

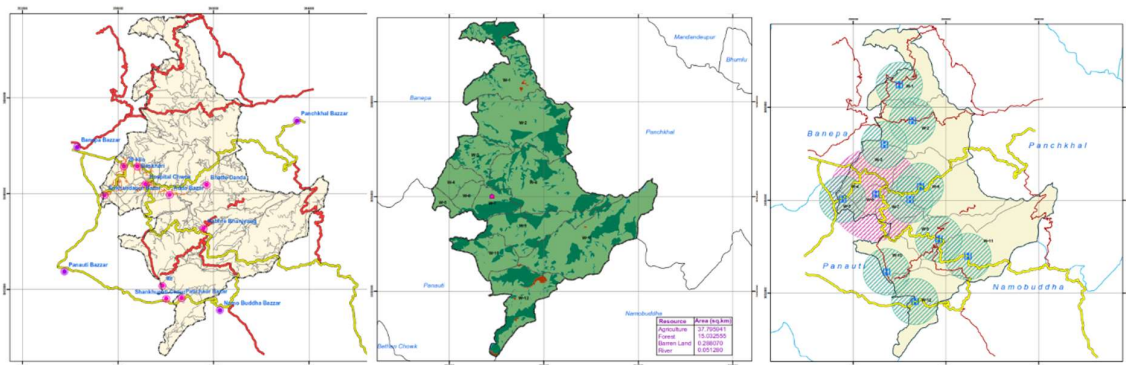


Government of Nepal

Dhulikhel Municipality

INTEGRATED URBAN DEVELOPMENT PLAN OF DHULIKHEL MUNICIPALITY

Volume 9: Disaster Risk Reduction Plan



2019



Submitted By:

GOEC-GIDA-Next JV

Kathmandu

Version:

Version No.	Author	Checked by	Date
1 (1 st Draft)	S. Paudel	L. Peterson	26 August 2018
2 (Consultation Draft)	S. Paudel and M. Gyawali	L. Peterson	25 January 2019
3 Final Draft	S. Paudel and M. Gyawali	L. Peterson	15 March 2019
4 Final Version		Adopted by the 4 th Assembly of Dhulikhel Municipality	9 April 2019

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Acknowledgements

The Integrated Urban Development Plan for Dhulikhel Municipality has been developed in a true collaborative process between the Municipality and the consultants appointed to prepare the plan.

The consultant team would like to thank Project Coordination Office and involved Planners, Engineers, Architects and other staff for their constant support, appreciation, valuable suggestions and comments during the process.

The strategy would not be complete without the proper help of the Municipality. We would also like to thank the entire key informants for providing valuable information related to the municipality.

Similarly, the consultant would also like to express its appreciation to all the officials of various government institutions for their cooperation during data collection.

We are grateful to entire individuals who directly or indirectly helped us to prepare this field report and work on the field during data collection, analyzing, and workshop preparation.

Finally, the project team would like to express thanks to all staffs and colleagues of GOEC-GIDA-Next for their support for this study.

Executive Summary

The Integrated Urban Development Plan (IUDP) for Dhulikhel is a strategic response to the 20 year growth of Dhulikhel Municipality, which brings together infrastructure provision, environmental management, economic growth, disaster preparedness, municipal service delivery and mainstreaming gender equality and social inclusion. This “whole of Council” strategic plan will deliver on the long-term vision of Municipality:

A prosperous, well governed and model town Dhulikhel

based on culture, heritage, tourism and environmentally friendly sustainable development.

Located 30 kilometres east of Kathmandu, Dhulikhel Municipality is blessed with a diverse and vibrant community, high quality environmental assets including clean air and water, spectacular view, rich built and cultural heritage, major institutions with Kathmandu University and Dhulikhel Hospital, agricultural production and a burgeoning tourism industry.

However the Municipality is facing a number of challenges. This includes: an emerging low density and scattered settlement pattern in the rural wards with poor access to essential social and physical infrastructure; rapid urban development at a rate that is not supported by key infrastructure; fragmented agricultural land which is becoming urbanized; and prioritization of infrastructure. Analysis of physical infrastructure indicate critical problems in water supply management and solid waste management which requires immediate attention.

