LALITPUR METROPOLITAN CITY DISASTER AND CLIMATE RESILIENCE PLAN

FEBRUARY 2018

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2073

शुभकामना

वि. सं. २०७२ बैशाख १२ गते गएको विनाशकारी गोरखा भूकम्पको कारण ललितपुर महानगरपालिकाले जनधनको धेरै क्षति बेहोर्नु पऱ्यो । साथै अन्य प्राकृतिक र अप्राकृतिक विपद्हरूबाट पनि जोखिम निकै बढ्दै आएको छ । अहिलेको अवस्थामा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन र जलवायु उत्थानशीलताको दिगो विकाससित प्रत्यक्ष सम्बन्ध रहेको छ । ललितपुर महानगरपालिकाको विकास कार्यक्रमहरूमा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका पहलहरूलाई प्राथमिकता दिन आवश्यक रहेको छ ।

नेपालको संविधान, २०७२ र स्थानीय सरकार सञ्चालन ऐन, २०७४ ले स्थानीय सरकारको काम, कर्तव्य र अधिकार भित्र विपद् व्यवस्थापन सम्बन्धी सबै चरणका कार्यहरू समावेश गरेको छ । विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन ऐन, २०७४ अनुसार आवश्यक गतिविधिहरू कार्यान्वयन गर्नको लागि स्थानीय विपद् व्यवस्थापन योजना तर्जुमा गर्ने अधिकार स्थानीय सरकारसित रहेको छ । ललितपुर महानगरपालिकाको विपद् तथा जलवायु उत्थानशील योजना संघीय मामिला तथा स्थानीय विकास मन्त्रालयको विपद् तथा जलवायु उत्थानशील योजनाको प्राविधिक निर्देशिका अनुसार २०७४ मा तर्जुमा गरिएको हो ।

विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनलाई ललितपुर महानगरपालिकामा संस्थागत गर्ने र साथै विपद् तथा जलवायु उत्थानशील गतिविधिहरूको कार्यान्वयनबाट जनधनको सुरक्षा गर्ने यस विपद् तथा जलवायु उत्थानशील योजनाको मुख्य उद्देश्य रहेको छ । यस विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमा सँगै प्रस्तावित गतिविधिहरूलाई विकास योजनाहरूमा मूलधार गरेर लगिनेछ भन्ने अपेक्षा गरिएको छ ।

यस योजनाको तर्जुमाको लागि सहयोग पुऱ्याइदिनु भएकोमा म सम्पूर्ण वडा अध्यक्षज्यूहरू, सचिवज्यूहरू र सदस्यज्यूहरू प्रति आभार व्यक्त गर्दछु । काठमाडौं उपत्यका भूकम्प विपत्ति जोखिम मूल्याङ्कन परियोजनाका जाइका परियोजना टोलीलाई यस योजना तर्जुमाका लागि सहकार्य र सहयोग गरिदिनु भएकोमा म हार्दिक धन्यवाद ज्ञापन गर्न चाहन्छु । अन्त्यमा विपद् तथा जलवायु उत्थानशील गतिविधिहरूलाई प्राथमिकता दिई कार्यान्वयन गर्ने हाम्रो आफ्नै कर्तव्य हो भन्दै ललितपुर महानगरपालिकाले जनधनको सुरक्षाका निम्ति सकुशल र सुरक्षित शहरी विकास गर्नेछ भन्ने दृढता जनाउन चाहन्छु ।

चिरीबाबु महर्जन
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LALITPUR METROPOLITAN CITY
DISASTER AND CLIMATE RESILIENCE PLAN

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Objectives

To implement the Disaster and Climate Resilience activities to reduce the disaster risks, damages and save resident's lives and their assets.

Hazard, Vulnerability, Capacity and Risk Assessment (Chapter-3)

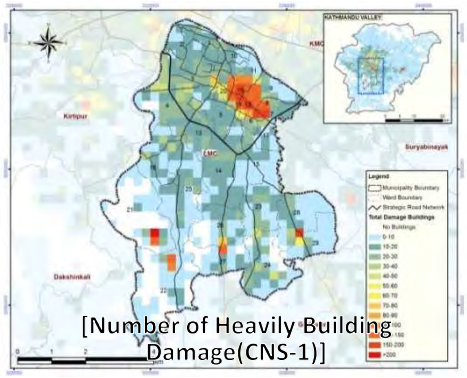
[Result of Seismic Risk Assessment]

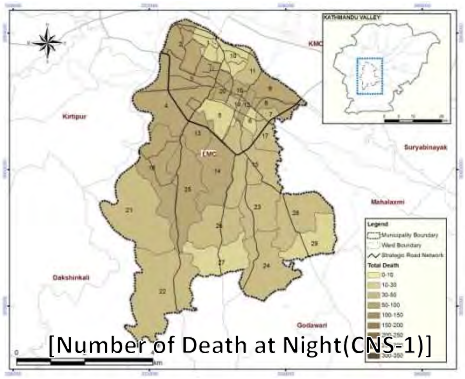
Number of Building Damage (Ratio) [CNS-1]	
Heavy Damage	9,603 (18.2%)
Moderate Damage	6,277 (11.9%)
Slight	9,322 (17.6%)

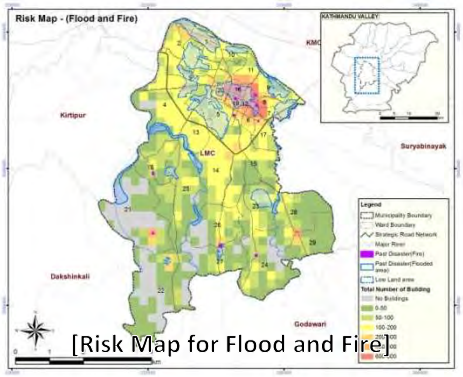
Number of Human Casualty (Ratio) [CNS-1]	
Death	1,364 (0.42%)
Injured	5,341 (1.66%)
Evacuee	91,975 (28.58%)

School (Heavy Damage) [CNS-2]	269 (34.5%)
Health facility(Heavy Damage) [CNS-2]	23 (32.9%)
Economic Loss (related to Damage of Building) [CNS-1]	57,355 mil NPR

*CNS-1,2: Scenario Earthquake (Details are shown in main document)


[Number of Heavily Building Damage(CNS-1)]


[Number of Death at Night(CNS-1)]



[Risk Map for Flood and Fire]

Local Disaster and Climate Resilience Policy (Chapter-4)

VISION — ***Disaster Resilient and Safe Metropolitan***

MISSION

1. To Encourage Everyone to Build Earthquake Resistant Buildings with Incorporation of Building Codes, Bylaws, Land Use Plan and Other Policies to Protect People
2. To Increase the Capacity and enhance awareness to Implement Efforts for Disaster Prevention/Mitigation and Preparedness, Emergency Response, and Rehabilitation/Reconstruction in planned, integrated, coordinated and comprehensive manner.
3. To Mainstream the DCR Activities to Development and to Establish Community's Right to Live being Safe from the Disaster

STRATEGY

ACTIVITY

Heavy damage of Building [CNS-1]

2016 (Current): 9,603(18.2%)

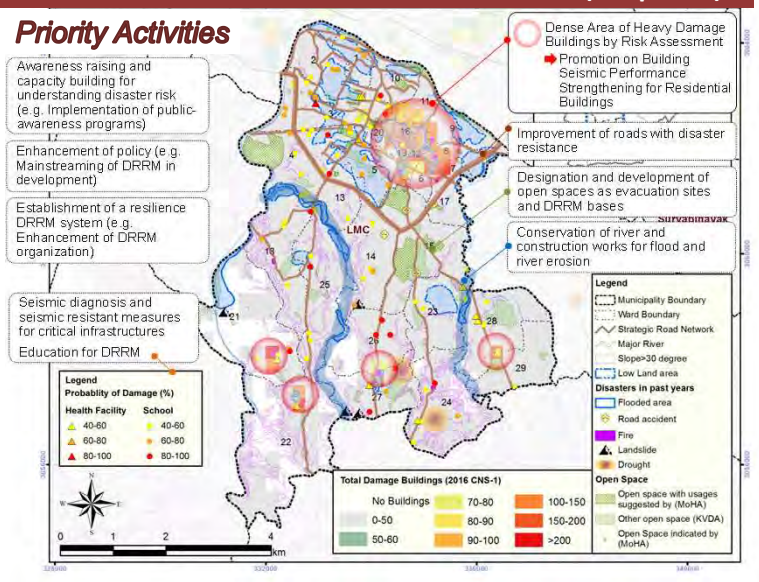
2030(Future): 12,362(18.1%) [Extrapolation] ⇒ 8,035 (11.8%)

DRR Target 35 %

Targets of Sendai Framework for DRR 2015-2030	Strategies (Target value by 2030)
(a) Substantially reduce global disaster **mortality** by 2030	Approx. **35%** Reduce **1,761 ⇒ 1,150 (persons)**
(b) Substantially reduce the **number of affected people** globally by 2030	Approx. **35%** Reduce (Evacuees) **118,485 ⇒ 77,000 (persons)**
(c) Reduce direct disaster **economic loss** in relation to global gross domestic product (GDP) by 2030	Approx. **15%** Reduce related to Heavy damage of Building **43,377 ⇒ 37,000 (mil. NPR)**
(d) Substantially reduce disaster damage to **critical infrastructure** and disruption of basic services, among them **health and educational facilities**, including through developing their resilience by 2030	**Reduce**
(e) Substantially increase the number of countries with national and **local disaster risk reduction strategies** by 2020	**This Plan and Strategy**

Local Disaster and Climate Resilience Activities (Chapter-5)

Priority Activities



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CHAPTER 1.

INTRODUCTION

1-1. Background

Lalitpur Metropolitan City (LMC), popularly known as Patan which is the oldest city in the Kathmandu Valley according to tradition, is currently one of the most vibrant cities of Nepal. With its urban history dating back to as far as 2,300 years, LMC is one of the three major cities located inside the Kathmandu Valley, besides Kathmandu Metropolitan City and Bhaktapur Municipality. LMC is located in south side of Kathmandu Valley.

According to the population census of 2011, the total population of LMC is 284,922 which is the second largest city in municipalities of the Kathmandu Valley. With restructuring of administrative organization in 2017, Lalitpur Sub-Metropolitan City and Parts of former Karyabinayak Municipality were incorporated as new Metropolitan City. Geographic condition of LMC: on its east lies Mahalaxmi Municipality, Kiritpur and Dakshinkali Municipality in the west, in the north lies Kathmandu Metropolitan City and in the south lies Godawari Municipality. It is divided into 29 wards.

From the view of disaster risk, LMC has suffered from various disasters in the past. Especially in the Gorkha Earthquake that occurred in 2015, the serious damage was caused such that 49 people lost their lives, 128 people were injured and around 2,300 private houses were completely collapsed, etc. in former Lalitpur sub-metropolitan area. According to the hazard, vulnerability, capacity and risk assessment, LMC is at a very high risk for earthquake disaster, and along with it are other disasters such as flood, road accident, fire, landslide, drought etc. Disaster and Climate Resilience Committees of LMC (LDCRC) shall be formed to face such disasters. It is essential to make efforts for Disaster Risk Reduction (DRR) and Climate Resilience by coordination of the LDCRC with Ward level and Community Disaster and Climate Resilience Committee (CDCRC), District, Province, National government and non-government organizations.

1-2. Objective of Plan

By institutionalizing the Disaster Risk Reduction and Management (DRRM) and Climate Resilience activities to form a safer community against the possible disasters and by mainstreaming the periodic and annual development programs at the local level as well as for the sustainable development, this plan, Local Disaster and Climate Resilience Plan (LDCRP) of LMC has been formulated in accordance with the LDCRP guidelines (2074) and the

mandate of Municipality which is stipulated in Disaster Risk Reduction and Management Act, 2017 and Local Government Operation Act, 2017. The main objectives of this plan are to implement the Disaster and Climate Resilience activities in chronological order, consist of measures in each phase, prevention and mitigation, preparedness, emergency response, and recovery and reconstruction to reduce the disaster risks, damages and save resident's lives and their assets.

The supplementary objectives of the plan are as follows:

a. To identify and analyse the hazard, vulnerability, and capacity in the metropolitan city.
b. To understand the disaster risk
c. To prioritize DCR activities to be invested in disaster risk reduction for resilience.
d. To strengthen disaster risk governance to manage disaster risk for institutionalizing the DCR by ensuring the equal participation of all stakeholders.
e. To determine the minimum basis and common criteria.
f. To contribute for formation of disaster and climate resilient community.
g. To prepare skilled human resource capable of facing the disaster.
h. To enhance disaster preparedness for effective response and provide support to the disaster affected communities and families for safe and respectable livelihood.

1-3. Rationale and Significance of Plan

To manage the various phases under DCR, this plan shall be implemented and continued as a major part of development plan formulated in local level. Every development activities should be merged with DRRM activities and there must be an active participation of the community in sustainable development activities. The following are the rationale and significance of LDCRP:

a. Institutional structure shall be prepared in the municipal level.
b. Municipal level disaster risk reduction information shall be reachable.
c. DCR measures in the municipal level shall be adapted to development plans by mainstreaming DRR.
d. Disaster and climate resilience fund in municipal level shall be established.
e. Participation and motivation of community and capacity in multi-hazard risk to provide suitable environment shall be enhanced.
f. Resource management by the communities shall be reached equally.
g. Social order, public welfare, cultural and harmony shall be enhanced.
h. Humanitarian assistance management during disaster shall be ensured.

1-4. Limitation of Plan

Plans and programs of every level prepared by government, non-government, and local agencies, have their own importance and area of responsibilities. This plan has the following

adopted methods, limitations, effectiveness way forward for implementation, monitoring and evaluation:

a. As this plan has to be implemented by LMC as an important part of development plan, it shall be continuously implemented being related with development and construction processes.
b. This plan has been formulated in accordance with LDCRP guidelines 2074.
c. For the implementation, monitoring and evaluation of this plan, the necessary financial resources and skilled human resources might not be sufficient in the LMC, and need to be coordinated with provincial, national government and stakeholders.

1-5. Methodology

The following procedures have been carried out in order to make the plan practical based on local conditions and ensure direct and inclusive participation of communities, wards, affected and vulnerable groups in LMC:

(1) Orientation workshop (1st workshop) for plan making:

Orientation workshop was carried out, organized by LMC and facilitated by JICA ERAKV Project. In this workshop, the participants discussed basic topics such as the objectives of LDCRP, formulation processes, and vision and mission for DCR of LMC.

(2) Collection of information of LMC:

During the process of preparing LDCRP, information was collected. Specially, relevant laws and plans of district and national level, social and financial information along with information on what type of activities have been carried out, and in which location, were collected.

(3) Risk assessment for earthquake:

JICA ERAKV Project conducted the risk assessment for earthquake for understanding the risk for earthquake and to consider countermeasures to reduce the risks.

(4) Hazard, Vulnerability and Capacity Assessment (VCA) (2nd workshop), and Risk Assessment:

In order to collect the community and ward level disaster and climate resilience related information and data, the 2nd workshop was held by LMC and JICA ERAKV Project. In this workshop, different methods were used to carry out VCA of LMC, under which are the acceptable VCA methods such as historical disaster record, hazard, vulnerability mapping and assessment of social and natural resources of LMC. On the basis of the VCA results, disaster risks were identified and assessed.

(5) Draft formulation of the plan:

In accordance with the risk identification and assessment, the plan was drafted.

(6) Holding workshop (3rd workshop) for collecting suggestions:

The plan prepared in the form of framework was again discussed by organizing a workshop between the LMC and JICA ERAKV Project. The participants of the workshop discussed the DCR activities with priority and provided necessary suggestions and points to be added.

(7) Finalization of the plan:

LDCRP of LMC was finalized by including the suggestions from the LMC, and participants of the workshop.

1-6. Plan Implementation Strategy

(1) Approval of the Plan:

a. The municipal LDCRP prepared by LDCRC shall be approved by the Municipal Assembly according to the required process.

(2) Mainstreaming of the Plan:

a. The DCR activities in the Plan shall be gradually mainstreamed to periodic, annual and other development processes on a priority basis.
b. Other sectoral organizations, while making sectoral plans, shall gradually allocate the budget for the DCR activities in the Plan on a priority basis.

(3) Allocation of Budget:

a. The budget is allocated by the LMC for organizing the prioritized activities which are determined by approved plans.
b. For the implementation of plan, the budget is managed by the coordination and support of District, District Coordination Committee (DCC), sectorial office, Nepal red-cross society, Province, National governmental and International non-governmental organizations and donor agencies.

(4) Implementation of the plan:

a. Implementation of LMC's approved LDCRP is prioritized through LDCRC.
b. The plan approved by LDCRC shall be implemented by LMC with support from communities, CDCRC, above organizations and private sectors.

CHAPTER 2.

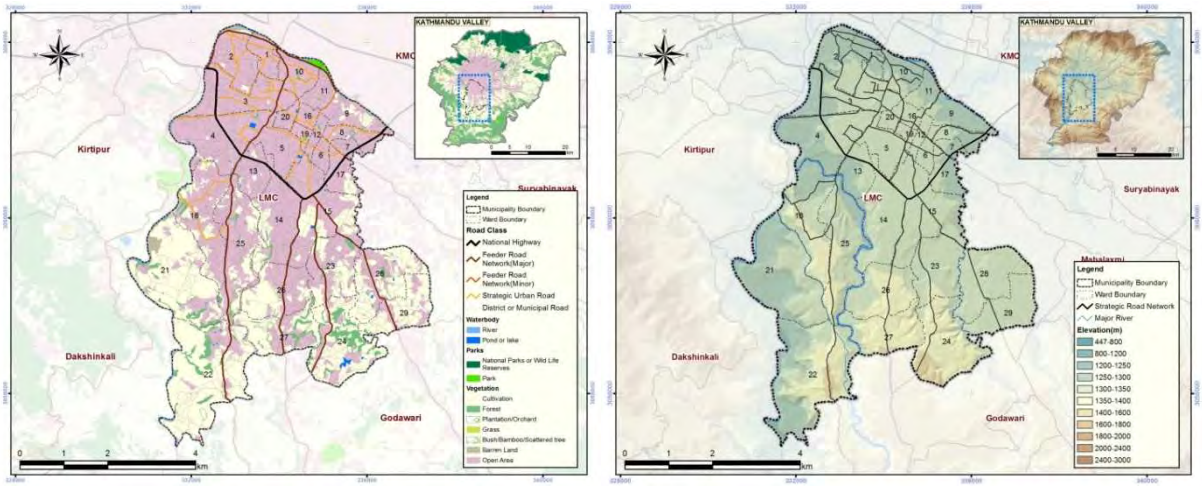
GENERAL DESCRIPTION OF METROPOLITAN CITY

2-1. Physical Condition

(1) Topographic and Geographic conditions

1) Topographic condition

In general, the topographical conditions of LMC are formed by natural characteristics. Topographic Conditions of LMC are shown in Figure 2-1 and Table 2-1.



Data Source: (Left) JICA RRNE Project, (Right) UNDP

Figure 2-1 Topographic map (Left) and Altitude distribution map (Right) of LMC

Table 2-1 Topographic Conditions of LMC

Topography		Area(Ha)	%
Waterbody	River	18.63	0.5%
	Pond or Lake	12.14	0.3%
Park		6.84	0.2%
Vegetation	Cultivation	1,291.31	35.8%
	Forest	121.90	3.4%
	Grass	0.74	0.0%
	Bush/Bamboo/Scattered tree	18.12	0.5%
	Barren Land	67.69	1.9%
	Open Area	2,012.82	55.7%
Others		60.62	1.7%
Total		3,610.81	100.0%

Data Source: JICA RRNE Project

Northern topography of city is built-up area and southern part is mainly cultivation area and forest area except the built-up area along major road network. LMC lies at an altitude of around 1,200 m – 1,400m and southern are is partly undulating with steep slope.

The geomorphological map of LMC is shown in Figure 2-2 and geomorphological classification of Kathmandu valley is shown in Table 2-2, and the age and altitude of the deltaic-lacustrine terraces are shown in Table 2-3. The majority of geomorphology in LMC occupies the deltaic-lacustrine terraces as T_1 to T_3. The Southeast part in LMC was resulted in the cutbank formation of the terrace faces and valley plain. Regarding the valley plain along the river, the new fluvial surfaces were formed, which is shown in Table 2-2 and Figure 2-2. The deltaic-lacustrine terraces were formed under the environment of the Paleo-Kathmandu Lake. The Paleo-Kathmandu Lake had appeared by upheaval of Mahabharat Mountain around a million years ago. However, the Paleo-Kathmandu Lake had disappeared around ten thousand years ago. The terraces of T_1 to T_3 are flat surface which were formed from the fluctuation of water level in the Paleo Kathmandu Lake since fifty thousand years ago.

The T_1 (Patan) terrace is distributed in north area, T_2 (Thimi) and T_3 (Gokarna) terrace is distributed in south area of LMC. Each terrace is flat surface with gentle slope to the northern direction. Elevation of T_1 terrace is 1,310 m to 1,330 m, T_2 terrace is 1,330 m to 1,360 m and T_3 terrace is 1,380 m to 1,410 m. There is active fault called Chandragiri fault in the middle of T_2 terrace as shown in red line of Figure 2-2.

