodes

Development nodes offer the opportunity for planned urbanisation which has the potential for development of urban service and infrastructures. Based on the intensity

of development, the nodes are further categorised into:

- a) **Primary node:** Ward 5 of Changunarayan municipality will act as Central Business area where economic sector such as Small and Medium size Enterprises (SMEs) and eco-tourism will be intensified as the area is accessible through roads and is on equidistance to all other wards.
- b) **Secondary node:** Ward 7 of Changunarayan municipality is proposed as Institutional Zone where the governmental and private institutions and service providers will be based on.
- c) **Tertiary node:** Ward 2, 6, 7, 8 and 9 are areas for contributing in the tourism sector, religious services, agricultural intensification, and other entertainment activities.

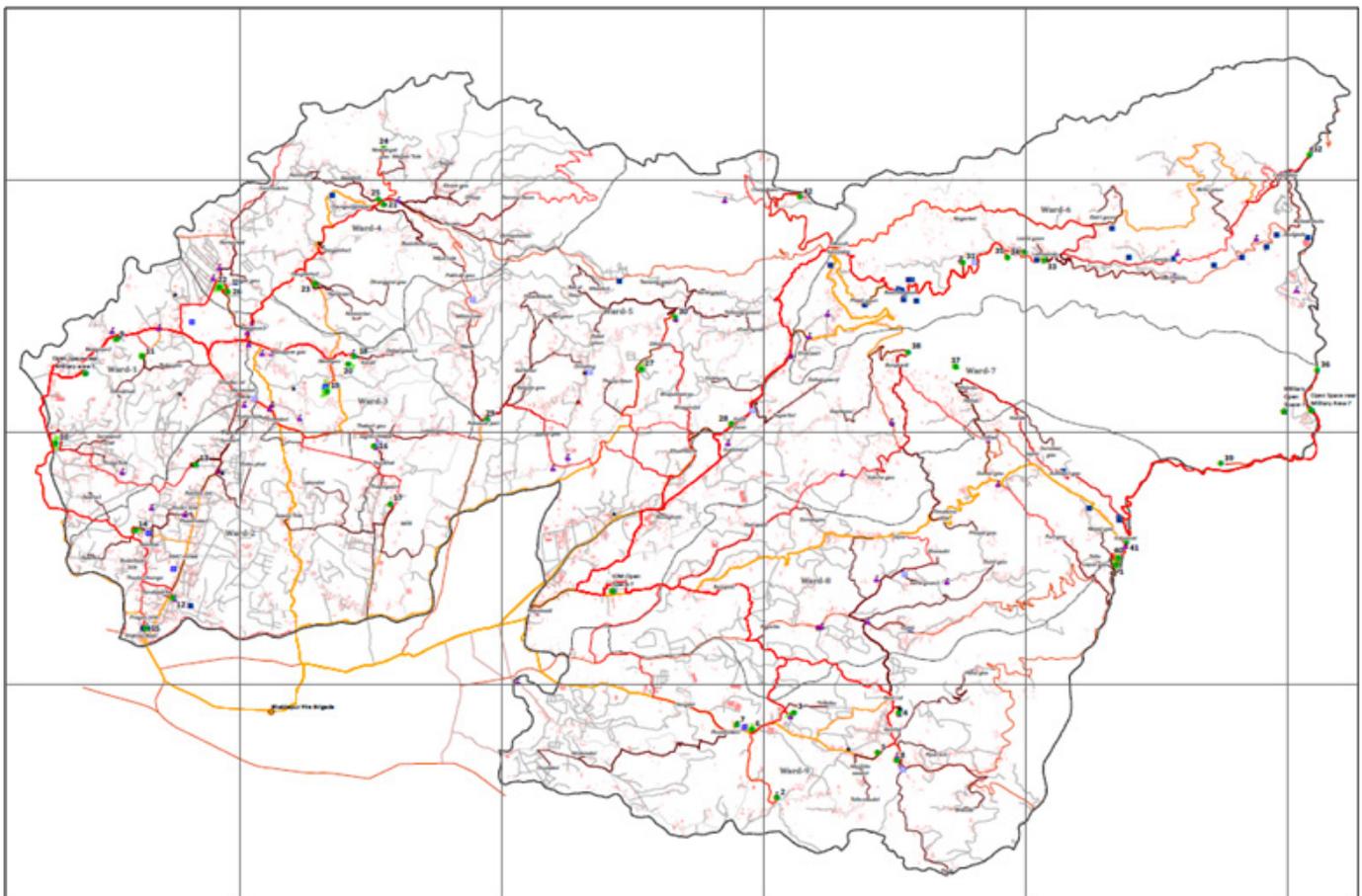


Figure 4: GIS based Evacuation Route for Changunarayan municipality

GIS based Evacuation Route Modeling

The Evacuation Route Modeling based on GIS is embedded into the app Shankharapur DIMP in which the user could pinpoint and trail the location of the critical infrastructure, Humanitarian Open Spaces (HOS) and accessible evaluation routes nearest to them when disaster strikes.