Observations in the field reveal housing outside, or on the edge of, urban areas being constructed without the provision of constructed roads, drainage, water and sewerage services. This reveals a disconnect between development approvals and infrastructure planning.

It appears that, in many cases, development is not occurring in sequential and planned way and that the provision of infrastructure to support the development is being provided in a reactive way, which is expensive to the community and financially and environmentally unsustainable.

Through research and community engagement, the IUDP includes analysis, strategic policy and practical actions to improve physical infrastructure, social infrastructure, risk sensitive land use, environment management at town level with proposals for capacity building and institutional strengthening of municipal authority. The IUDP also focuses on improving the conditions of women, the poor and the excluded by undertaking a community development program and gender equality and social exclusion (GESI) activities through the Social Development Plan.

The IUDP, presented in 16 volumes, also covers institutional and technical issues. The report provides comprehensive details on: urban management, institutional development; physical development planning, social development planning, economy, environment, institutional and financial planning along with social impacts and poverty; gender and social inclusion; and the subproject resettlement plans and disaster risk reduction. Based on the immediate needs of the municipality, short term plans and long-term plans have been developed which will support Dhulikhel’s growth.

In the preparation of the IUDP project, the most pressing needs of the Dhulikhel Municipality have been identified. Analysis was carried out for physical infrastructure, social infrastructure, economy and disaster management and provide priorities for short, medium and long-term needs of the Municipality.

While generally the spatial distribution of health and education facilities show good coverage, connectivity in rural wards needs to be improved through upgrading existing road networks. Likewise, disaster management is another critical issue demanding a strategic response.

Critically, the IUDP provides a new framework to manage the urbanization of Dhulikhel, while protecting its agricultural, environmental and cultural assets. This will be in the form of new processes for the Municipality, including land use zoning and by-laws, and clear processes to better link land development, community needs and the provision of infrastructure.

The IUDP:

- Sets out the planned urban expansion of Dhulikhel in three key areas to accommodate residential, tourism and commercial growth over the coming 20 years.
- Supports more intensive development around the commercial centres (chowks) that supports existing private and public investment.
- Identifies key road, water and sewerage infrastructure to support the growing community over the next 20 years.
- Identifies key road connections between the Rural wards (in particular Wards 1 and 2) to facilitate access to schools and health services.
- Establishes Land Use Zonings, based on economic, physical attributes and disaster risk management principles, which will support good decisions, guide development in strategically suitable locations and support Dhulikhel's agriculture sector.
- Identifies opportunities to support the growth in tourism and protection of heritage and environmental assets for existing and future generations.
- Identifies priority projects to be undertaken by the Municipality over the coming 5 years to support the delivery of the IUDP, supported by a financial plan.

The IUDP introduces new land use zoning and by-laws which provides for strategically-driven decision making and sustainable development of Dhulikhel into the long term.

Implementation of the actions within the IUDP from all part of the organization is critical to the success of Dhulikhel's future.

Table of Contents

1. Introduction	7
2. Issues	7
3. Detailed Plans and Programs	9

1. Introduction

This plan proposes institutional arrangements for Dhulikhel Municipality to address disaster risk management within the area. It includes disaster management arrangements for preparing, managing and recovering from disaster events and institutional mechanisms for addressing disaster risk reduction. This strategy is focused on natural/environmental disasters only.

There are three phases of Disaster Risk Reduction – pre-disaster, during the disaster and post disaster. This Plan is primarily focused on preventative measures in terms of land use and development.

2. Issues

There are two types of disasters – natural disasters and human induced disasters.

Natural disasters are unpredictable and they can occur at any point of time. Disasters cannot be stopped because they are purely natural however the damages caused by those disasters can be minimized to a greater extent by the proper application of Disaster Risk Reduction or Management plan.