Table 2-2 Geomorphological Classification of Kathmandu Valley

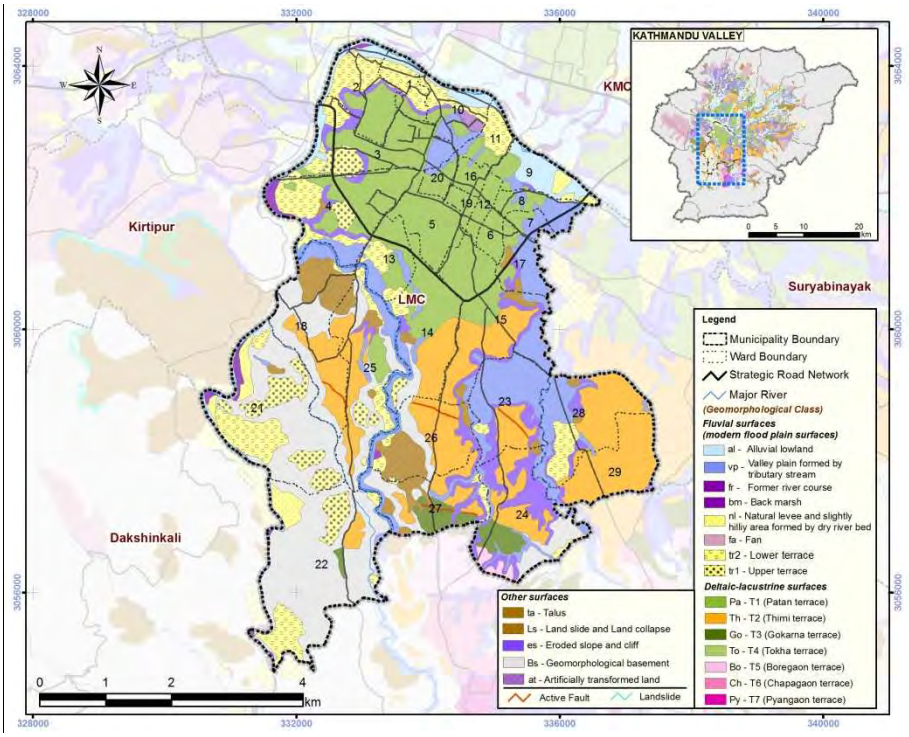
Classification	Detailed classification	Abbrev.	Characteristics
Fluvial surfaces (modern flood plain)	Alluvial lowland	al	Lowland along modern rivers
	Valley plain	vp	Lowland in the narrow valleys
	Former river course	fr	Long and narrow depression
	Back marsh	bm	Marshes between natural levees
	Natural levee	nl	Long-narrow and slightly hilly area
	Alluvial fan	fa	Gentle slope with concentric contours at the exit of valley
	Lower terrace	tr2	Slightly hilly area
	Higher terrace	tr1	Fluvial terraces on the hillside
Deltaic-lacustrine terraces	T1(Patan) terrace	T1	Terrace formed under environment of the Paleo-Kathmandu Lake. The terraces are sub-divided into T1 to T7 depending on the altitudes
	T2(Thimi) terrace	T2	
	T3(Gokarna) terrace	T3	
	T4(Tokha) terrace	T4	
	T5(Boregaon) terrace	T5	
	T6(Chapagaon) terrace	T6	
	T7(Pyangaon) terrace	T7	
Other surfaces	Talus	ta	Relatively steep slope formed by collapse of cliff
	Landslide and slope failure	Ls	Relatively gentle slope formed by sliding of mountainous slope
	Eroded slope and cliff	es	Cliff at the side of terraces
	Geomorphological basement	Bs	Hill and mountainous slope where hard rocks and Kalimati formation expose
	Artificially transformed land	at	Developed land by back on the lowland Flat surface by cutting of terraces

Source: JICA ERAKV Project

Table 2-3 Age and altitude of Lacustrine Delta Terraces

Terrace	Age of terraces (cal ka years BP)	Altitude of terraces(m above sea level)	
		Northern region	Southern region
T1(Patan)	17-10	1,300 – 1,330	1,310 – 1,330
T2(Thimi)	35-29	1,330 – 1,350	1,330 – 1,360
T3(Gokarna)	>50-38	1,350 – 1,390	1,380 – 1,410
T4(Tokha)	23-17	1,360 – 1,390	-
T5(Boregaon)	>50	-	1,420 – 1,440
T6(Chapagaon)	>50	-	1,440 – 1,460
T7(Pyangaon)	>50	-	1,470 – 1,510

Source: JICA ERAKV Project



Source: JICA ERAKV Project

Figure 2-2 Geomorphological map of LMC

2) Geological condition

The geological stratigraphy which is distributed in LMC is shown in Table 2-4. Figure 2-3 shows the geological map in LMC. The geology of LMC is categolized into two types which are Kathmandu basin group and deltaic-lacustrine terrace as shown in Table 2-4.

Kathmandu basin group is the sediment deposits of the Paleo-Kathmandu Lake and is separated Kalimati formation and Lukundol formation. The Lukundol formation is distributed south area of LMC and is the layer which was piled up at the lake in the initial period of the Paleo Kathmandu Lake. The facies of Lukundol formation consist of alternate layers with clay of grey from the black to grey, sand and silt. The Kalimati formation is widely distributed in LMC and is the layer which was piled up when the depth of water of Paleo Kathmandu Lake was deepening. The facies of Kalimati formation consist of slightly soft clay from dark grey to black and organic clay.

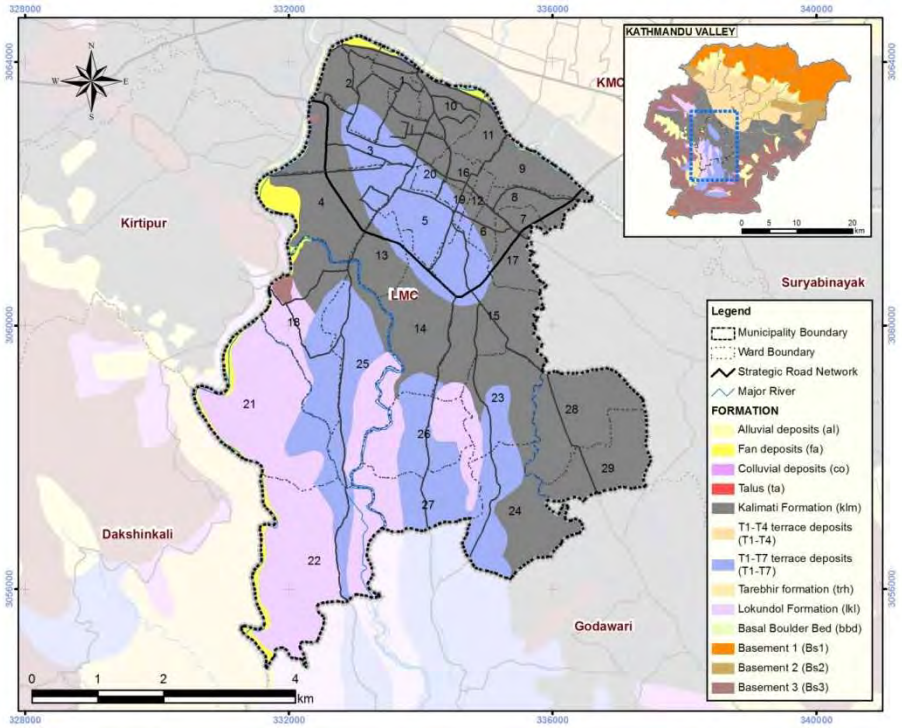
Deltaic-lacustrine terrace is distributed flat surface in the hilly area and is separated T_1, T_2 and T_3 terrace deposits depending on the altitude. It consists of gravel layer which is included sub-rounded to rounded pebbles and cobbles.

The basement from Paleozoic to Pre-Cambrian is cropped out in northwest edge of LMC. The basement consists of phyllite, slate, sandstone and limestone. Basement is presumed a rocky ridge around west-northwest to east-southeast direction and is confirmed in layer of shallow depth by boring exploration in T_1 terrace.

Table 2-4 Geological stratigraphy of LMC

Geological age			Stratigraphy		Abbrev.	Facies
Cenozoic	Quaternary	Holocene	Alluvium	Alluvial deposits	al	Clay, sand, gravel
		Pleistocene	Deltaic-lacustrine terrace	T1(Patan) terrace deposits	T1	Sand, sandy clay with sub-rounded to rounded pebbles and cobbles
				T2(Thimi) terrace deposits	T2	
				T3(Gokarna) terrace deposits	T3	
			Kathmandu basin group	Kalimati formation	klm	Dark grey to black clay, organic clay, and fine sand
				Lukundol formation	lkl	Weakly consolidated and laminated clay, silt, and fine sand with granules
Paleozoic to Pre-Cambrian		-	Basement	-	Bs	Phyllite, slate, sandstone, limestone, quartzite

Source: JICA ERAKV Project

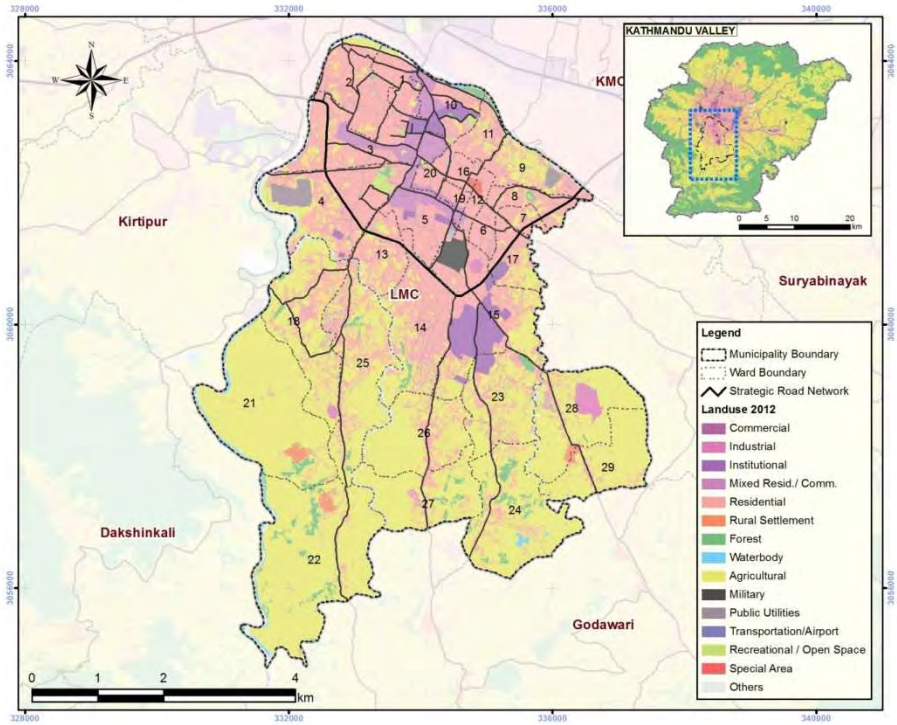


Source: Department of Mines and Geology, edited by JICA ERAKV Project
Note: The legend is shown in Table 2-3.

Figure 2-3 Geological map of LMC

(2) Land Use

LMC has occupied 36.1 sq. km. area. Land use data obtained from 2012(Comprehensive Study of Urban Growth Trend and Forecasting of Land use in the Kathmandu Valley, UNDP, 2012) estimates that around 52.5% of the Metropolitan City area is covered with agricultural land, whereas 35.2% is residential and mix-residential/commercial area. The built-up area is mostly northern part, especially around Patan is high dense area and gradually decreases to south where there is still agriculture land. Infrastructural development is very high within the metropolitan city. Almost all parts are accessible by developed road. Many development projects in different field are being carried out.

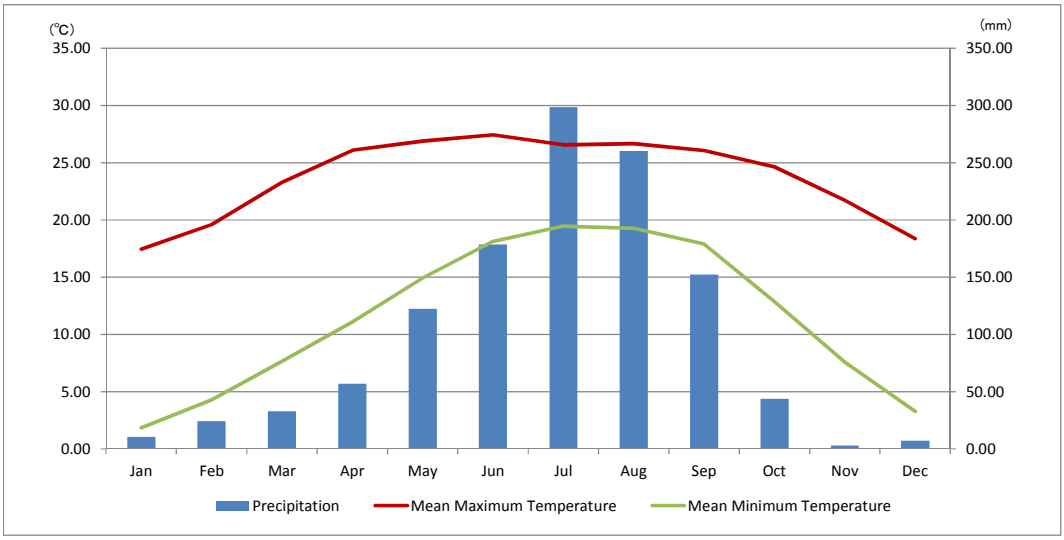


Source: Comprehensive Study of Urban Growth Trend and Forecasting of Land use in the Kathmandu Valley, UNDP, 2012, edited by JICA ERAKV Project

Figure 2-4 Land Use map

(3) Climate conditions

Meteorology in LMC shows as follows. Total amount of rainfall of July and August is around 250mm – 300 mm. In the rainy season, the risks of flood, landslide and other storm and rain related disasters increase. On the other hand, in the dry season, the risk of drought increases. For the all Nepalese climate trends, according to the "Observed Climate Trend Analysis of Nepal" (Department of Hydrology and Meteorology, 2017), all Nepal minimum temperatures show a significantly positive trend only in the monsoon season. No significant trend is observed in precipitation in any season. All Nepal annual maximum temperature trend is significantly positive (0.056 ^{o}C/yr). All Nepal annual minimum temperature trend is also positive (0.002 ^{o}C /yr) but it is insignificant. Climate trend of Lalitpur district is shown in Table 2-5.



Data Source: Department of Hydrology and Meteorology

Figure 2-5 Rainfall and Temperature 1997 - 2016 (Khumaltar station)

Table 2-5 Climate Trend of Lalitpur district

	Winter		Pre-monsoon		Monsoon		Post-monsoon		Annual	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
Precipitation	0	0.118333	0	0.21	0	-4.94	0	-0.24	+	-4.95
Maximum temperature	***	0.043	***	0.045	***	0.046	***	0.049	***	0.045
Minimum temperature	+	0.014	+	0.013	***	0.019	*	0.013	***	0.017

Extreme climate	Rainy days		Consecutive dry days		Consecutive wet days		Very wet days		Extremely wet days	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
	0	0.0	0	0.2	0	-0.1	0	-0.1	0	0.0
	Warm days		Cool days		Warm spell duration		Warm nights		Cool nights	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
	***	1.1	***	-0.8	**	0.3	***	1.0	0	-0.2
	Cold spell duration									
	α	Trend								
	0	0.0								

Note: Significance (α): * 95% Confidence Level (CL), ** 99% CL and *** 99.9% CL; insignificant at 95% CL: +, 0
Data Source: Observed Climate Trend Analysis of Nepal, Department of Hydrology and Meteorology, 2017

2-2. Social Condition

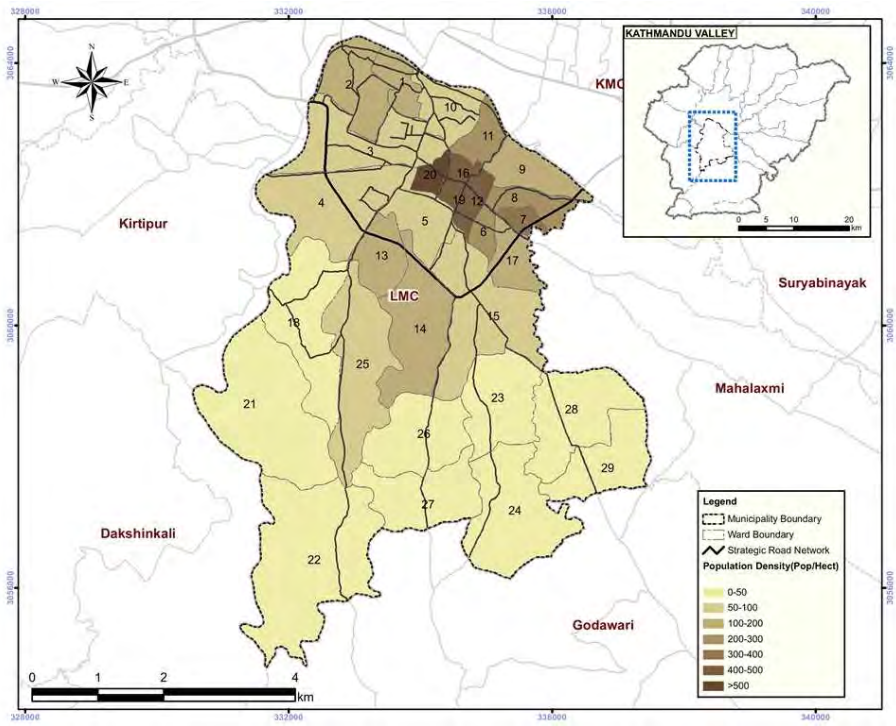
(1) Population

Information about population is an important consideration in DCR. The main source of population data for LMC is Census summarized by Central Bureau of Statistics (CBS). Table 2-6 shows population data at ward level and Figure 2-6 shows the population density at ward level of LMC. The Patan area which is city centre of LMC is high dense area.

Table 2-6 Population and households at ward level in 2011

Ward	HH	Total	Male	Female	Ward	HH	Total	Male	Female
1	2,221	8,434	4,665	3,769	16	2,058	10,139	5,007	5,132
2	4,839	19,061	10,369	8,692	17	2,678	10,644	5,551	5,093
3	3,528	14,082	7,315	6,767	18	2,007	8,146	4,112	4,034
4	3,913	15,367	7,580	7,787	19	1,774	7,385	3,779	3,606
5	1,516	6,404	3,152	3,252	20	3,121	12,380	6,342	6,038
6	1,563	6,780	3,474	3,306	21	1,056	4,927	2,452	2,475
7	1,839	7,849	4,075	3,774	22	1,304	5,966	2,981	2,985
8	2,816	11,400	5,958	5,442	23	1,854	7,002	3,645	3,357
9	3,484	13,908	7,385	6,523	24	1,324	5,676	2,790	2,886
10	1,729	6,554	3,508	3,046	25	2,996	11,575	5,823	5,752
11	2,460	10,109	5,403	4,706	26	1,377	5,813	2,834	2,979
12	2,352	10,349	5,301	5,048	27	1,020	4,279	2,128	2,151
13	3,772	14,867	7,400	7,467	28	1,667	6,577	3,315	3,262
14	5,438	21,232	10,518	10,714	29	1,070	4,159	2,063	2,096
15	3,480	13,858	6,999	6,859	Total	70,256	284,922	145,924	138,998

Source: Census 2011, CBS



Data Source: Census 2011, CBS

Figure 2-6 Population Density Map in 2011

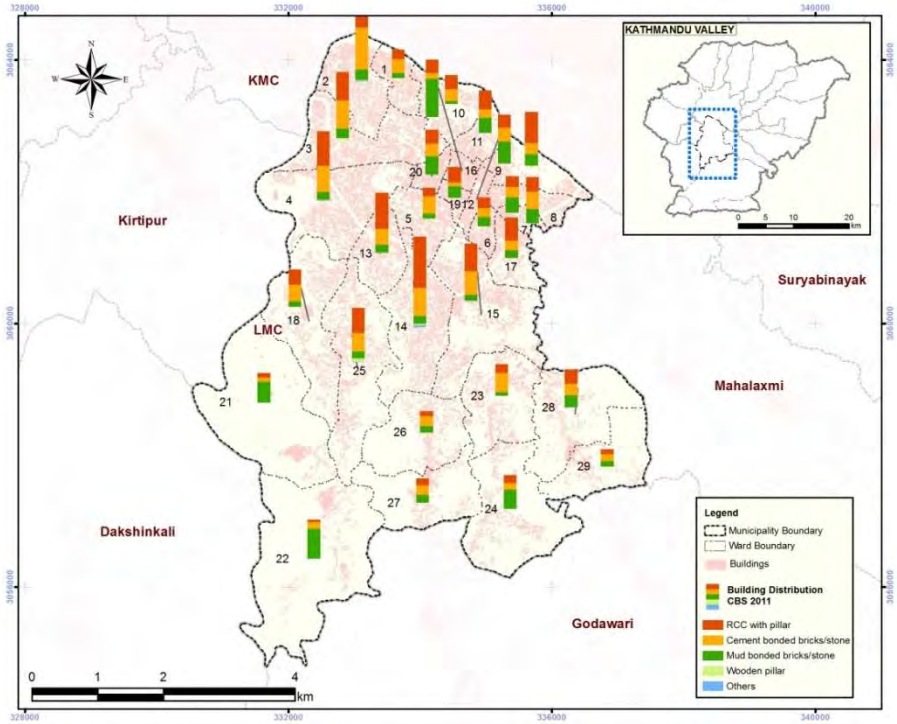
(2) Building

Information on building structure is another significant consideration for DCR. Table 2-7 and Figure 2-7 show the building data at ward level of LMC. The ratio of buildings with mud bonded bricks/stone is relatively high in the southern part of LMC.