The modeling was based on

- a) **Mapping of critical infrastructures and services:** Location of critical infrastructures and services with basic attributes of their capacities
- b) **Identification of open spaces:** Location of selected Humanitarian Open Spaces (HOS)

c) Preparation of evacuation route using GIS based modelling:

Evacuation routes and accessibility analysis, and Ward and Municipal Emergency Evacuation Plan

The integration of the modeling into the municipality DIMP app has ensured its sustainability where the municipal authorities are capable of adjusting to the dynamic changes that can occur with the road network.

Learnings

■ Supporting Instrument for policy:

RSLUP provides a guidance to other plans and policy instruments by recommending “safe place” for investments in infrastructure and economic activities, conservation of natural resources and for urban development. RSLUP also provides base for DRR/DRM plans by recommending safer use of land for various DRR/DRM related activities.

■ Ensure standard protocol for RSLUP:

Municipalities have been preparing RSLUP since 2009 and this has got further impetus after the Gorkha Earthquake 2015, with authorities making several guidelines for risk reduction strategies. These guidelines were often conflicting in nature. With reference to the RSLUP, such guidelines did not give clear guidelines in terms of its preparation and implementation.

General observations and exposure to other RSLUP making process has revealed that the RSLUP making process is largely based on planners’ and planning authorities’ rational approaches undermining the all-important people’s perception of the risk. This has created a gap between people and public authorities on common understanding of risk reduction strategies.

PRAGATI has tried in to overcome that gap in this RSLUP preparation planning process by including the real time participation of stakeholders in building urban disaster resilience as indicated in the approach.

Way Forward

■ Support to implement RSLUP:

RSLUP is an initiation of broader planning scenario and envisioning of the future urban form to provide the basic right of any citizen i.e. safer place to live and prosper. RSLUP’s recommendations and guidelines should be implemented through a legal document “building bye-laws” by the municipal authority. The building bye-law must be implementable, acceptable and inclusive to translate the future safer growth vision of the municipal region. RSLUP’s recommendations and guidelines can be implemented through various mechanisms and tools related to urban development, land management, financial incentivizing such as land readjustment (land pooling), transfer of development rights, infill development, building pooling etc.

■ Piloting RSLUP: The most appropriate mechanism

with legal basis needs to be piloted is with stakeholders/ citizen’s participation, financial investments ad upscaled considering future sustainability. At the same time, institutional capacity building of the municipal authority is required to implement the RSLUP and its implementing tools efficiently and effectively.

■ Integration of RSLUP to strengthen urban governance:

There is scope to mainstream RSLUP into the Integrated Urban Development Plan (IUDP) to reinforce risk element. The model will be developed after intensive review of the urban planning practice and policies, content and implementation tools of IUDP and the community perception. The review report has completed and the process of development of Risk Sensitive Land Use Planning Model to mainstream in Urban Development Plan is currently undergoing.

About the Project

Promoting Resilient And sustainable urban Growth by Augmenting DRR capacity of local authorities Through active private sector Involvement (PRAGATI) is an urban disaster risk reduction project implemented in the two new municipalities in the Kathmandu valley - Changunarayan in Bhaktapur and Shankharapur in Kathmandu Districts. This project is with the financial support from European Union through Civil Protection and Humanitarian Aid (ECHO). A consortium led by DCA Nepal with other members VSO Nepal and ADRA Nepal - have formed a consortium to execute the PRAGATI project through local partners, Friends Service Council Nepal in Changunarayan, and National Disaster Risk Reduction Centre – NDRC in Sankharapur Municipality. The project aims to promote resilient and sustainable urban growth through Disaster Risk Reduction (DRR) capacity building of local authorities and active involvement of the private sector and local population.

Promoting Resilience Approaches in Younger and Smaller Municipalities (PRAYAS) is another Urban DRR Project supported through DCA Innovation Grant complimenting PRAGATI. The project supported on the use of information technologies such as the use of satellite and drone imageries to develop risk management plan. Risk Sensitive Land Use Planning (RSLUP) and VCA tool digitisation.

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