Dhulikhel Municipality is prone to natural disasters including landslides, earthquakes, river cuttings, forest fire and flooding. While these disasters cannot be completely prevented if their pre-assessment is done accurately, the damage caused by these disasters can be mitigated to some extent. Compilation of natural disaster risks in the municipality is presented in the map as well as table below:

Ward No.	Soil Erosion affected area	River Cuttings and Flood affected areas
2.	Matakhani Landslide	Soni, River Banks
3.	Koirala river	
4.	Koirala river	
7.	West areas of community Stadium	
10.	Karki gaun of Sarada Batasey	Sudikhola, Maaruwa Khola
12.	Ekleykhet (large Landslide)	

Table 1: Disaster Prone Areas

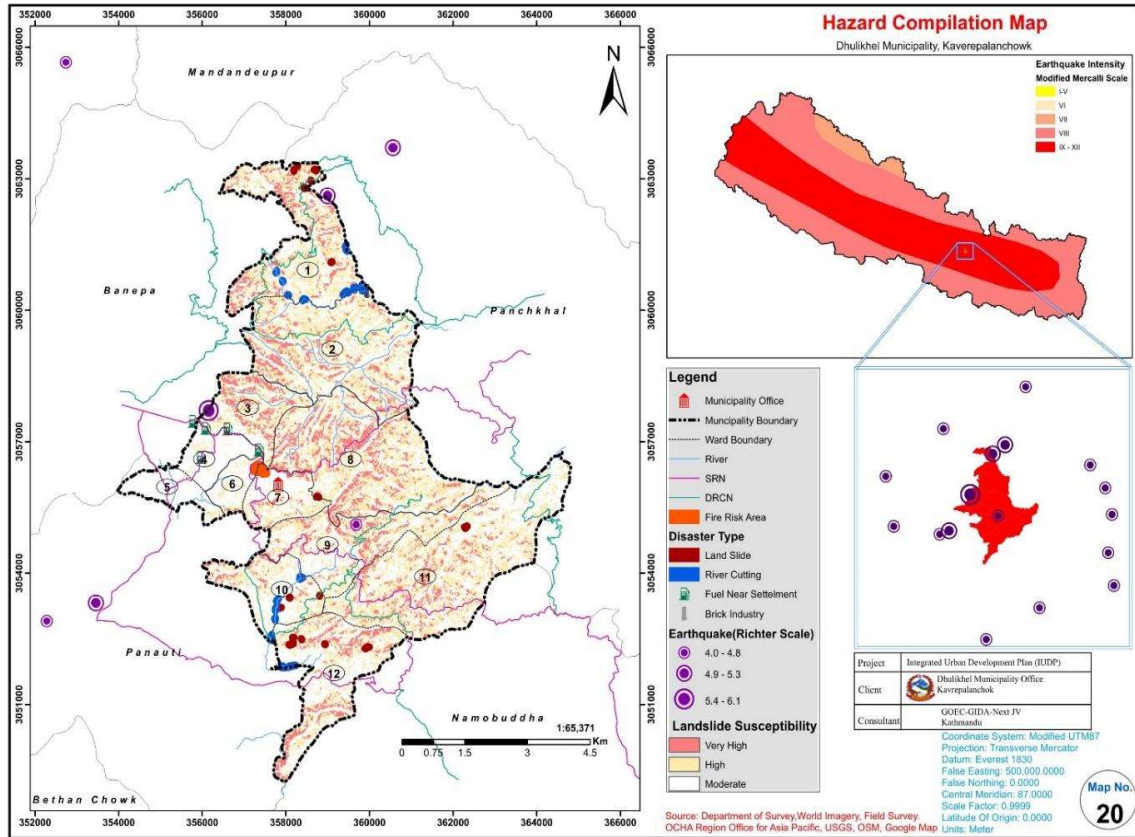


Figure 1: Compilation of disasters in Municipality

Within Dhulikhel Municipality Disaster Risk Reduction is managed by collaboration with a number of partners. The Disaster Risk Reduction Committee is managed by the District Office (chaired by the Chief Management Officer). The District Office is in charge of responses including incident response, co-ordination of organisations who have a role in disaster response including emergency agencies, health, army etc), storage of materials, etc. The head of the Environment Department represents the Municipality within the Disaster Risk Reduction Committee. Municipality staff are involved in disaster response.