Table 2-7 Household by type of foundation of house at ward level in 2011

Ward	MBBS	CBBS	RCCP	WP	Oth
1	136	384	268	6	5
2	287	1170	671	22	17
3	266	774	798	22	5
4	216	723	966	8	4
5	144	476	236	5	1
6	259	246	300	3	0
7	420	287	302	10	3
8	404	478	401	8	4
9	311	306	870	28	3
10	80	330	387	5	2
11	418	234	525	3	2
12	606	389	359	3	2
13	213	438	1006	12	8
14	213	783	1423	36	53
15	160	658	767	10	8
16	1053	170	372	0	0
17	221	260	642	3	4
18	155	451	429	7	7
19	314	103	431	3	0
20	510	339	392	0	1
21	570	116	131	2	1
22	822	197	58	0	4
23	102	529	254	5	5
24	535	191	227	0	0
25	197	513	690	97	11
26	180	276	140	3	1
27	216	271	194	0	4
28	336	314	402	2	7
29	152	195	136	5	0
Total	5363	3925	4498	127	45

Source: [Damage data] Lalitpur sub-metropolitan city, [Census 2011] CBS
MBBS: Mud bonded bricks/stone, CBBS: Cement bonded bricks/stone, RCCP: RCC with pillar, WP: Wooden pillar
Oth: Not stated



Data Source: Census 2011, CBS

Figure 2-7 Household by type of foundation of house at ward level in 2011

CHAPTER 3.

HAZARD, VULNERABILITY, CAPACITY AND RISK ASSESSMENT

3-1. Historical Disaster Events

Historical disaster events have been prepared for the disasters to get information on the type of severe results due to disasters in LMC in the past. From this, information about the condition of trend and frequency of disaster can be obtained. Historical disaster events in LMC are shown in Table 3-1.

Table 3-1 Historical Disaster Events in the past around 30 years

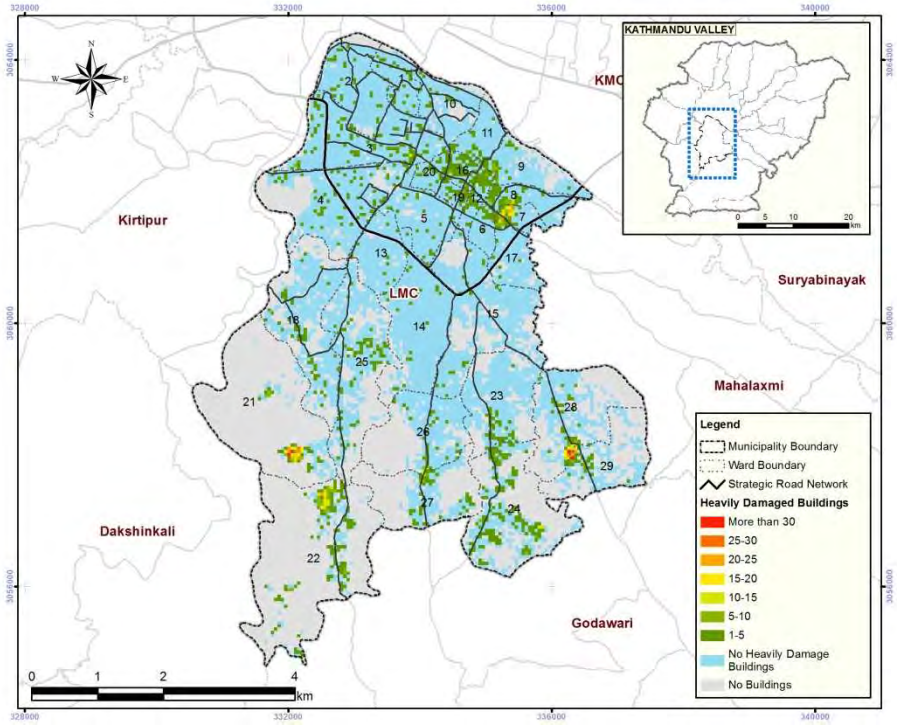
S/N	Disaster Type	Year (Approximately)	Cause, Causal Factor	Damage Descriotion
1	Flood	2046 (1989/90 AD)	-	-
2	Drought	2047 (1990/91 AD)	-	Socil loss, economic loss and damage on natural condition
3	Drought	2049 (1992 AD)	Deforestation	Damage on natural condition
4	Flood	2049 (1992/93 AD)	-	Building damage, social loss, economic loss
5	Epidemic	2054 (1997 AD)	Lack of purified drinking water	3-4 dead
6	Fire	2054 (1997 AD)	High dense settlement	Economic loss
7	Epidemic	2055 (1998/99 AD)	-	1 injured, 1 dead
8	Fire	2058 (2001/02 AD)	-	-
9	Flood	2061 (2004/05 AD)	-	1 dead
10	Fire	2070 (2013/14 AD)	Load shedding	Social loss and economic loss
11	Epidemic	2072 (2015 AD)	-	1 injured, 1 dead
12	Earthquake	2072 (2015 AD)	Huge 7.8 magnitude (USGS) earthquake	Around 2,300 private houses collapsed completely, around 5,000 buildings damaged partially 49 dead, 128 injured and, social, economic loss
13	Fire	2072 (2015/16 AD)	Many old buildings	9 houses damaged, 4 injured
14	Heavy rainfall	2072 (2015/16 AD)	-	Building damage, 1 dead
15	Fire	2072 (2015/16 AD)	Gas cylinder explosion	3 dead and economic loss
16	Fire	2072 (2015/16 AD)	Electric pole fell down	-
17	Fire	2073 (2016/ 17 AD)	-	Social loss and economic loss
18	Flood, Landslide	2074 (2017 AD)	River encroachment	-

Note: Information is based on the workshop for formulation of LDCRP in LMC
Source: JICA ERAKV Project

In addition to above Table 3-1, other flood, landslide, fire and road accident disasters have occurred almost every year.

The disaster which was most seriously damaged in recent years in LMC is the Gorkha Earthquake in 2015. In former Lalitpur sub-metropolitan city, 49 people lost their lives and 128 people were injured. For the building damage, around 2,300 private houses collapsed completely, and around 5,000 buildings were damaged partially. In addition, several public buildings such as governmental buildings, schools and hospitals have collapsed or have been affected. Moreover, several cultural heritages which were designated World Heritage Sites

were severely damaged. Figure 3-1 shows the heavily damaged buildings by Gorkha Earthquake in LMC.



Source: JICA ERAKV Project

Figure 3-1 Heavily Damaged Buildings by 2015 Gorkha Earthquake

3-2. Hazard Identification and Ranking

LMC has many types of potential disasters that could be a threat and lead to the risk posed to the victim life, property damage, or damage to the environment according to the past disasters. Based on the discussion on workshop for formulation of LDCRP, disaster identification and ranking is summarized shown in Table 3-2 as top six prioritized disaster on the basis of standardization done on the wards. And earthquake disaster is prioritized as the most hazardous disaster.

Table 3-2 Disaster Potential in LMC

*First Priority Disaster: Earthquake

Hazards	Flood	Road Accident	Fire	Landslide	Drought
Flood					
Road Accident					
Fire					
Landslide					
Drought					
Rank	2nd	3rd	4th	5th	6th

Note: Information is based on the workshop for formulation of LDCRP in LMC, Other potential disasters according to the past disasters: Epidemic, Gas explosion, Lightning, Wildlife attack, Wind and Hail storm
Source: JICA ERAKV Project

3-3. Hazard Analysis

Hazard assessment is a way to understand the elements of hazard which may create risk to the metropolitan city and its community. Characteristics of hazards in one area with its community are different from other areas with its communities. Assessment of the characteristic of hazard will be conducted in accordance with necessary level by identifying the risky elements of various hazards in a specific location.

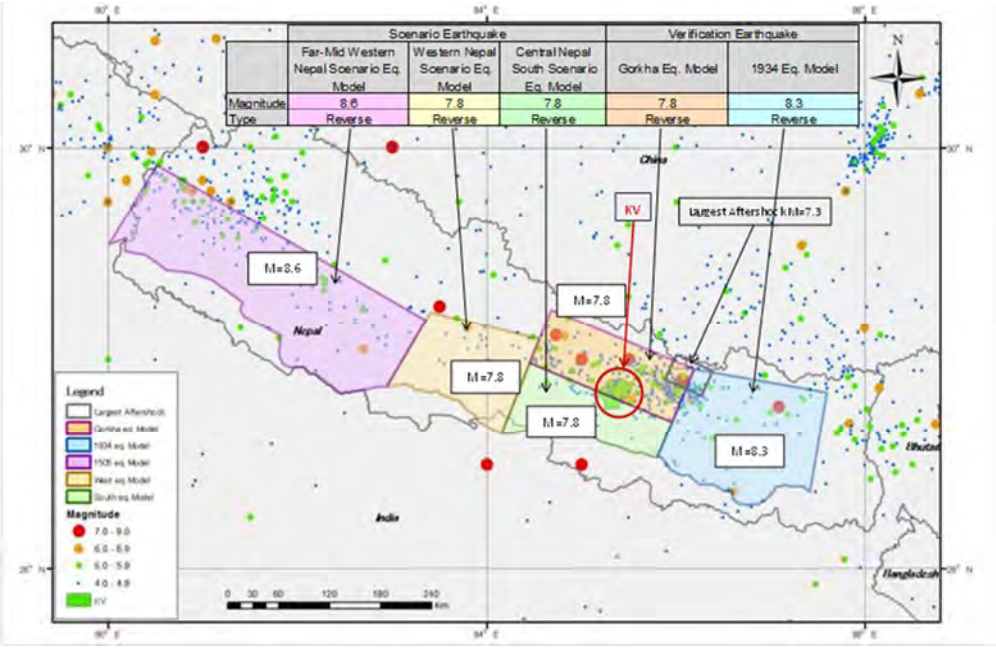
Hazard is a situation or a condition of biological characteristics, climatology, geography, geology, society, economy, politic, culture or technology which have potency to cause victims or damages. These potentials will be risky if they happen in such an area which does not have any capacity to face disaster. Therefore, it is needed to make analyses regarding hazard levels that might happen in those areas.

(1) Earthquake

JICA ERAKV Project implemented the hazard and risk assessment for earthquake in Kathmandu Valley including LMC. Hazard analysis for earthquake is as follows according to the JICA ERAKV Project.

1) Set-up of Scenario Earthquake

The basis of scenario earthquakes and the relation with historical earthquakes are shown in Figure 3-2. Scenario earthquakes are not the prediction of next earthquake and set based on the information and data of the past earthquakes, recent earthquake activity, tectonics and active faults and consultation with the national and international experts.



Source: JICA ERAKV Project

Figure 3-2 Scenario Earthquake Fault Model

For ground motion estimation, attenuation formula was directly used for Far-Mid Western Nepal Scenario Earthquake and Western Nepal Scenario Earthquake, while four modification

factors: 1/3, 1/2, 2/3 and 1/1, were applied to estimate peak ground acceleration (PGA) from the attenuation formula for Central Nepal South Scenario Earthquake because recorded PGA from Gorkha Earthquake was much smaller than that calculated from the attenuation. Since considering the reality of risk assessment results, ground motion from Western Nepal Scenario Earthquake shall be directly used for risk assessment and, ground motions with modification factor of 1/3, 1/2 and 2/3 from Central Nepal South Scenario Earthquake shall be used for risk assessment as shown in Table 3-3.

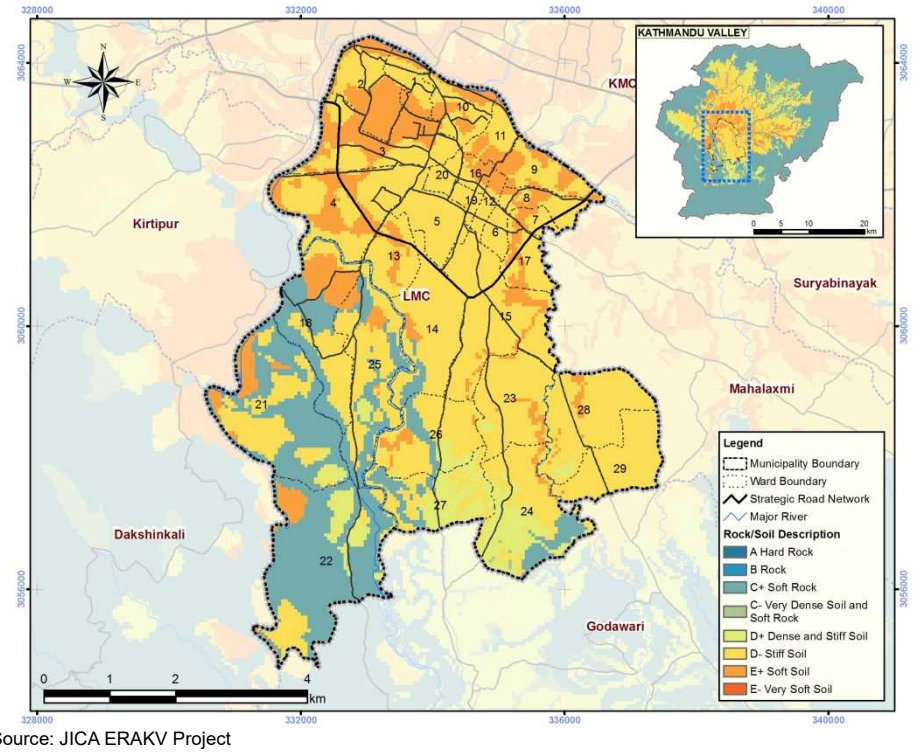
Table 3-3 Scenario ground motion for risk assessment

Scenario Earthquake	Modification Factor for PGA	Remarks
Far-Mid Western Nepal Scenario Earthquake	1/1 (Normal)	Not for risk assessment
Western Nepal Scenario Earthquake	1/1 (Normal)	For risk assessment (WN)
Central Nepal South Scenario Earthquake	1/1 (Normal)	Not for risk assessment
	1/3 (cover max. main shock)	For risk assessment (CNS-1)
	1/2 (average of aftershock)	For risk assessment (CNS-2)
	2/3 (cover max. aftershocks)	For risk assessment (CNS-3)

Source: JICA ERAKV Project

2) Hazard Analysis

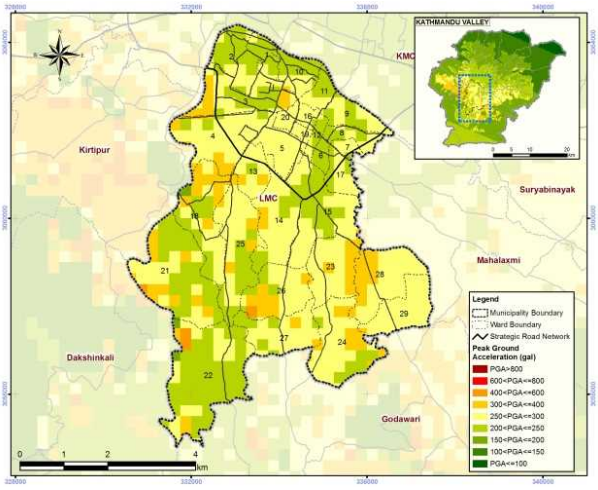
As the hazard analysis of earthquake, AVS30, the average value of the Shear-wave velocity to a depth of 30m from the surface, which shows the softness of ground in each location, is as follows based on the geomorphological unit (Figure 2-2) and a variety of survey results.



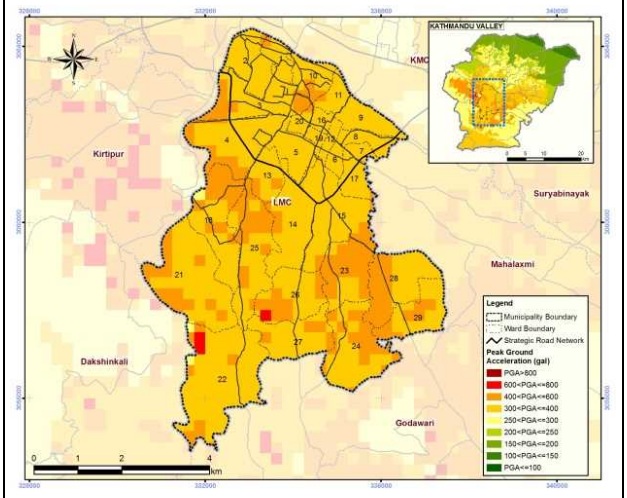
Source: JICA ERAKV Project

Figure 3-3 AVS30 Map based on Geomorphological Unit

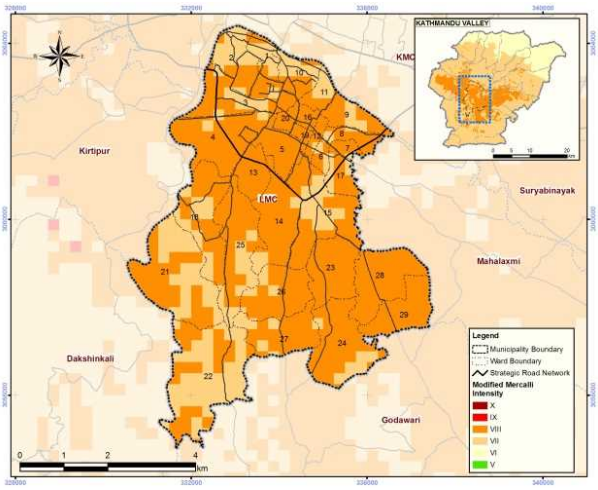
Based on the Figure 3-3, PGA (Peak Ground Acceleration) and MMI (Modified Mercalli Intensity) has been calculated. The results for CNS-1 and 2 are shown as follows.



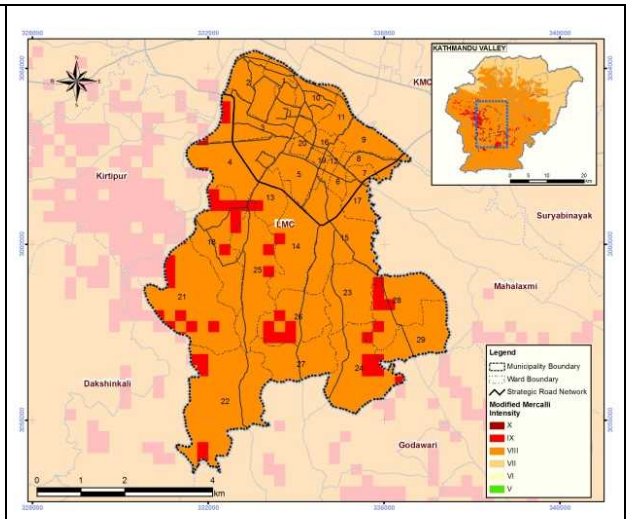
PGA(CNS-1)



PGA(CNS-2)



MMI(CNS-1)

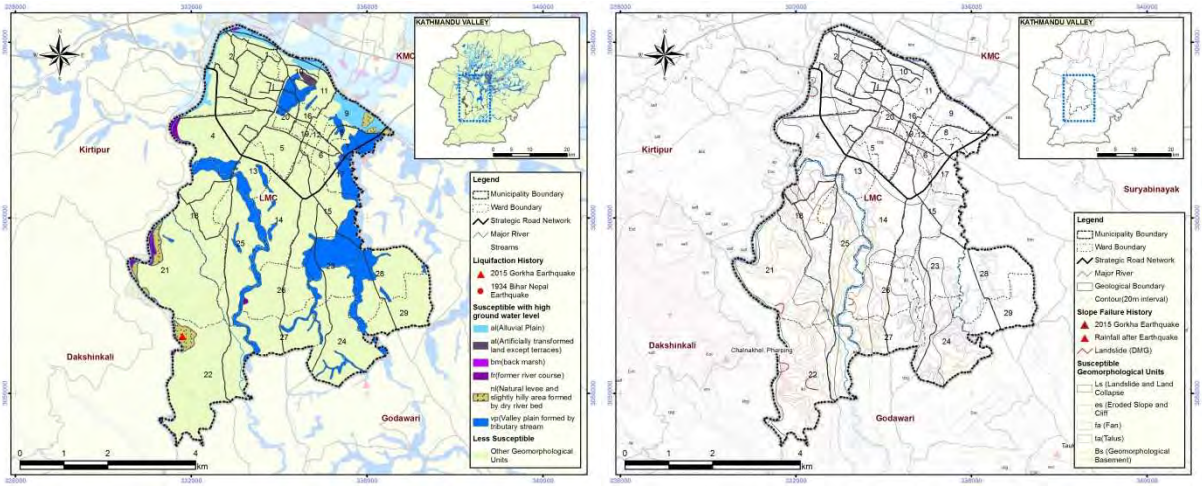


MMI(CNS-2)

Source: JICA ERAKV Project

Figure 3-4 PGA (Above) and MMI (Below) of Scenario Earthquakes

In addition, there are the possibilities of liquefaction and slope failure induced by the earthquake after the occurrence of the earthquake. Therefore, susceptibility of liquefaction and slope failure were analysed by JICA ERAKV Project based on the several survey results. The maps are shown as follows.

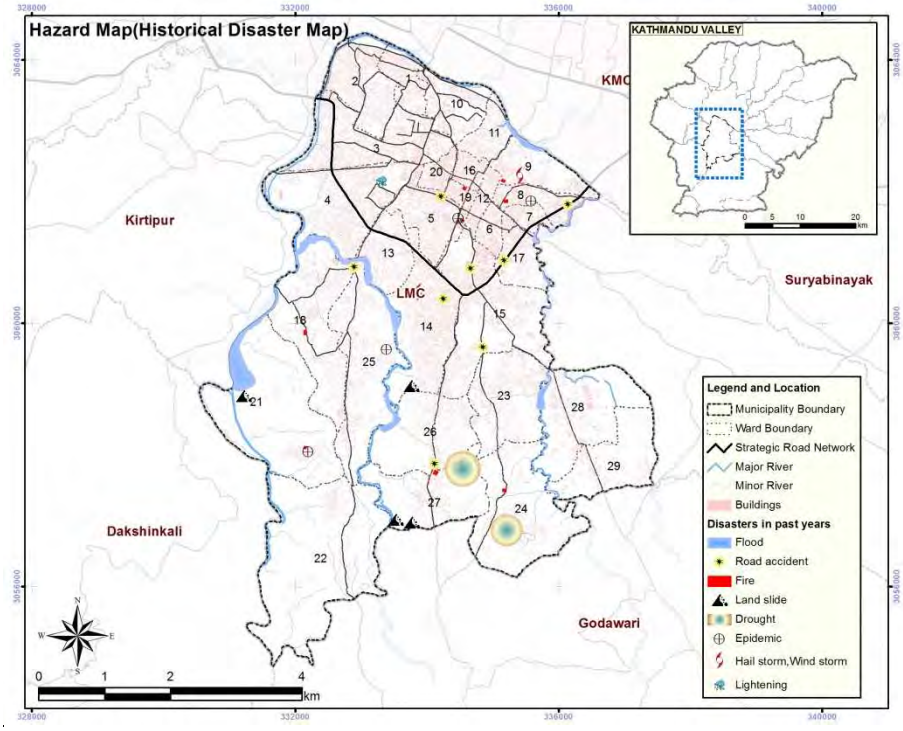


Source: JICA ERAKV Project

Figure 3-5 Liquefaction Susceptibility Map (Left) and Earthquake Induced Slope Failure Susceptibility Map (Right)

(2) Other Disasters

The hazards of other disasters except earthquake are summarized from the results of the workshop for formulation of LDCRP in LMC based on the historical disasters as follows. Road accident and fire have occurred mainly in the city centre such as Patan of northern area with high dense buildings and population, and drought and landslide have occurred in the southern area in LMC.



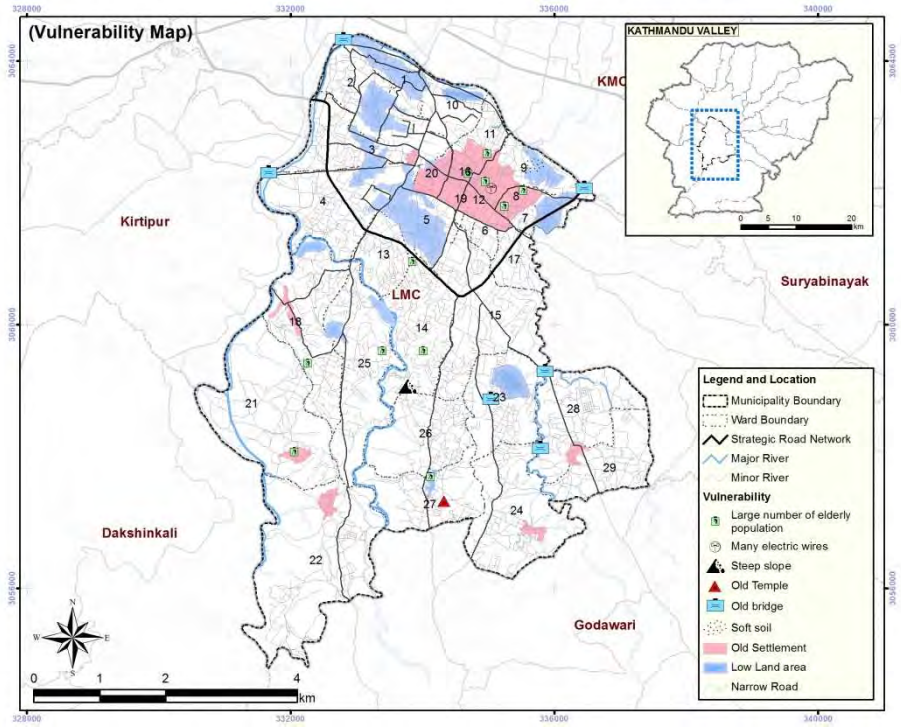
Note: Information is based on the workshop for formulation of LDCRP in LMC
Source: JICA ERAKV Project

Figure 3-6 Hazard Map for disasters except the earthquake

3-4. Vulnerability Analysis

Vulnerability is the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (UNISDR, 2009). There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors such as poor design and construction of buildings, inadequate protection of assets. Vulnerability varies significantly within a community and over time.

The result of vulnerability analysis based on the workshop for formulation of LDCRP in LMC is shown in Figure 3-7. There are old settlements mainly in Patan area and lowland area which is vulnerable for flood and inundation around rivers.



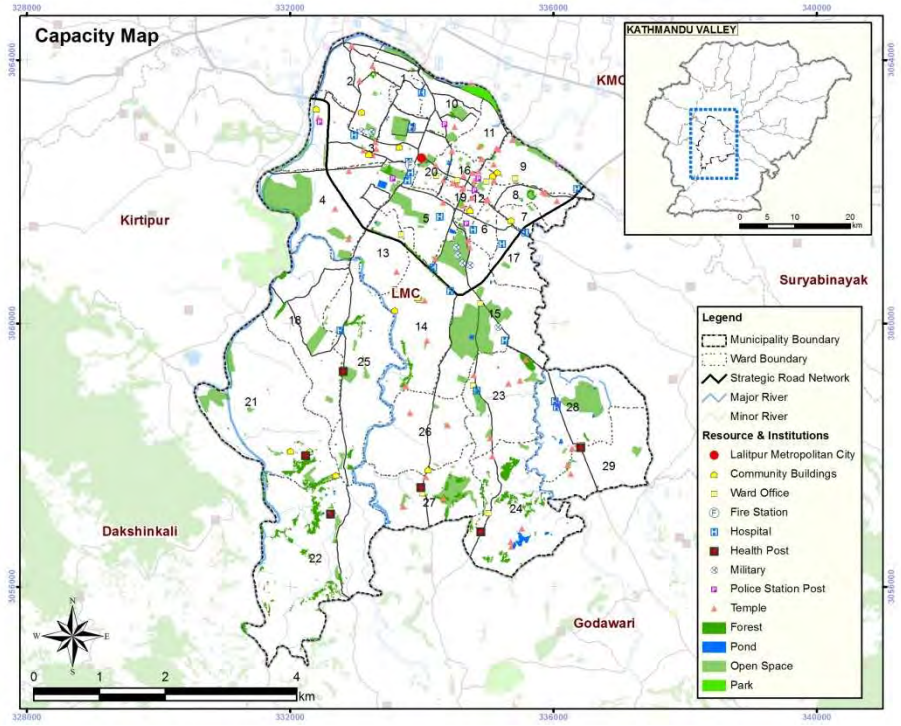
Note: Information is based on the workshop for formulation of LDCRP in LMC
Source: JICA ERAKV Project

Figure 3-7 Vulnerability Map

3-5. Capacity Analysis

Capacity is the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals (UNISDR, 2009). Capacity include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management.

The result of capacity analysis based on the workshop for formulation of LDCRP in LMC is shown in Figure 3-8. This factor is not static, but should be improved in future in order to cope and/or act to reduce disaster risks.



Note: Information is based on the workshop for formulation of LDCRP in LMC and JICA RRNE Project
Source: JICA ERAKV Project

Figure 3-8 Capacity Map

3-6. Risk Identification and Assessment

(1) Earthquake

1) Contents of risk assessment

Risk assessment has been implemented with the combination of seismic hazard assessment and the structural and/or social vulnerability. In case of a disaster, structural vulnerability results in infrastructure and building damage, while social vulnerability results in exposure to loss of life or environmental impact. The damage for each scenario earthquake has been estimated based on the collected data, hazard assessment and the damage function.

Risk assessment for earthquake disaster has been implemented based on following contents and earthquake occurrence scene.

Table 3-4 Earthquake Occurrence Scenes and Corresponding Risk Assessment

Year	Scene	Building	Infrastructure / Lifeline	Human Casualty	Economic Loss
2016	Night	○	○	○	○
	Weekday noon			○	
	Weekend afternoon			○	
2030	Extrapolation	○	-	○	-
	Seismic Stren.	○		○	

Source: JICA ERAKV Project

2) Results of risk assessment

Summary of risk assessment results and risk maps are shown in Table 3-5, and the preconditions of risk assessment by JICA ERAKV Project are as follows.

1. Scenario Earthquake are not a prediction of next earthquake
2. Based on Scenario earthquakes, hazard and risk are assessed for Kathmandu valley to utilize for the purpose of policy making and planning, and others for effective disaster risk reduction and management efforts.
3. Risk Assessment was carried out based on the available data at present.

Table 3-5 Summary of Risk Assessment Results

Category		Physical damage				Economic loss (mil. NPR)*1				Human casualty (Population: 2016: Night & Weekend afternoon - 321841 ,WKDY Noon - 357240, 2030 - 415525)				
		Scenario earthquake				Scenario earthquake					Scenario earthquake			
		WN	CNS-1	CNS-2	CNS-3	WN	CNS-1	CNS-2	CNS-3		WN	CNS-1	CNS-2	CNS-3
Building (2016) (Total building 52821)	Heavy damage (EMS DL4&5)	2,737	9,603	19,030	26,694	15,861.0	57,355.0	107,349.0	145,934.0	Night (Weekday and weekend)				
		5.2%	18.2%	36.0%	50.5%					Death	321	1,364	3,136	4,810
											0.10%	0.42%	0.97%	1.49%
										Injured	1,257	5,341	12,281	18,838
											0.39%	1.66%	3.82%	5.85%
										Evacuee	30,437	91,975	160,202	205,929
											9.46%	28.58%	49.78%	63.98%
	Moderate damage (EMS DL3)	2,564	6,277	8,391	8,434					Weekday (noon, 12:00)				
		4.9%	11.9%	15.9%	16.0%					Death	301	1,308	3,050	4,710
											0.08%	0.37%	0.85%	1.32%
										Injured	1,180	5,124	11,946	18,447
											0.33%	1.43%	3.34%	5.16%
										Evacuee	32,127	99,030	174,468	225,554
											8.99%	27.72%	48.84%	63.14%
	Slight damage (EMS DL2)	5,255	9,322	9,540	8,031					Weekend (afternoon, 18:00)				
		9.9%	17.6%	18.1%	15.2%					Death	225	955	2195	3367
											0.07%	0.30%	0.68%	1.05%
										Injured	880	3,739	8,597	13,187
											0.27%	1.16%	2.67%	4.10%
										Evacuee	30,534	92,384	161,142	207,372
											9.49%	28.70%	50.07%	64.43%
Building (2030, EMS DL4&5) (Total building 68126)*2	Extrapolation	3,457	12,362	24,595	34,543					Death	404	1,761	4,076	6,264
		5.1%	18.1%	36.1%	50.7%						0.10%	0.42%	0.98%	1.51%
	Case-1	3,032	11,384	23,245	33,102					Death	352	1,600	3,796	5,920
		12.3%	7.9%	5.5%	4.2%						0.08%	9.1%	6.9%	5.5%
	Case-2	1,575	9,065	20,975	31,175					Death	181	1,284	3,450	5,605
		54.4%	26.7%	14.7%	9.8%						55.2%	27.1%	15.4%	10.5%
	Case-3	1,381	7,842	18,454	28,000					Death	148	1,028	2,833	4,741
		60.1%	36.6%	25.0%	18.9%						63.4%	41.6%	30.5%	24.3%
	Case-4	1,734	7,865	18,197	27,726					Death	209	1,185	3,212	5,371
		49.8%	36.4%	26.0%	19.7%						48.3%	32.7%	21.2%	14.3%
	Case-5	1,199	6,359	15,977	25,322					Death	150	999	2,929	5,083
		65.3%	48.6%	35.0%	26.7%						62.9%	43.3%	28.1%	18.9%
School (Total building 780)	Heavy	33	132	269	380	2,902.0	8,985.0	15,727.0	20,470.0	Death	57	272	643	986
		4.2%	16.9%	34.5%	48.7%						0.05%	0.25%	0.58%	0.89%
	Moderate	36	91	122	124					Injured	223	1,065	2,518	3,861
		4.6%	11.7%	15.6%	15.9%						0.20%	0.97%	2.28%	3.50%
	Slight	80	143	147	125									
		10.3%	18.3%	18.8%	16.0%									
Health facility (Total building 70)	Heavy	3	11	23	34	4,130.1	11,788.6	24,906.6	33,679.1					
		4.3%	15.7%	32.9%	48.6%									
	Moderate	3	8	11	12									
		4.3%	11.4%	15.7%	17.1%									
	Slight	6	12	13	11									
		8.6%	17.1%	18.6%	15.7%									
Government building (Total building 107)	Heavy	6	18	36	51	733.2	2,644.8	4,718.3	6,226.4					
		5.6%	16.8%	33.6%	47.7%									
	Moderate	5	12	16	17									
		4.7%	11.2%	15.0%	15.9%									
	Slight	11	18	19	17									
		10.3%	16.8%	17.8%	15.9%									
Road*3 (Total length 534)	Length by landslide (km)	0.0	0.0	0.0	6.3	0.0	137.4	204.8	228.3					
		0.0%	0.0%	0.0%	1.2%									
	Length by liquefaction (km)	0.0	24.1	47.2	60.8									
		0.0%	4.5%	8.8%	11.4%									
Bridge (7 bridges assessed)*4	Heavy	0	0	1	2	37.7	46.1	60.4	85.1					
		0.0%	0.0%	14.3%	28.6%									
	Moderate	0	2	1	0									
		0.0%	28.6%	14.3%	0.0%									
	Slight	2	0	0	0									
		28.6%	0.0%	0.0%	0.0%									
Water supply (Existing) (Total length 213 km)	Damage points	184	444	791	1159	6.8	16.4	29.3	42.9					
	Damage ratio (point/km)	0.86	2.08	3.72	5.44									
Water supply (Planned) (Total length 204 km)	Damage points	40	92	165	242	1.5	3.4	6.1	8.9					
	Damage ratio (point/km)	0.2	0.5	0.8	1.2									
Sewage (Total length 172km)	Damage Length (km)	0.7	1.5	1.8	3.2	11.0	25.0	33.0	50.1					
		0.4%	0.9%	1.1%	1.8%									
Power distribution (Total pole 27814)	Pole broken	171	739	1,598	2,324	2.4	10.4	22.5	32.7					
		0.6%	2.7%	5.7%	8.4%									
Mobile BTS tower (Total tower 140)	Tower damage	5	28	66	98	9.5	53.2	125.4	186.2					
		3.6%	20.0%	47.1%	70.0%									

Note:

*1 Economic loss is the direct loss due to the damage of building, infrastructure and lifeline, calculated by the necessary construction or repair cost.

*2 The building damage of 2030 accounts for heavy damage only. The ratio of each case is the reduction ratio with respect to that of extrapolation.

Extrapolation: The composition of the structure type of 2030 is assumed as same as that of 2016.

Case-1: Buildings increased from 2016 to 2030 are assumed masonry with cement mortar and RC engineered only. The ratio of masonry and RC is assumed as same as that at the time of 2016.

Case-2: 1) Same as Case-1, 2) All of the existing masonry building are assumed to change to masonry with cement mortar.

Case-3: 1) Same as Case-2, 2) All of the existing RC non-engineered building are assumed to change to RC engineered.

Case-4: 1) 50% of increased new masonry buildings are changed to RC engineered, 2) 50% of existing masonry buildings at 2016 are assumed be reconstructed to RC Engineered, 3) 30% of existing non-engineered RC buildings are assumed be reconstructed to RC engineered.

Case-5: 1) 70% of increased new masonry buildings are changed to RC engineered, 2) 70% of existing masonry buildings at 2016 are assumed be reconstructed to RC Engineered, 3) 50% of existing non-engineered RC buildings are assumed be reconstructed to RC engineered.

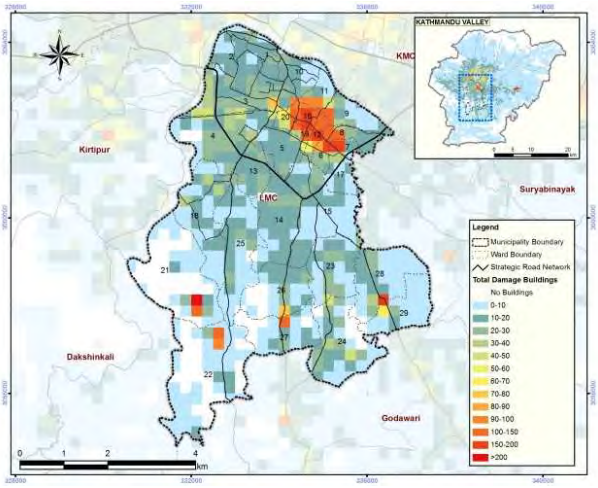
*3 The damage length of road means the road length which located in the high liquefaction and landslide potential area, not the damage length which will happen in the scenario earthquakes.

*4 There are a total of 145 bridges and, among them, 45 of RC multi span bridges were quantitatively assessed for each scenario. The remaining single span and multi span masonry bridges were qualitatively assessed from the point view of seismic performance without relating to scenario earthquakes.

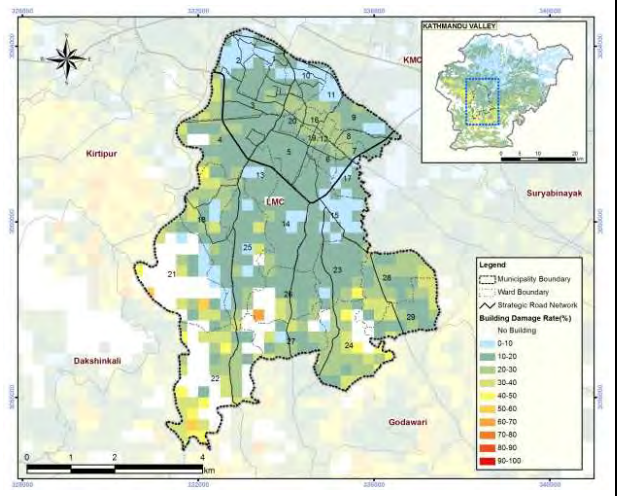
Caution

1. Scenario Earthquake are not the prediction of next earthquake
2. Based on Scenario earthquakes, hazard and risk are assessed for Kathmandu valley to utilize for the purpose of policy making and planning, and others for effective disaster risk reduction and management efforts.
3. Risk Assessment was carried out based on the available data at present.

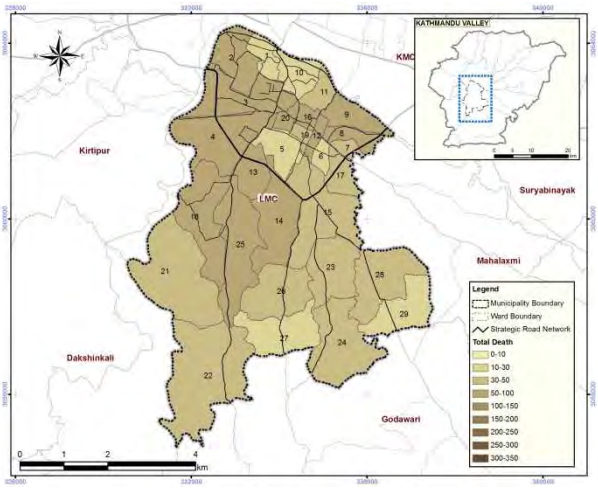
Source: JICA ERAKV Project



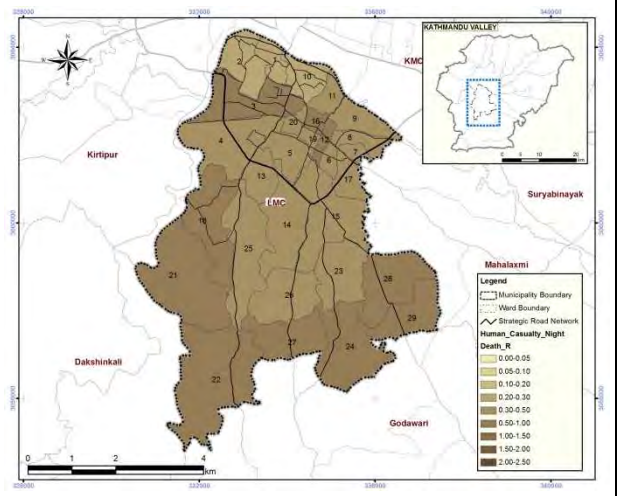
Number of Heavily Building Damage(CNS-1)



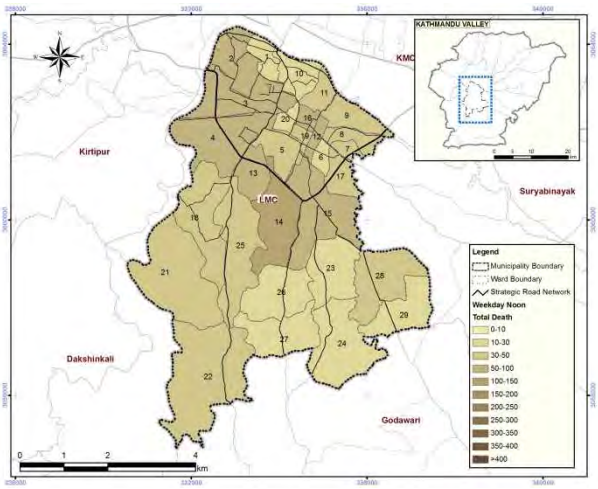
Ratio of Heavily Building Damage(CNS-1)



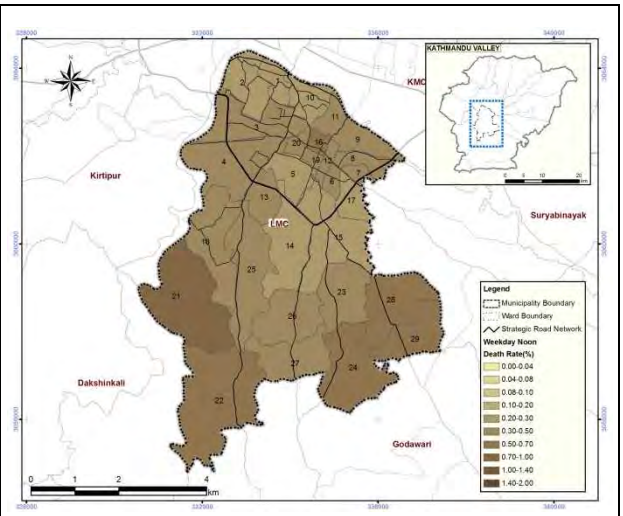
Number of Death in 2016 at Night(CNS-1)