Based on the existing disaster scenario explained disaster risk reduction objectives for Dhulikhel are set and detailed plans are prepared. These are listed below:

3. Detailed Plans and Programs

MAIN PLANS AND PROGRAMS	DESCRIPTION	Measurement Indicators and Means of Verification	
Municipality will be protected from all kinds of Hazards.	<p>Apply Land Use Zones and By-laws to prevent settlement of land that is high risk to disaster (including proximity to flooding, areas of higher fire risk, landslides)</p> <p>Allocate a “fire line” so that no one can use fire producing material inside the boundary</p>	<p>Planning Building approvals</p> <p><i>(IUDP Link: Physical Development Plan, Land Use and Zoning Plan, By-Laws)</i></p>	<p>Complaints of all types of disasters in municipality will decrease in comparison to current situation</p> <p>Registers in municipality’s Ward Offices.</p>
	<p>Continue to apply building regulations to ensure new buildings are earthquake proof</p>	<p>Planning Building approvals</p> <p><i>(IUDP Link: Land Use and Zoning Plan, By-Laws)</i></p>	<p>The damage caused by earthquake in the city would have dropped significantly.</p> <p>Physical structures within the municipality will be constructed according to building bye laws.</p>
	<p>Discourage squatter settlements on land in high risk areas</p> <p>Encourage private sector to develop affordable rental housing through the provision of incentives and facilitate (incentives: easier permit process, facilitate land consolidation, taxation abatement, Facilities: facilitating development and access to infrastructure provision such as roads, utility lines etc).</p> <p>Consider land plotting while constructing road and settlement development.</p>	<p>Planning</p> <p><i>(IUDP Link: Social Development Plan, Physical Development Plan, Land Use/Zoning)</i></p>	
	<p>Protect residential areas and other sensitive uses such as hospitals and schools by applying a buffer between heavy industrial uses and sensitive uses. Include a “buffer distance” provision in the by-laws</p>	<p>Planning</p> <p><i>(IUDP Link: Environmental Management Plan, Physical Development Plan, Land Use/Zoning)</i></p>	<p>By-laws include a “buffer distance” provision between sensitive uses and heavy industrial uses</p>
	<p>Regularly monitor air, noise and water in strategic locations</p> <p>Respond to complaints within 7 days</p>	<p>Environment Department</p> <p><i>(IUDP Link: Environment Management Plan)</i></p>	<p>Air, Water and Noise pollution will be reduced to 90%</p>

	Undertake annual Forestation programs to prevent/reduce the occurrence of landslides	Environment Department <i>(IUDP Link: Environment Management Plan)</i>	
Address impact of River Cutting and flooding	Regulation the Punyamati river using natural materials in order to prevent floods	Planning Building approvals <i>(IUDP Link: Environment Management Plan, Physical Development Plan, Land Use and Zoning Plan, By-Laws)</i>	Zoning and by-laws applied
	River training works and dams will be constructed on the rivers which have problems with river induced erosion at the end of 5 years at Dhulikhel	Engineering	
The risk of fire in the core traditional area and settlement areas would have dropped significantly.	Awareness programs in the fire risk zones Fire-fighting infrastructure included in new developments and retro-fitted in existing settlements (ie. Ponds/hydrants)	Fire Service Planning Engineering <i>(IUDP Link: Physical Development Plan)</i>	
Immediate victims of Disaster will be provided with relief programs.	Disaster risk management centers will be established and fund will be raised.	Kavre District Office	
	Provision of open space for escape during disaster	Planning <i>(IUDP Link: Physical Development Plan, Masterplans)</i>	
	Emergency supplies storage for time of disaster	DRR Committee	
	Public awareness program should be conducted	DRR Committee	
	Alarm system should be developed to mitigate vulnerability of risk during disaster.	DRR Committee	
	Coordination for organizations working within the relief and rescue sector will be managed by the municipality.	DRR Committee	
	Provision of Emergency ambulance	DRR Committee Dhulikhel Hospital	
	Emergency vehicle management in each settlement for, during time of disaster.	DRR Committee Dhulikhel Hospital	
	Provision of Fire Fighting services	Fire Service DRR Committee	