Ratio of Death in 2016 at Night(CNS-1)



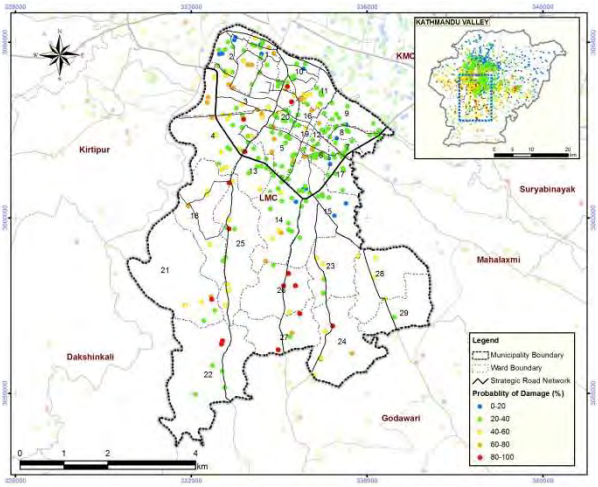
Number of Death in 2016 at Weekday Noon(CNS-1)



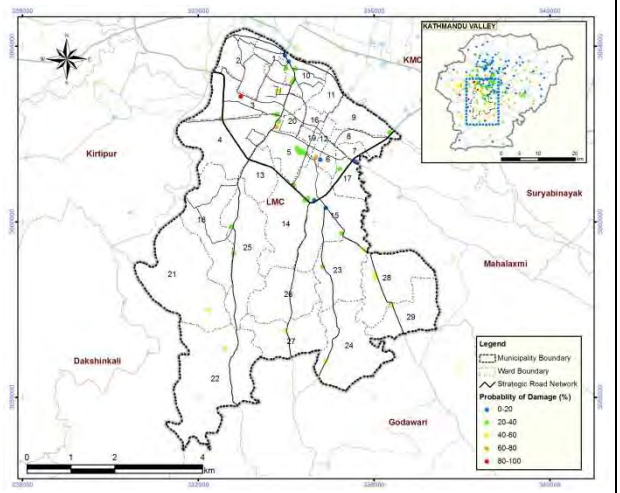
Ratio of Death in 2016 at Weekday Noon(CNS-1)

Source: JICA ERAKV Project

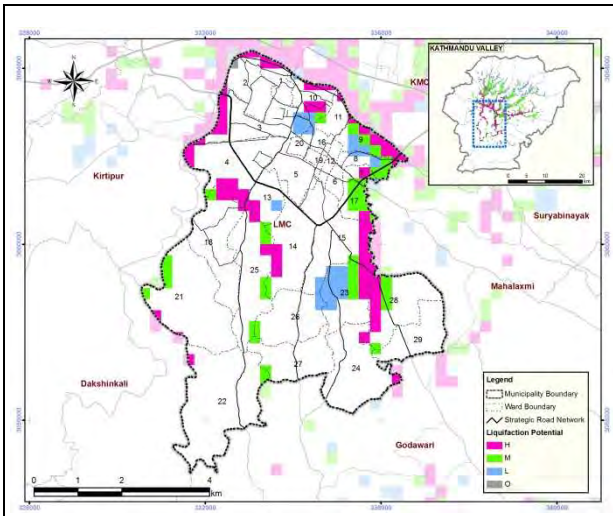
Figure 3-9 Result of risk assessment (1)



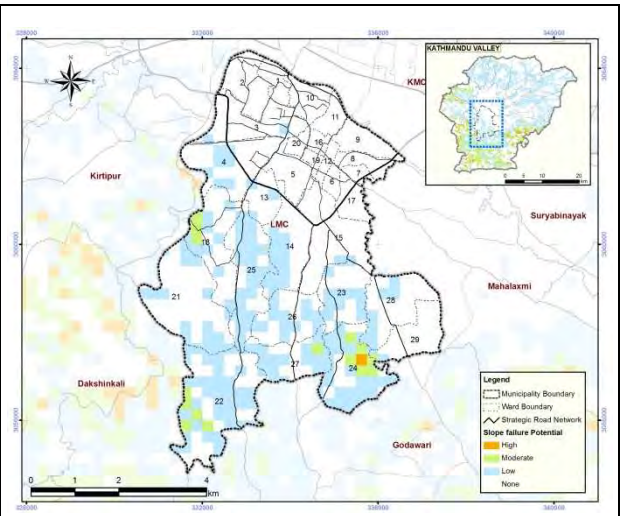
School Building Damage (CNS-2)
Probability of Heavy Damage (Damage Level 4+5 by EMS-98)



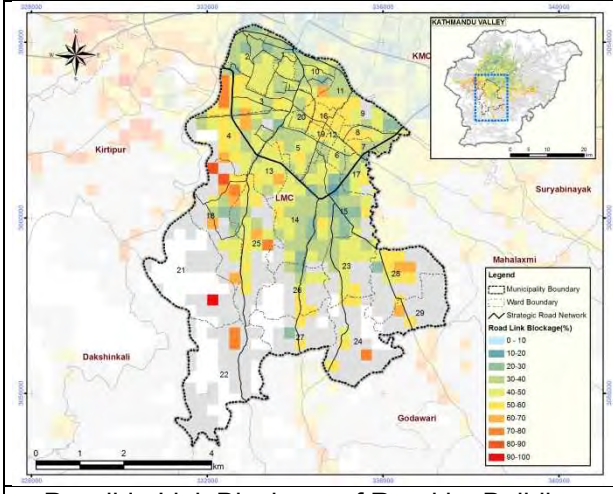
Health Facility Building Damage (CNS-2)
Probability of Heavy Damage (Damage Level 4+5 by EMS-98)



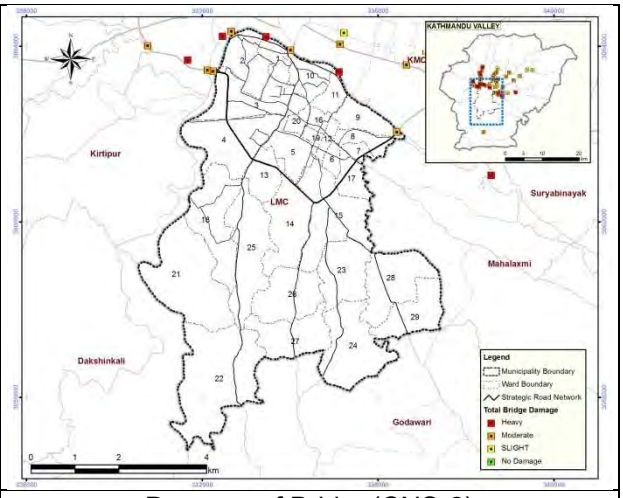
Possible Damage of Road by Liquefaction(CNS-2)



Possible Damage of Road by Slope Failure(CNS-2)



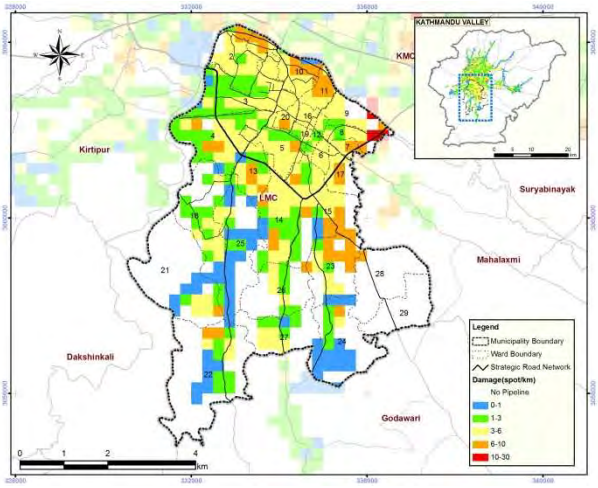
Possible Link Blockage of Road by Building Damage(CNS-2)



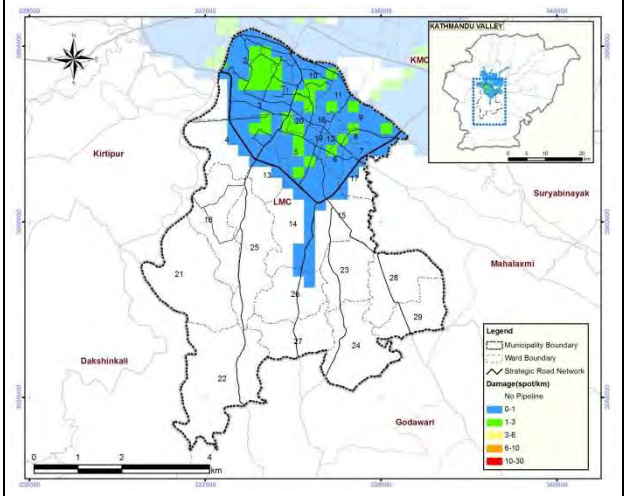
Damage of Bridge(CNS-2)

Source: JICA ERAKV Project

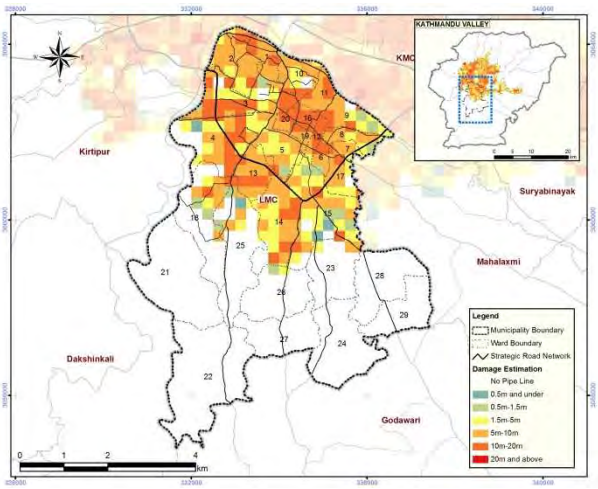
Figure 3-10 Result of risk assessment (2)



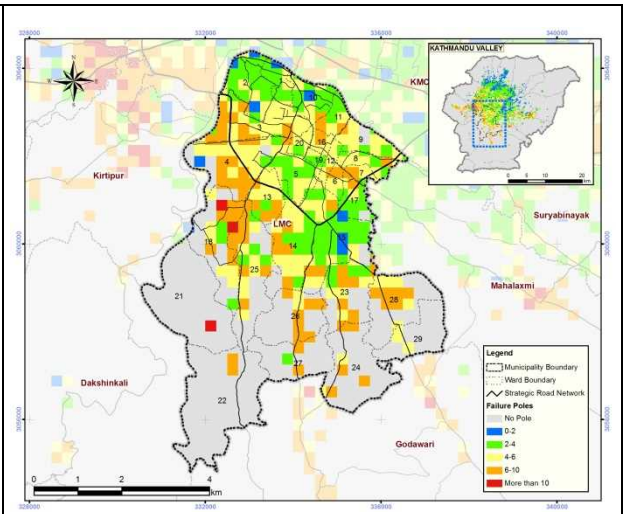
Water Supply Network Damage (Existing) (CNS-2)



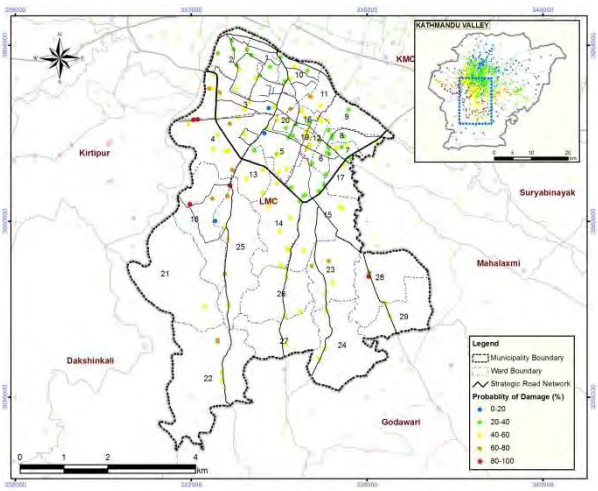
Water Supply Network Damage (Planned) (CNS-2)



Sewage Network Damage(CNS-2)



Power Pole Damage (CNS-2)



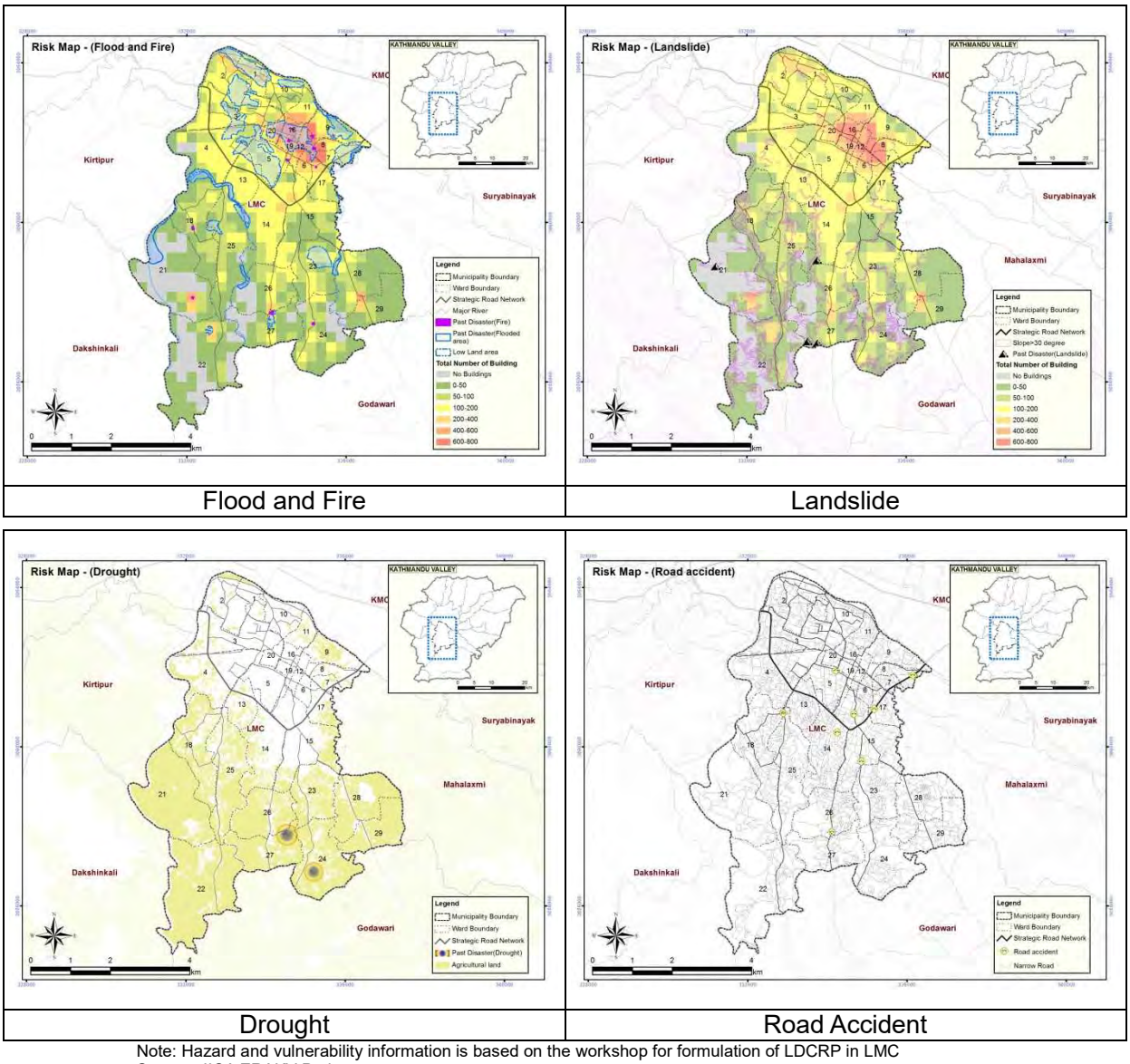
Mobile BTS Tower Damage (CNS-2)

Source: JICA ERAKV Project

Figure 3-11 Result of risk assessment (3)

(2) Other Disasters

The risks of other disasters except earthquake are identified from the hazard, vulnerability, capacity assessment and land use conditions such as built-up area for considering exposure of damages and agriculture for drought as shown in Figure 3-12. Since the city centre such as Patan of northern area is high dense population with lowland area, these areas are at high risk for flood as well as fire. On the other hand, southern area is at high risk for drought and landslide in LMC.



Flood and Fire | Landslide

Drought | Road Accident

Note: Hazard and vulnerability information is based on the workshop for formulation of LDCRP in LMC
Source: JICA ERAKV Project

Figure 3-12 Risk Map

CHAPTER 4.
LOCAL DISASTER AND CLIMATE RESILIENCE POLICY

4-1. Vision and Mission

The Vision of DCR Plan in LMC is:

Disaster Resilient and Safe Metropolitan

The Mission of DCR Plan in LMC is:

1. To Encourage Everyone to Build Earthquake Resistant Buildings with Incorporation of Building Codes, Bylaws, Land Use Plan and Other Policies to Protect People
2. To Increase the Capacity and enhance awareness to Implement Efforts for Disaster Prevention/Mitigation and Preparedness, Emergency Response, and Rehabilitation/Reconstruction in planned, integrated, coordinated and comprehensive manner.
3. To Mainstream the DCR Activities to Development and to Establish Community's Right to Live being Safe from the Disaster

- Message from Mayor of LMC -

Basic Principle for DCR

LMC has suffered from various disasters so far. Especially in the Gorkha Earthquake that occurred in 2015, the serious damage was caused such that 49 people lost their lives, 128 people were injured and around 2,300 private houses were completely collapsed, etc. Although already two years have passed since the earthquake, it is important not to forget disasters and to build the culture for disaster risk reduction and management.

Under such circumstances, in Nepal, large earthquakes occurred periodically, and the risk of earthquakes still continues.

In the result of earthquake risk assessment by the JICA ERAKV project, in the Central South Nepal scenario Earthquake, it is very severe situation, specifically 9,603 buildings are assessed to be heavily damaged in CNS-1.

However, regardless of any difficult situation, LMC will promote safe and secure city planning in order to protect the lives of residents as a fundamental principle. In particular, since "Risk Reduction of Building Damage" is directly linked to the residents' lives, we will promote countermeasures for buildings.

Then, it is our responsibility to carry out the DCR measures as the top priority by understanding the mechanism of the disasters and our regional characteristics, and imagining the disaster as the basis.

4-2. Disaster and Climate Resilience Strategy

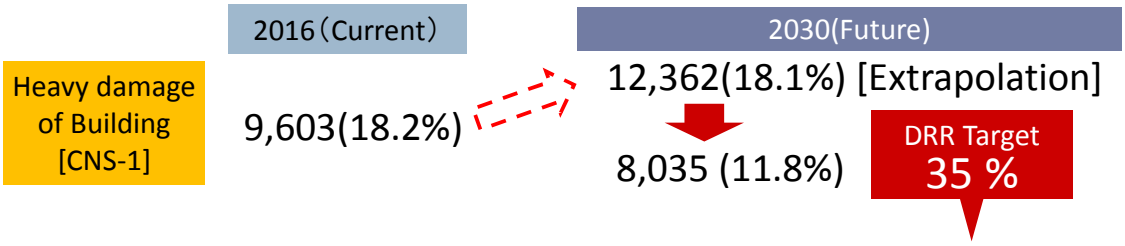
(1) Target level of scenario earthquake

As a first prioritized disaster LMC set the target level of scenario earthquake ground motion for DRR efforts based on the results of risk assessment as follows.

- CNS-2 for Critical Facilities such as School, Hospitals, Governmental Buildings, Large Commercial Buildings, High-rise Buildings, etc. and Critical Infrastructure such as Bridges.
- CNS-1 for Other Facilities such as Residential and Small Residential-Commercial Buildings.

(2) DCR Strategies

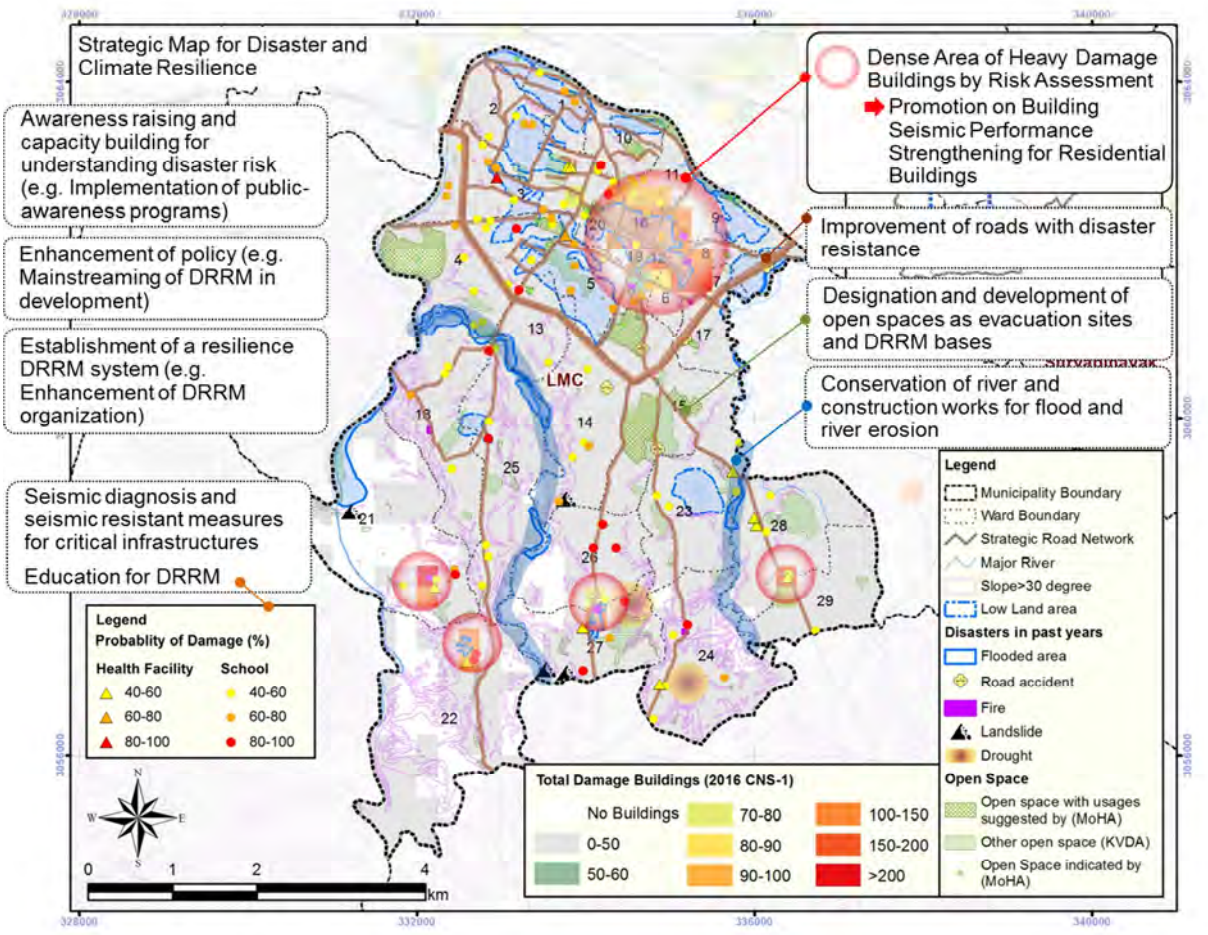
To contribute the DCR of LMC and achieve the targets of Sendai Framework for DRR 2015-2030, DCR Strategies with disaster risk reduction ratio as target value were set as follows.



Targets of Sendai Framework for DRR 2015-2030	Strategies (Target value by 2030)
(a) Substantially reduce global disaster **mortality** by 2030	Approx. **35%** Reduce **1,761 ⇒ 1,150 (persons)**
(b) Substantially reduce the **number of affected people** globally by 2030	Approx. **35%** Reduce (Evacuees) **118,485 ⇒ 77,000 (persons)**
(c) Reduce direct disaster **economic loss** in relation to global gross domestic product (GDP) by 2030	Approx. **15%** Reduce related to Heavy damage of Building **43,377 ⇒ 37,000 (mil. NPR)**
(d) Substantially reduce disaster damage to **critical infrastructure** and disruption of basic services, among them **health and educational facilities**, including through developing their resilience by 2030	**Reduce**
(e) Substantially increase the number of countries with national and **local disaster risk reduction strategies** by 2020	**This Plan and Strategy**

Source: JICA ERAKV Project

Figure 4-1 DCR Strategies of LMC



Source: JICA ERAKV Project

Figure 4-2 Strategic Map for Disaster and Climate Resilience

4-3. Institutional Structure of Disaster and Climate Resilience

The framework of related organizations to DCR is summarized in Figure 4-3. Efforts from many organizations are required for implementing DCR measures. Moreover, DCR measures by each stakeholder are necessary to be collaborated and coordinated.

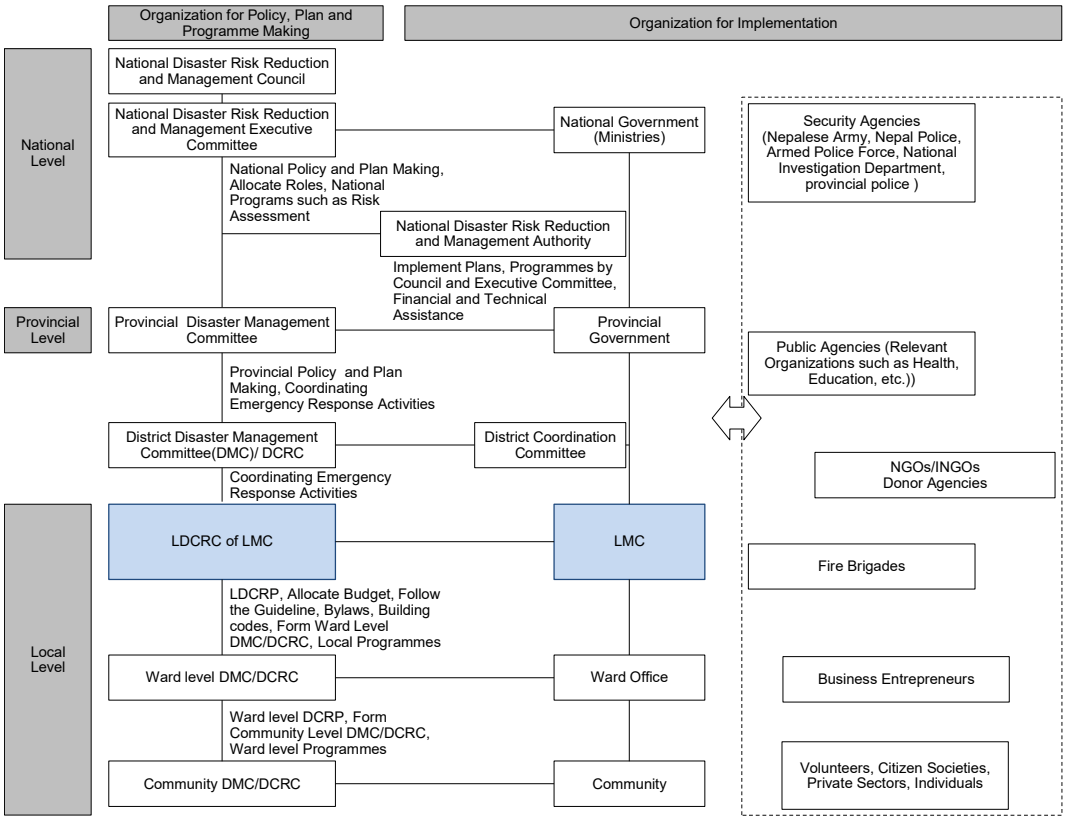
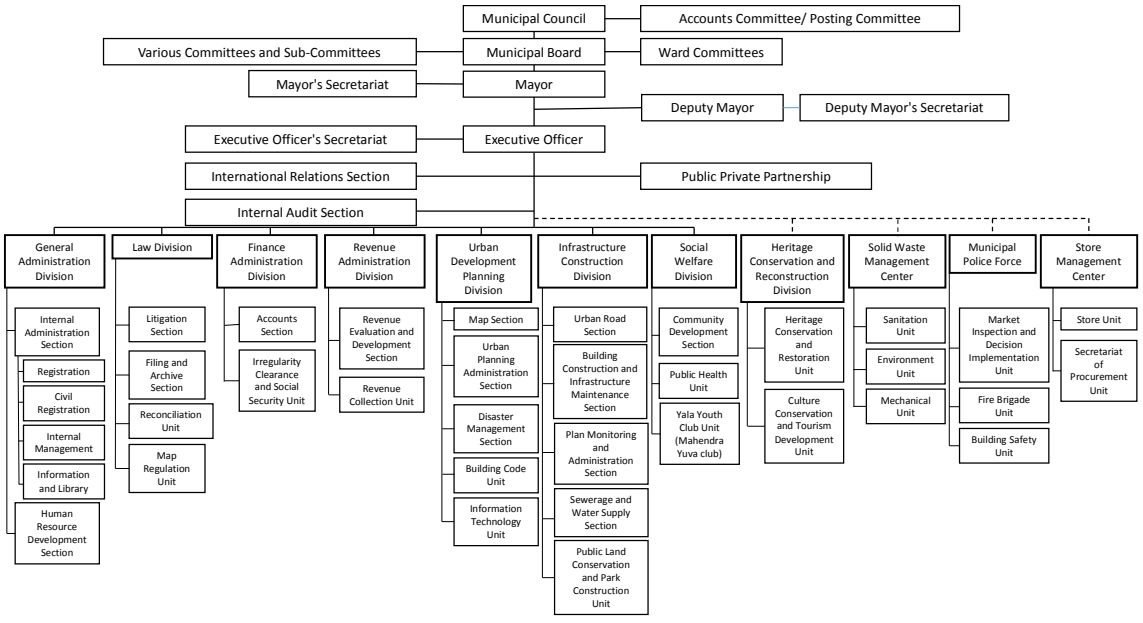


Figure 4-3 Framework of related organizations

In the implementation of DCR activities, LDCRC of LMC does not work alone but cooperate with entire LMC government, District, Provincial, National Government, NGO/INGOs and relevant organizations. Figure 4-4 shows the organizational structure of LMC.



Source: LMC

Figure 4-4 Organization chart of LMC

CHAPTER 5.
LOCAL DISASTER AND CLIMATE RESILIENCE ACTIVITIES

To achieve the Vision and Mission for DCR of LMC, priorities for action are as follows based on the Sendai Framework for DRR 2015-2030:

(1) Understanding disaster risk

Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.

(2) Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the national, regional and global levels is vital to the management of disaster risk reduction in all sectors and ensuring the coherence of national and local frameworks of laws, regulations and public policies, by defining roles and responsibilities, guide, encourage and incentivize the public and private sectors to take action and address disaster risk.

(3) Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation.

(4) Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Disaster preparedness needs to be strengthened for more effective response and ensure capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of the disaster, is an opportunity to «Build Back Better» through integrating disaster risk reduction measures. Women and persons with disabilities should be empowered to publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases.

5-1. Understanding Disaster Risk

Based on the DCR policy which had been described in Chapter 4, the activities for understanding disaster risk can be seen on Table 5-1.

Table 5-1 Activity list for understanding disaster risk

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
1.Understanding disaster risk								
1-1.Understanding disaster risk								
Understanding disaster risk	Common	***	1-1-1	Accumulation of disaster data for the historical disasters	Accumulation of disaster data ・Accumulation and database compilation of historical disaster data ・Studying the past disasters and disaster trends	LMC	DCC	1 year
	Common	***	1-1-2	Development of a disaster information database for DRRM	Development of a disaster information database ・Information of past disasters ・Information of physical and social conditions such as geology, people and buildings ・Regularly update database	LMC	National Government	2 years
	Common	**	1-1-3	Update of VCA in ward level	Update of VCA in ward level (Examples of contents) ・Historical timeline analysis, hazard ranking ・Institutional analysis ・Target group discussion	Ward Office	LMC	1 year
	Common	**	1-1-4	Update of VCA in municipal level	Update of VCA in municipal level ・Integration of results of VCA in ward level	LMC	-	1 year
	Disasters except Earthquake	***	1-1-5	Identification of risk area	Understanding and Identification of the risk area of the municipality ・Risk area by VCA and, results of hazard and risk assessment (if any) ・Risk area on risk sensitive land use plan ・Understanding the risk area	LMC	National and Provincial Government, DCC	2 years
1-2.Effective dissemination of disaster risk information								
Effective dissemination of disaster risk information	Common	**	1-2-1	Development of risk maps and DRRM maps	Development of risk maps and DRRM maps ・Development of risk maps and DRRM maps based on the risk assessment	LMC	Provincial Government, DCC	1 year
	Common	**	1-2-2	Dissemination of disaster risk information to the residents	Dissemination of disaster risk information to the residents ・Dissemination of risk maps and DRRM maps to the residents ・Development of hoarding boards for disaster risk information and public awareness	LMC	Ward Office	1 year
1-3.Awareness Raising and Capacity Building for Understanding Disaster Risk								
Enhancement of public awareness of Disaster Risk Reduction/ Management (DRRM)	Common	**	1-3-1	Development of a handbook on DRRM for families	Development and Distribution of a handbook about DRRM for families (Examples of contents) ・Learning about disasters (disaster mechanisms, etc.) ・What to do in the event of disaster	LMC	Ward Office	1 year
	Common	***	1-3-2	Implementation of public awareness-raising programmes on DRRM	Implementation of awareness-raising programmes on DRRM (Examples of programmes) ・Community workshop for learning disaster risks and DRRM ・Development/Utilization of educational tools ・TV/Radio awareness programme	LMC	Ward Office	Regularly
	Common	*	1-3-3	Construction and management of DRRM training centre	Construction and management of DRRM training centre for all municipality (communities, municipal staffs) ・Consideration of the concept of DRRM training centre ・Designing the building ・Consideration of the training course/contents ・Planning of the operation and management for the training centre	LMC	Provincial Government, DCC	3 years

Note: Priority Level *** High, ** Middle, * Low

5-2. Strengthening Disaster Risk Governance to Manage Disaster Risk

Based on the DCR policy which had been described in Chapter 4, the activities for strengthening disaster risk governance to manage disaster risk can be seen on Table 5-2.

Table 5-2 Activity list for strengthening disaster risk governance to manage disaster risk

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
2. Strengthening disaster risk governance to manage disaster risk								
2-1.Developing regulatory frameworks								
Enhancement of policy on DRRM	Common	***	2-1-1	Formulation of regulation on DRRM	Formulation of regulation on DRRM ・Development of regulation on DRRM ・Synchronization with the local regulation on land use	LMC	Provincial Government, DCC	1 year
	Common	***	2-1-2	Mainstreaming of DRRM in development	Mainstreaming of DRRM in development ・Integration of DRRM aspect into the local development plan and all relevant plans	LMC	-	1 year
	Common	***	2-1-3	Formulation of the local regulation for disaster emergency fund	Formulation of the local regulation for disaster emergency fund	LMC	Provincial Government, DCC	2 years
2-2.Resilient DRRM Governance								
Establishment of a resilient DRRM system	Common	***	2-2-1	Establishment of Local Disaster and Climate Resilience Committee (LDCRC)	Establishment of Local Disaster and Climate Resilience Committee (LDCRC)	LMC	-	1 year
	Common	***	2-2-2	Enhancement of DRRM organization	Enhancement of the DRRM section on the municipal level. ・Organizational restructuring including the promotion to the Division "DRRM Division" divided into several sections and allocated tasks. ・Increasing the number of staff, and the employment of experts for DRRM	LMC	-	1 year
	Common	**	2-2-3	Establishment of sub committees	Establishment of sub committees such as Preparedness and response, Monitoring and evaluation)	LMC	-	1 year
	Common	***	2-2-4	Management and enhancement of the fire brigade/equipment	Management and enhancement of the fire brigade/equipment ・Establishment of the fire brigade organization (municipal and ward level), allocation of resources ・Procurement of the fire equipment (portable fire engines, fire extinguishers, search and rescue equipment, etc.) ・Training and awareness raising activities	LMC	National and Provincial Government, DCC	1 year
	Common	***	2-2-5	Establishment of Ward level Disaster and Climate Resilience Committee and Community Disaster and Climate Resilience Committee (CDCRC)	Establishment of Ward level Disaster and Climate Resilience Committee ・Determination of members of committee based on the Ward Citizen Forum ・Determination and allocation of roles and responsibilities of committee ・Determination of DRRM capacity development programmes ・(if necessary) Establishment of CDCRC	Ward Office	LMC	1 year
	Common	**	2-2-6	Formulation of community DRRM plans	Support for Formulation of Community DRRM plans ・Hazard/Risk assessment of community level based on the risk assessment on the municipal level ・Establishment of planning committee ・Formulation of Community DRRM plans (Example of contents: General overview, Community profile, Risk assessment, DRRM policy, Action plan, etc.)	Ward Office	LMC	2 years

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Common	***	2-2-7	Human resource development for DRRM administration	Implementation of training for municipal staff in order to develop the human resources needed for DRRM administration. ・Consideration of training programmes for each level. ・Conducting the workshops and training.	LMC	National and Provincial Government, DCC	Regularly
		Common	***	2-2-8	Monitoring and Evaluation of implementation on the LDCRP	Monitoring and Evaluation of implementation on the LDCRP ・Identification of the activities which is on going ・Regularly monitoring, evaluation of the activities ・Development of the monitoring and evaluation report	LMC	-	Regularly
		Common	***	2-2-9	Update of the LDCRP	Update of the LDCRP ・Review of the LDCRP ・Update of the LDCRP for effective disaster and climate resilience after five years	LMC	-	Regularly (Every 5 years)
	Building alliance, collaboration and partnership	Common	*	2-2-10	Strengthening cooperation with other municipalities, the establishment of a support and acceptance system, and conclusion of agreements	Conclusion of agreements for strengthening cooperation with other municipalities and the establishment of a support and acceptance system. ・Coordination with national and province lecel for a cooperation system among municipalities.	National and Provincial Government, DCC	LMC	5 years
		Common	**	2-2-11	Establishment of DRR platforms to strengthen the cooperation with other agencies (Red Cross, NGOs/INGOs), the establishment of a support and acceptance system, and conclusion of agreements	Conclusion of agreements for strengthening cooperation with other related agencies for emergency response and the establishment of a support and acceptance system. ・Coordination with Red Cross, NGOs/INGOs, etc.	National and Provincial Government, DCC	LMC	2 years

Note: Priority Level *** High, ** Middle, * Low

5-3. Investing in Disaster Risk Reduction for Resilience

Based on the DCR policy which had been described in Chapter 4, the activities for investing in disaster risk reduction for resilience can be seen on Table 5-3.

Table 5-3 Activity list for investing in disaster risk reduction for resilience

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
3. Investing in disaster risk reduction for resilience								
3-1.Risk Reduction for Buildings								
Resilience and safety of houses	Earthquake	***	3-1-1	Application of National Building Codes(NBC), enforcement of the building permission and inspection system	Enforcement of the building permission and inspection system applied to NBC ・Capacity development of the building permission and inspection section ・Strengthening of intermediate inspection for such as high-rise buildings ・Improvement of E-BPS(Electronic – Building Permit System) such as the listing of those who were trained TOT(Training of Trainers)	LMC	National and Provincial Government, DCC	Regularly
	Earthquake	***	3-1-2	Financial and technical support for seismic diagnosis, seismic resistant measures of houses, and the dispatch of experts for seismic diagnosis	Financial and technical support for seismic diagnosis, and seismic resistant measures of houses. ・Dispatch of experts, technicians for seismic diagnosis and checking houses ・Technical support for seismic retrofitting of buildings according to the guidelines by national government	LMC	National and Provincial Government, DCC	Regularly
	Earthquake	***	3-1-3	Development of capacity and public awareness for seismic resistant houses	Development of capacity and public awareness for seismic resistant houses. ・Distribution of posters, brochures, pamphlets, books on design and construction/retrofitting methods. ・Holding workshops and training for the construction of seismic resistant houses and retrofitting for masons, etc.	LMC	Provincial Government, DCC	Regularly
3-2.Risk Reduction for Critical Facilities and Infrastructures								
Resilience and safety of public buildings	Earthquake	***	3-2-1	Seismic diagnosis of all public buildings and the reinforcement of public buildings	Seismic diagnosis of public buildings ・Conduct detailed building diagnosis for public buildings ・Consider methods for reinforcement ・Reinforcement of public buildings	LMC	National and Provincial Government, DCC	1-5 years
	Earthquake	***	3-2-2	Construction of community buildings	Construction of community buildings for utilization of DRRM ・Identification of location ・Construction of community buildings	LMC	Provincial Government, DCC	1-5 years
	Common	***	3-2-3	Designation, development, improvement and enhancement of DRRM base facilities	Designation, development, improvement and enhancement of DRRM base facilities. ・Designation of DRRM base facilities in a municipality (Municipal office, etc.). ・Improvement and enhancement of facilities as the DRRM base. (Seismic resistant measures, stockpile, communication facilities, etc.)	LMC	Provincial Government, DCC	2 years
Enhancement of medical, health care and social welfare services	Earthquake	***	3-2-4	Seismic diagnosis and seismic resistant measures of hospitals on the municipal level, health centres and health posts	Seismic diagnosis and seismic resistant measures of hospitals on the municipal level, health centres and health posts ・Dispatch of experts, or technicians for seismic diagnosis and checking hospitals. ・(If necessary) Seismic resistant measures and retrofitting ・Establishment of a legal system in order to ensure seismic resistance of private hospitals.	LMC	National and Provincial Government, DCC	1-5 years
	Common	**	3-2-5	Formulation of a disaster waste management plan	Formulation of a disaster waste management plan for future disasters. (Example of contents) ・Establishment of a disaster waste management system. ・Estimation of the amount of debris. ・Promotion of recycling (development of recycle centres, etc.) ・Ensuring of temporary stock place for disaster waste.	LMC	-	1 year

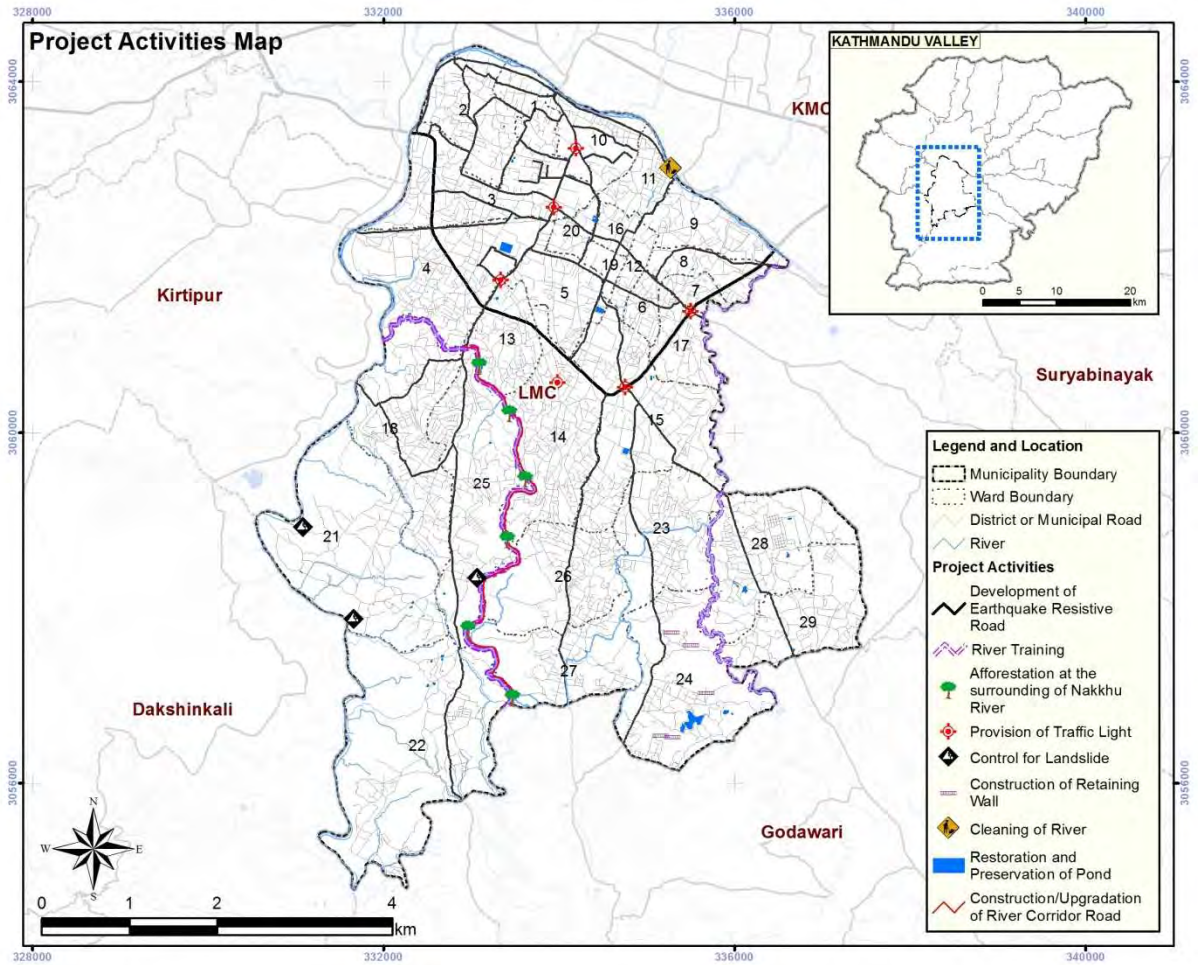
Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
	Common	**	3-2-6	Ensuring of temporary stock places for disaster waste	Ensuring of temporary stock places for disaster waste in advance so that the space can be effectively utilized. ・Investigation of open spaces and consideration of candidates for temporary stock place for disaster waste ・Development of the spaces can be effectively utilized for temporary stock place	LMC	-	3 years
Enhancement of school education	Earthquake	***	3-2-7	Seismic diagnosis and seismic resistant measures of schools	Seismic diagnosis and seismic resistant measures of schools ・Dispatch of experts or technicians for seismic diagnosis and checking schools ・(If necessary) Seismic resistant measures, retrofitting shall be implemented. ・Establishment of a legal system in order to ensure the seismic resistance of private schools.	LMC	National and Provincial Government, DCC	1-5 years
	Common	***	3-2-8	Education for DRRM	Education for DRRM in the school curriculum. ・Consideration of school curriculum for the DRRM and the experience of the Gorkha EQ. (Example contents of curriculum) ・Learning about the disaster, mechanisms, DRRM. ・Learning about ensuring safety when a disaster happens. ・Sharing the experience of the Gorkha EQ. ・Implementation of evacuation drills.	LMC	-	Regularly
	Common	***	3-2-9	Enhancement of the DRRM functions of schools	Enhancement of the DRRM functions of schools in order to secure the children and promote the DRRM base. ・Seismic resistant measures ・Securing stockpiles ・Development of communication facilities, etc.	LMC	National and Provincial Government, DCC	5 years
Enhancement of infrastructure	Common	***	3-2-10	Improvement of roads with disaster resistance for smooth emergency response, transportation and evacuation	Development of roads with disaster resistance ・Designation of a traffic control road network and emergency transportation road ・Detailed survey for the structure of bridges and reinforcement based on the survey result ・Improvement of designated roads and bridges ・Promotion of road widening ・Cooperation with road and bridge development in urban development projects and different administrative levels	National and Provincial Government, DCC	LMC	5 years
	Flood	***	3-2-11	Removal of debris and waste in the river	Removal of debris and waste in the river ・River clean-up activities for smooth flow	LMC	-	Regularly
	Flood	***	3-2-12	Conservation of river and construction works for flood and river erosion	Conservation of river to prevent flood ・Identification of high risk area ・Tree plantation ・Construction of embankment/retaining wall, river improvement works	LMC	Provincial Government, DCC	5 years
	Flood	**	3-2-13	Development and management of monitoring system for Flood	Development and management of monitoring system for flood ・Installation of equipment for rainfall and water level measurement ・Monitoring of rainfall, water level and other necessary information for flood	National and Provincial Government, DCC	LMC	5 years

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Landslide	***	3-2-14	Conservation of slope area and construction works for landslide	Conservation of slope area and construction works for landslide to prevent falling sands and rocks ・Identification of high risk area ・Tree plantation ・Construction on retaining walls, wire mesh ・Use of biotechnological means such as bio-engineering etc.	LMC	Provincial Government, DCC	5 years
		Road Accident	**	3-2-15	Installation of traffic signs and signals to control the traffic	Installation of traffic signs and signals to control the traffic ・Selection of locations for installation ・Installation of traffic signs and signals ・Installation of street lights ・Traffic control management	National and Provincial Government, DCC	LMC	5 years
		Road Accident	**	3-2-16	Construction of facilities for safety of pedestrians	Construction of facilities for safety of pedestrians ・Selection of location for construction ・Installation of pedestrian crossing ・Construction of pedestrian bridge	LMC, National and Provincial Government, DCC	-	5 years
		Drought	**	3-2-17	Development and management of monitoring system for drought	Development and management of monitoring system for drought ・Monitoring of rainfall, humidity, daily temperature data and other necessary information for drought	National and Provincial Government, DCC	LMC	Regularly
	Enhancement of lifeline facilities	Earthquake	***	3-2-18	Taking seismic resistant measures for supply lines and other related facilities, and improve their supply systems	Improvement of the supply system ・Seismic resistance of the supply system of water and electricity and improvement of the system ・Examination of the usage of solar energy as a alternative energy ・Improvement of drainage, sewage, and sanitation systems	National Government	-	5 years
		Flood	**	3-2-19	Conservation, construction and maintenance of sewage and drainage system	Conservation, construction and maintenance of sewage system ・Regularly maintenance, clearance and repair of sewage and drainage (if necessary) ・Selection of location for construction ・Construction of sewage and drainage	National and Provincial Government, DCC	LMC	3 years
		Fire	**	3-2-20	Construction of water supply pipe lines for fire fighting	For fire brigades, development of water resources under the ground ・Preparation of network plan ・Construction of water supply pipe lines and installation of fireplug	Kathmandu Upatyaka Khanepani Ltd (KUKL)	LMC	2 years
		Fire	***	3-2-21	Management of electric poles and wires	Management of electric poles and wires ・Survey of condition for electric poles and wires ・Management of electric wires (non covered wires to outer plastic cover and old wires to new wires, etc.)	Nepal Electricity Authority (NEA), related agencies	LMC	2 years
		Fire	***	3-2-22	Identification, construction and maintenance of water resources for fire fighting	Identification, construction and maintenance of water resources for fire fighting ・Identification of water resources ・Regularly conservation and maintenance of water resources (if necessary) ・Selection of location for construction ・Construction of water resources such as wells, ponds	LMC	-	1 year

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Drought	**	3-2-23	Improvement of irrigation systems	Improvement of irrigation systems ・Identification of irrigation condition ・Regularly maintenance and repair of irrigation network ・Improvement of irrigation systems such as expansion and arrangement of lift irrigation	Provincial Government, DCC	LMC	5 years
		Drought	**	3-2-24	Identification, construction and maintenance of water resources for drought	Identification, construction and maintenance of water resources for drought control and mitigation ・Identification of water resources ・Regularly conservation and maintenance of water resources (if necessary) ・Selection of location for construction ・Construction of water resources such as wells, ponds ・Tree plantation	Provincial Government, DCC	LMC	5 years
3-3.Resilient DRRM system									
	Development of effective evacuation system for DRRM	Common	***	3-3-1	Formulation and dissemination of evacuation plan	Formulation and dissemination of an evacuation plan. ・Designation of evacuation sites/routes and dissemination. ・How to lead residents to the evacuation site. ・How to operate the evacuation site (open spaces and evacuation shelters).	LMC	DCC	2 years
		Common	***	3-3-2	Designation and development of open spaces as evacuation sites and DRRM bases	Development of open spaces as DRRM bases and evacuation sites. ・Examination and designation of the function of each open space and prioritization for development ・Develop open spaces (including space for stockpiling, evacuation routes, etc.) ・Understanding of parks and open spaces to be utilized as temporary heliports. ・Designation and development of temporary heliports. ・Dissemination of evacuation sites to residents	LMC	Provincial Government, DCC	5 years
		Common	***	3-3-3	Designation and development of evacuation shelters	Designation and development of evacuation shelters ・Designation buildings as temporary evacuation shelters ・Develop evacuation shelters (including space for stockpiling, evacuation routes, etc.) ・Dissemination of evacuation sites to residents	LMC	Provincial Government, DCC	5 years
		Common	*	3-3-4	Development of stockpile warehouses, and ensuring disaster stockpiles	Development of stockpile warehouses, and ensuring disaster stockpiles. ・Development of stockpile warehouses and installation. ・Listing of necessary emergency goods (food, medical equipment, daily necessities, rescue equipment, fuel, etc.). ・Procurement of stockpiles.	LMC	Provincial Government, DCC	3 years
	Promotion of land use restriction	Common	***	3-3-5	Revision of the land use zoning and building regulations based on hazard and risk assessment	Revision of the land use zoning and building regulations ・Analysis and comparison of current land use and hazard, risk assessment, risk sensitive land use plan ・Revision and enforcement of land use and building regulations	National and Provincial Government, DCC, LMC	-	2 years
		Flood	**	3-3-6	Promotion on relocation of unplanned settlement and settlement in high risk areas	Promotion on relocation of unplanned settlement and risk areas ・Management and promotion on relocation of unplanned settlement and settlement in high risk areas	National and Provincial Government, DCC, LMC	-	5 years

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
	Promotion of a DRRM cooperation system	Common	*	3-3-7	Strengthening cooperation with private enterprises, and conclusion of agreements	Conclusion of agreements for strengthening cooperation with private enterprises, (Examples of agreements) ・Developing guidelines for procurement of food, medicines, materials and equipment, etc.	LMC	Provincial Government, DCC	2 years
		Common	*	3-3-8	Support for the formulation of BCP for private enterprises	Support for the formulation of BCP (Business Continuity Plan) for securing the safety of private enterprises and industries (Examples of contents: Risk assessment, policy making (selection of important businesses), how to recover quickly and operate in the event of disaster, prevention and preparedness, etc.)	National and Provincial Government, DCC, LMC	-	2 years
		Common	**	3-3-9	Development of an acceptance system for volunteers	In order to manage the volunteers, a development of acceptance system should be created as follows. ・Establishment of section or assignment of staff in charge of volunteer activities. ・Establishment of a contact centre for volunteers.	LMC	-	2 years

Note: Priority Level *** High, ** Middle, * Low



Note: Information is based on the workshop for formulation of LDCRP in LMC
Source: JICA ERAKV Project

Figure 5-1 Priority Activity Map for mainly infrastructure

Table 5-4 Priority Activity List for mainly infrastructure

S/N	Project	Category	Location	Spatial Information in above figure
1	Afforestation at the surrounding of Nakkhu River	Afforestation	Nakkhu River	Located
2	Upgradation of Road	Road	Nakkhu River Corridor	Located
3	Control of Landslide	Landslide		Located
4	Maintenance of Raj Kulo for Irrigation	Irrigation	Ward-21,Khokana Fant	NA
5	Upgradation of Road	Road	Ward-21, Shree Rudrayeni School Khokana to Ward-18, Magar Gaun	NA
6	Control of Landslide	Landslide	Ward-21	Located
7	Control of Landslide	Landslide	Ward-21	Located
8	Construction of Retaining Wall	Retaining wall	Ward-24	Located
9	Upgradation of Pond	Pond	All over the municipality	Located
10	Widening of Road	Road		NA
11	Management of Electric Wires	Electric Lines	All over the municipality	Located
12	Provision of Traffic Light	Traffic Light		Located
13	River Training Work	River Training	South east of Hattiban in karmanasha River	Located
14	Provision of Traffic Light	Traffic Light	Gwarko	Located
15	Provision of Traffic Light	Traffic Light	Satdobato	Located
16	Provision of Traffic Light	Traffic Light	Pulchowk,Infornt of Labim Mall	Located
17	Provision of Traffic Light	Traffic Light	Kupandole	Located
18	Provision of Traffic Light	Traffic Light	Infront of Alka Hospital	Located
19	Cleaning of River	Sanitation	Bagmati River	Located
20	Control of Landslide	Landslide	Ward-24	NA
21	Widening of Road	Road	James school to south of ward 24	NA
22	River Training Work	River Training	Near James School	Located

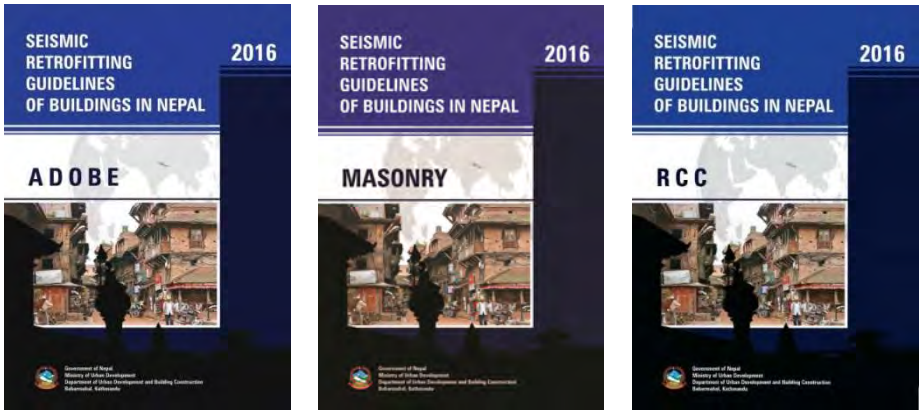
Note: Information is based on the workshop for formulation of LDCRP in LMC
Source: JICA ERAKV Project

[Details of Activities]

■3-1-2: Financial and technical support for seismic diagnosis, seismic resistant measures of houses, and the dispatch of experts for seismic diagnosis

・Dispatch of experts, technicians for seismic diagnosis and checking houses

・Technical support for seismic retrofitting of buildings according to the guidelines by national government



Source: Department of Urban Development and Building Construction, Ministry of Urban Development

Figure 5-2 Seismic Retrofitting Guidelines of Buildings

■3-2-4: Seismic diagnosis and seismic resistant measures of hospitals on the municipal level, health centres and health posts

Seismic diagnosis for health facilities shall be implemented with priority referring to Table 5-5 based on the seismic risk assessment.

Table 5-5 Probability of heavy damage for health facilities in case of CNS-2 (Probability ≧ 0.3)

S/N	Ward No.	Name	Classification	Operator	Capacity of bed	Building	Building Structure	Probability of Heavy Damage [CNS-2]
1	4	Alka Hospital	Hospital	private	100	Main	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
2	23	Sumeru Hospital	Hospital	private	100	Associate	Engineered Reinforced Concrete	0.34
						Associate	Engineered Reinforced Concrete	0.34
						Associate	Engineered Reinforced Concrete	0.34
						Associate	Engineered Reinforced Concrete	0.34
3	10	Sarvanga Hospital	Hospital	private	35	Main	Load Bearing Brick Wall in Cement Mortar	0.31
4	3	Kundalini Hospital	Hospital	private	15	Main	Load Bearing Brick Wall in Mud Mortar	0.81
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
5	3	Sumeru City Hospital	Hospital	private	15	Associate	Load Bearing Brick Wall in Cement Mortar	0.39
6	29	Harisiddhi Health Post	Health post	government	0	Main	Load Bearing Brick Wall in Cement Mortar	0.42
7	28	Kathmandu Hospital	Hospital	private	50	Main	Non Engineered Reinforced Concrete	0.45
8	4	National Hospital and Cancer Research Center	Hospital	private	25	Main	Load Bearing Brick Wall in Cement Mortar	0.36
						Associate	Load Bearing Brick Wall in Mud Mortar	0.78
9	25	Sainbu Health Post	Health post	government	2	Main	Non Engineered Reinforced Concrete	0.31
10	28	Nepal Plastic Surgery Hospital	Hospital	private	15	Main	Non Engineered Reinforced Concrete	0.43
11	15	Comrehebsive Swasha Sanstha	Clinic	private	2	Main	Non Engineered Reinforced Concrete	0.42
12	21	Khokana Sub Health Post	Health post	government	1	Main	Load Bearing Brick Wall in Cement Mortar	0.52
13	25	Diyas Hospital	Hospital	private	25	Main	Non Engineered Reinforced Concrete	0.33
14	12	Lagankhel Poly Clinic	Clinic	private	0	Main Building	Load Bearing Brick Wall in Mud Mortar	0.76
15	22	Bungmati Health Post	Health post	government	1	Main Building	Load Bearing Brick with Cement Mortar	0.54
						Associate	RC Frame Non Engineering	0.41
						Associate	Load Bearing Brick with Cement Mortar	0.54
16	27	Sunakothi SHP	Health post	government	0	Main Building	Load Bearing (Brick)	0.55
17	24	Dhapakhel HP	Health post	government	0	Main Building		0.57
18	3	Pashupati Homeopathy Hospital	Hospital	government	0	Main Building	Brick in Cement	0.44
						Associate	Brick in Cement	0.44

Note: Risk Assessment was carried out based on the available data at present and based on the scenario earthquakes. Scenario earthquakes are not the prediction of next earthquake.

■3-2-7: Seismic diagnosis and seismic resistant measures of schools

Seismic diagnosis for schools shall be implemented with priority referring to Table 5-6 based on the seismic risk assessment.

Table 5-6 Probability of heavy damage for schools in case of CNS-2 (Probability ≧ 0.5)

S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
1	4	DAV Sushil Kedia Vishwa Bharati School	Secondary	private	Main	Load Bearing Brick Wall in Limesurkhi Mortar	0.80
2	4	Shree Sanchetana Primary School	Primary	government	Main	Load Bearing Brick Wall in Cement Mortar	0.51
3	5	Welhams College	College	private	Main	Load Bearing Brick Wall in Limesurkhi Mortar	0.78
4	18	Shahid Dharma Bhakta School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar; Load Bearing Concrete Block Wall in Cement Mortar	0.60
					Associate	Load Bearing Brick Wall in Mud Mortar	0.90
					Associate	Load Bearing Brick Wall in Cement Mortar	0.60
5	11	Kumbeshwor Lower Secondary School	Lower Secondary	government	Main	1st floor Load Bearing Brick Wall in Mud Mortar; above Load Bearing Brick Wall in Cement Mortar	0.56
6	2	GEMS Primary Wing	Primary	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.76
7	2	Shining Stars Secondary Boarding School	Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.50
8	10	Pragati Sikshya Sadan Secondary School	Higher Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.74
9	1	Rupak Memorial International Higher Secondary School	Secondary	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.73
10	4	Kistland School	Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.58
11	16	Shree Adarsha Saral Secondary School	Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.77
					Associate	Load Bearing Brick Wall in Mud Mortar	0.77
12	3	Nile Stream School	Secondary	private	Main	Load Bearing Concrete Block Wall in Cement Mortar	0.54
					Associate	Load Bearing Brick Wall in Cement Mortar	0.54
					Associate	Load Bearing Concrete Block Wall in Cement Mortar	0.54
					Associate	Load Bearing Concrete Block Wall in Cement Mortar	0.54
13	20	Tri-Padma Higher Secondary School	Higher Secondary	government	Associate	Load Bearing Brick Wall in Mud Mortar	0.59
14	2	Gyanodaya Bal Batika Secondary Boarding School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.61
15	3	Lalitpur Nursing Campus	College	government	Associate	Load Bearing Brick Wall in Cement Mortar	0.54
					Associate	Load Bearing Brick Wall in Mud Mortar	0.72
16	3	Avens English Boarding School	Primary	private	Main	Load Bearing Brick Wall in Cement Mortar	0.63
					Associate	Load Bearing Brick Wall in Cement Mortar	0.63
					Associate	Non Engineered Reinforced Concrete	0.51
17	4	Himalayan International Ideal School	Secondary	private	Main	Load Bearing Concrete Block Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
18	3	National Open College	College	private	Main	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Concrete Block Wall in Cement Mortar	0.51
19	4	Nepal College of Management	College	private	Main	Non Engineered Reinforced Concrete	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.63
					Associate	Non Engineered Reinforced Concrete	0.51
					Associate	Engineered Reinforced Concrete	0.51
20	12	Adarsha Kanya Niketan Higher Secondary School	Higher Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.75
21	14	Choina Binayak Guru Ganesh School	Lower Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.77
22	14	Jupiter English school	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.51
23	14	Shree Mahalaxmi Lower Secondary	Lower Secondary	government	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.78

S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
		school					
24	4	Annapurna English Boarding High School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.53
25	4	Living Stone Academy	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.56
					Associate	Load Bearing Brick Wall in Cement Mortar	0.56
					Associate	Load Bearing Brick Wall in Cement Mortar	0.56
26	4	Sudesha High School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.53
27	5	Lalitpur Secondary School	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.76
28	5	Caribbean College	College	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.77
29	12	Children Talent Hunt Pre-Primary School	Primary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.72
30	26	Anal Jyoti Boarding School	Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.60
					Associate	Load Bearing Brick Wall in Mud Mortar	0.81
31	26	Lalitpur Academy	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.80
32	26	Shree Moti Binayak School	Lower Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.59
					Associate	Load Bearing Brick Wall in Mud Mortar	0.80
33	27	Siddhartha Secondary School	Lower Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.81
					Associate	Load Bearing Brick Wall in Mud Mortar	0.81
34	27	Shree Bal Kumari School	Higher Secondary	government	Associate	Load Bearing Brick Wall in Mud Mortar	0.62
35	4	Alpha's High School	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.62
36	23	I J Pioneer School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.56
37	3	Rato Bangala School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.85
38	21	Shree Yuwa Pratibha Vidhya Mandir Secondary School	Secondary	government	Associate	Load Bearing Brick Wall in Mud Mortar	0.61
39	21	Simran Academy	Primary	private	Main	Non Engineered Reinforced Concrete	0.59
40	21	Zing Secondary School	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.81
41	25	Trilochan Academy	Primary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.83
42	18	High Land Secondary Boarding School	Secondary	private	Main	Load Bearing Brick Wall in Cement Mortar	0.57
					Associate	Load Bearing Brick Wall in Cement Mortar	0.57
43	18	Shree Bal Kumari Lower Secondary School	Lower Secondary	government	Associate	Non Engineered Reinforced Concrete	0.53
					Associate	Load Bearing Brick Wall in Cement Mortar	0.64
44	27	Goma Academy	Primary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.81
45	24	New Modern English Academy	Lower Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.85
46	24	Shree Jalpa Secondary School	Secondary	government	Associate	1st floor Load Bearing Brick Wall in Mud Mortar; above Load Bearing Brick Wall in Cement Mortar	0.64
47	29	People's Centroid Academy	Secondary	private	Main	Load Bearing Brick Wall in Cement Mortar	0.52
					Associate	Load Bearing Brick Wall in Cement Mortar	0.52
48	22	Divya Jyoti Secondary School	Secondary	private	Main	1st floor Load Bearing Brick Wall in Mud Mortar; above Load Bearing Brick Wall in Cement Mortar	0.72
					Associate	Load Bearing Brick Wall in Mud Mortar	0.88
49	22	Tri Ratna Cooperative Secondary School	Secondary	government	Main	Load Bearing Brick Wall in Cement Mortar	0.54
					Associate	Load Bearing Brick Wall in Mud Mortar	0.88
50	28	Pabitra Prabha Secondary School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.54
51	13	Mahendra Bhrikuti Ma Vi	Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.80
52	15	Namuna Macchindra Higher Secondary School and College	Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.52
53	4	Birendra Smriti Sikshya Sadan (BEBS)	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.59
54	3	Paribodh Boarding School	Secondary	private	Main	Non Engineered Reinforced Concrete	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.63
55	5	AVM High School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.77
					Associate	Load Bearing Brick Wall in Mud Mortar	0.77
56	15	Little Angel's School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51

S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate		0.51
57	19	Bal Vidhyashram Primary School	Primary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.55
58	28	Bright Star Workers Higher Secondary School	Secondary	private	Main	Brick with Cement Mortar	0.58
59	2	Shree Tika Vidyashram Higher Secondary School	Higher Secondary	government	Associate	Bricks with mud mortar	0.76
					Associate	Bricks with mud mortar	0.76
60	10	Pulchowk Campus-Dean's Office	College	government	Main	Load Bearing Brick Wall in Limesurkhi Mortar	0.88
					Associate	Load Bearing Brick Wall in Cement Mortar	0.55
61	3	St. Mary's School	Secondary	Private	Main	Load Bearing Brick Wall in Mud Mortar	0.62
62	11	Shree Patan H.S.School	Higher Secondary	government	Main	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.68
					Associate	Load Bearing	0.68
					Associate	Load Bearing	0.68
					Associate	Load Bearing	0.68
63	2	Shree Panchakumari Primary School	Primary	government	Main	Load Bearing	0.56
64	24	Jassya Secondary School	Secondary	government	Associate	Load Bearing	0.57
65	26	Moti binayak LowerSecondary School	Lower Secondary	government	Associate	Load Bearing	0.60
					Associate	Load Bearing	0.60

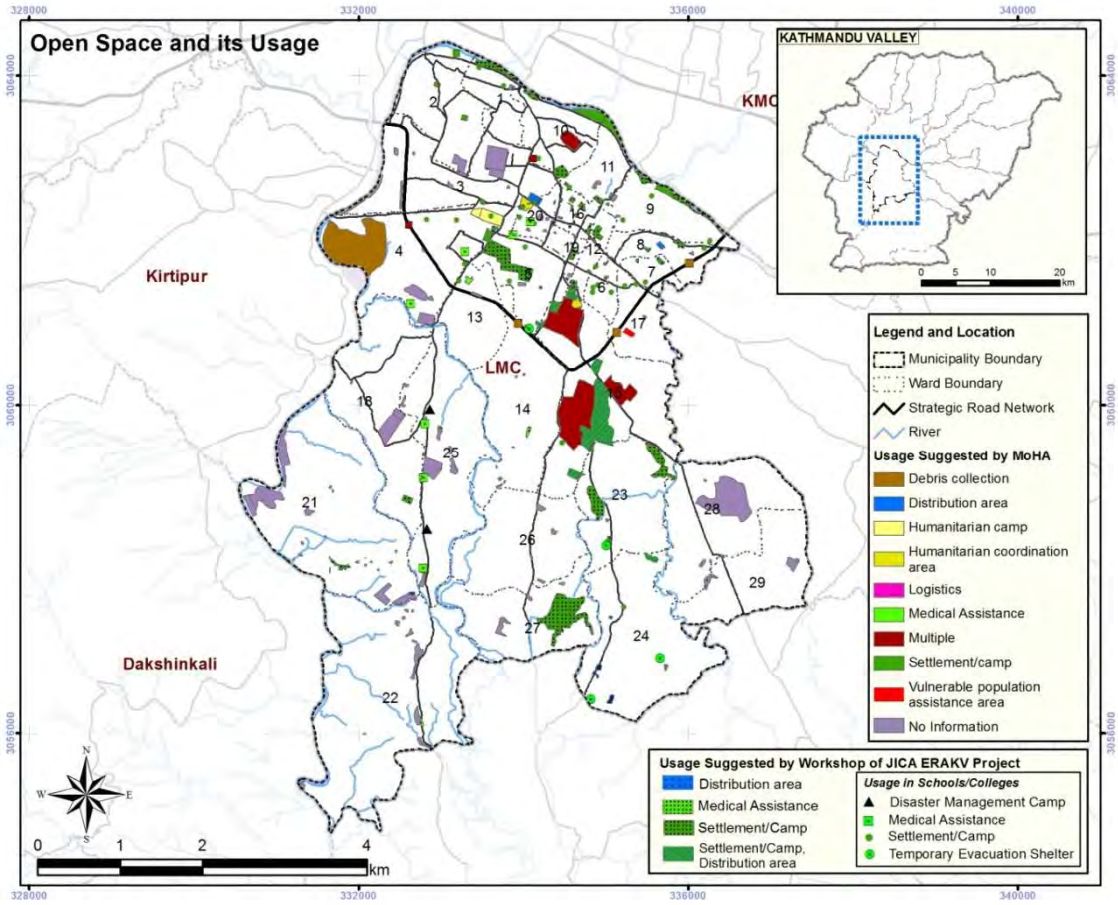
Note: Risk Assessment was carried out based on the available data at present and based on the scenario earthquakes. Scenario earthquakes are not the prediction of next earthquake.

■3-3-2: Designation and development of open spaces as evacuation and DRRM bases

・Examination and designation of the function of each open space and prioritization for development based on Figure 5-3

・Develop open spaces (including space for stockpiling, evacuation routes, etc.)

・Dissemination of evacuation sites to residents



Note: Information is based on the workshop for formulation of LDCRP in LMC, Details are shown in Appendix.
Source: MoHA, KVDA, JICA ERAKV Project

Figure 5-3 Open Space Map

5-4. Enhancing Disaster Preparedness for Effective Response, and to «Build Back Better» in Recovery, Rehabilitation and Reconstruction

Based on the DCR policy which had been described in Chapter 4, the activities for enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction can be seen on Table 5-7.

Table 5-7 Activity list for enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
4. Enhancing disaster preparedness for effective response, and to ≪Build Back Better≫ in recovery, rehabilitation and reconstruction								
4-1. Emergency Preparedness								
Capacity enhancement of emergency response	Common	***	4-1-1	Establishment of an information collection and dissemination system	Establishment of an information collection and dissemination system ・Establishment of information collection from the ward level ・Development of a damage and recovery information sharing system with the rescue and health/medical institutions, road and bridges, lifelines, etc. ・Establishment of an information dissemination system (development of information flow (from municipality to residents), utilization of media) ・Development of the multiplexing of communication means (e.g. Installation of satellite line) in order to avoid disconnection of the communication line and the disruption of information due to congestion in the event of a disaster ・Development of DRRM administrative radio	National and Provincial Government, DCC, LMC	-	5 years
	Common	*	4-1-2	Development of an information sharing system for vulnerable people and deprived/marginalized people (Pichadiyeko barga)	Development of an information sharing system for vulnerable people and deprived/marginalized people (Pichadiyeko barga) ・Collection and sharing of information for vulnerable people (Name, Address, Condition, etc.) ・Establishment of a support system. (establishment of assistant group, etc.)	LMC	-	2 years
	Common	**	4-1-3	Establishment of early warning system	Establishment of early warning system ・Promotion and coordination with national and provincial government	National and Provincial Government, DCC, LMC	-	2 years
	Common	**	4-1-4	Establishment of Emergency Operation Centre (EOC)	Establishment of EOC ・Securing space and human resources for EOC ・Development of EOC including equipment such as PC, communication devices, etc.	National and Provincial Government, DCC, LMC	-	2 years
	Common	*	4-1-5	Establishment of the initial system and mobilization system for emergency response	Formulation of manuals including the following items in order to execute the initial emergency response activities smoothly: ・Establishment of a disaster response committee (how to inform, gather, etc.) ・Establishment of an initial system such as the mobilization of staff (how to inform, gather, etc.)	LMC	-	2 years
	Disasters except Earthquake	***	4-1-6	Formulation of a disaster emergency response manual (SOP)	Formulation of a disaster emergency response manual (SOP) (Examples of contents) ・Flow chart and check list of each section and each response activity such as search and rescue, medical, food provision, etc. ・Several formats for information collection, etc.	LMC	National and Provincial Government, DCC	2 years
	Common	*	4-1-7	Implementation of DRRM exercises for emergency response	Implementation of DRRM exercises for capacity development of emergency response. ・Formulation of step-by-step exercise programmes for capacity development (From seminars, table-top-exercises, to command post exercises) ・Exercise in collaboration with other agencies ・Verification of exercises and revision of SOP (Examples of contents) ・Information collection and dissemination, sharing ・Mobilization ・Coordination with other agencies	LMC	National and Provincial Government, DCC	Regularly

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility	
				Activity List	Contents	Main Responsible Organization	Supporting Organization
Capacity enhancement of rescue, first-aid and emergency medical activities	Common	*	4-1-8	Designation of disaster base hospitals, medical centres	Designation of disaster base hospitals, medical centres ・Improvement and enhancement of facilities as the disaster base hospital (Seismic resistant measures, stockpiles, communication facilities, etc.)	National and Provincial Government, DCC, LMC	-
	Common	**	4-1-9	Establishment of an emergency medical transportation system	Establishment of an emergency medical transportation system in order to achieve quick emergency transport ・Management of health information system ・Improvement of ambulances and the transportation system ・Cooperation with national and province level	National and Provincial Government, DCC, LMC	-
Traffic/transportation and lifeline management	Common	**	4-1-10	Development of a plan/manual for the elimination of road obstacles, strengthening of elimination of road obstacles system, strengthen cooperation with the police	Development of a plan/manual for the elimination of road obstacles ・Designation of priority roads for the elimination of road obstacles ・Establishment of an elimination of road obstacles system in cooperation with Police	National and Provincial Government, DCC, LMC	-
	Common	*	4-1-11	Conclusion of agreements related to emergency recovery for roads with the construction companies	Conclusion of agreements related to emergency recovery for roads with the construction companies ・Selection of construction companies ・Consideration of contents of agreements (responsible areas, expenses, etc.) ・Conclusion of agreements	National and Provincial Government, DCC, LMC	-
	Common	*	4-1-12	Strengthening of emergency response capacities in cooperation with lifeline operators	Establishment of a cooperation system with lifeline operators ・Implementation of the training in cooperation with lifeline operators to strengthen disaster response capabilities.	LMC	National and Provincial Government, DCC, Related Agency
Enhancement of CBDRRM (Community Based Disaster Risk Reduction and Management)	Common	*	4-1-13	Promotion of the preparation of emergency stockpiles by families	Promotion of the preparation of emergency stockpiles by families. ・Preparation of list of emergency ・Promotion of preparation of emergency stockpiles by families (Development of brochure, leaflet for stockpiles)	LMC	Ward Office
	Common	***	4-1-14	Formulation of "community carte" for summarized information of current conditions on DRRM at the community level	Formulation of "community carte" (Examples of contents) ・Community Profiles(Population, Geography, Location) ・DRRM related information (Status of preparedness, Vulnerable people, Evacuation places/routes, etc.)	Ward Office	LMC
	Common	***	4-1-15	Implementation of DRRM capacity development programmes for community leaders	Implementation of DRRM capacity development programmes for community leaders ・Establishment of Task forces ・Determination and implementation of DRRM capacity development programmes (Examples of programmes) ・Consider disaster preparedness of community (DRRM planning, Making action plans, etc.)	Ward Office	LMC
	Common	**	4-1-16	Carrying out of community DRRM exercises	Carrying out of community DRRM exercises ・Formulation of annual plan for DRRM exercise ・Carrying out of community DRRM exercise (Examples of exercise) ・Evacuation exercise ・Fire-fighting exercise ・SAR, first-aid exercise	Ward Office	LMC

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
DRRM measures for tourist sites	Common	**	4-1-17	Designation and development of evacuation sites adjacent to tourist sites	Designation and development of evacuation sites to ensure the safety of tourists ・Investigation of open spaces and facilities available to be utilized as evacuation sites adjacent to tourist sites ・Designation and development of evacuation sites such as the development of stockpile warehouses	National and Provincial Government, DCC, LMC	–	1 year
	Common	***	4-1-18	Establishment of a guidance system for tourists in the event of a disaster	Establishment of a guidance system for tourists in the event of a disaster. ・Establishment of a guidance system (section in charge) to evacuate tourists to evacuation sites safely ・Creation and distribution of guide maps and sign boards ・Consideration of safety confirmation of tourists (creation of format for gathering tourist information) ・Implementation of exercises for the evacuation of tourists periodically	National and Provincial Government, DCC, LMC	–	2 years
	Common	*	4-1-19	Enhancement of stockpiles for tourists	Enhancement of stockpiles not only for residents but also including tourists. ・Estimation of number of tourists and estimation of the necessary amount of stockpiles for tourists ・Development of stockpile warehouses for tourists ・Procurement of stockpiles for tourists	National and Provincial Government, DCC, LMC	–	2 years
4-2. Emergency Response activities during disaster	Common	–	4-2-1	Establishment and management of Emergency Response Headquarter (ERHQ)	Refer to SOP	LMC	–	Immediately
	Common	–	4-2-2	Gathering disaster information	Refer to SOP	LMC, Ward Office	National and Provincial Government, DCC	Immediately
	Common	–	4-2-3	Emergency rescue activities (Search and Rescue (SAR), and first-aid) for disaster victims	Refer to SOP	National and Provincial Government, DCC, LMC	–	Immediately
	Common	–	4-2-4	Fire extinguishing activities	Refer to SOP	LMC	Provincial Government, DCC	Immediately
	Common	–	4-2-5	Management of evacuation shelters (distribution of emergency kit such as food, clothing, health care, drinking water and sanitation)	Refer to SOP	LMC	Ward Office	1 hour–
	Common	–	4-2-6	Environment management (temporary toilet, management of dead bodies, cleaning hygiene and epidemic prevention measures, treatment for solid waste and debris)	Refer to SOP	LMC	Provincial Government, DCC	1 hour–
	Common	–	4-2-7	Providing information to public	Refer to SOP	LMC	Ward Office	1 hour–
	Common	–	4-2-8	Protection and support for vulnerable groups	Refer to SOP	LMC	Ward Office	1 hour–
	Common	–	4-2-9	Emergency recovery for the function of critical facilities, infrastructures and lifelines to secure the transportation network	Refer to SOP	National and Provincial Government, DCC, LMC	–	Immediately
	Common	–	4-2-10	Accepting the support of volunteers	–	LMC	Ward Office	1-3 day–
	Common	–	4-2-11	Safety control and panic prevention Measures	–	National and Provincial Government, DCC, LMC	–	1-3 day–

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
	Common	–	4-2-12	Management of emergency fund	–	National and Provincial Government, DCC, LMC	–	1-3 day-
	Common	–	4-2-13	Collaboration and request for support and acceptance with other organizations	–	National and Provincial Government, DCC, LMC	–	1-3 day-
4-3. Activities in the Aftermath of Disaster with Build Back Better	Common	–	4-3-1	To conduct assessment of damage and loss due to disaster	–	National and Provincial Government, DCC, LMC	–	–
	Common	–	4-3-2	To formulate action plan for rehabilitation and reconstruction with BBB	–	LMC	Provincial Government, DCC	–
	Common	–	4-3-3	Recovery of public facilities and infrastructure and reconstruction of disaster victims' houses	–	LMC	Provincial Government, DCC	–
	Common	–	4-3-4	To recover/normalize the life of disaster victims	–	LMC	Provincial Government, DCC	–
	Common	–	4-3-5	To conduct social, economic, and cultural rehabilitation of disaster victims	–	LMC	Provincial Government, DCC	–

Note: Priority Level *** High, ** Middle, * Low

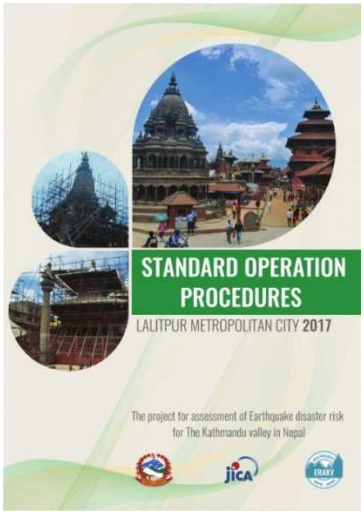
[Details of Activities]

■4-1-6: Formulation of a disaster emergency response manual (SOP) for except of earthquake

(Examples of contents)

・Flow chart and check list of each section and each response activity such as search and rescue, medical, food provision, etc.

・Several formats for information collection, etc.



1. Preface

2. Mobilization of officials
2-1. Flow of Mobilization (On and Off-duty)
2-2. Preparation for Mobilization

3. Establishment of Emergency Response Head Quarter (ERHQ)
3-1. Establishment of ERHQ
3-2. Structure of ERHQ
3-3. Function of ERHQ
3-4. Relationship of ERHQ with other Organizations
3-5. Role of Ward Office

4. Response and Preparedness Activities against Earthquake
4-1. Preparedness Activities
4-2. Response Activities

[APPENDICES]
Appendix A: Activity Flowchart
Appendix B: Disaster Information Format
Appendix C: List of Evacuee at Evacuation Shelter
Appendix D: Personal Data of Officials

Figure 5-4 Table of Contents of SOP for Earthquake

Responsible Division: "Disaster Management Section, Urban Development Planning Division"

	Main Activity	Check box	Operational Activity
Disaster Management Section, Urban Development Planning Division	Disaster Information Team	☐	**Form "Disaster Information Team":** ERHQ assembles the members of "Disaster Information Team".
		☐	**Asking "Disaster Information" from Ward leaders:** "Disaster Information Team" asks to collect and submit disaster information from Ward leaders
		☐	**Dispatch "Disaster Information Team":** "Disaster Information Team" goes to affected area and start collecting information.
		☐	**Collecting information:** "Disaster Information Team" collects latest information in the affected area with the help of 'Format B'. (from "Disaster Information Team" and "Ward Leaders")
		☐	**Summarize "Disaster Situation Report":** "Disaster Information Team" makes a "Disaster Situation Report".
		☐	**Submit "Disaster Situation Report":** "Disaster Information Team" submits the "Disaster Situation Report" to ERHQ.
	Emergency Rescue Team	☐	**Form "Emergency Rescue Team":** ERHQ assembles members of "Emergency Rescue Team" based on report from "Disaster Information Team".
		☐	**Dispatch "Emergency Rescue Team":** "Emergency Rescue Team" goes to the affected area and starts providing medical support to affected people. (It needs to collaborate with Red-Cross)
	Collaboration	☐	**NDRRMC, SDMC, DDMC, LDMC, CDMC, etc.:** ERHQ collaborates with other organization and agency for sharing information of disaster. Please see page 8 for more information.

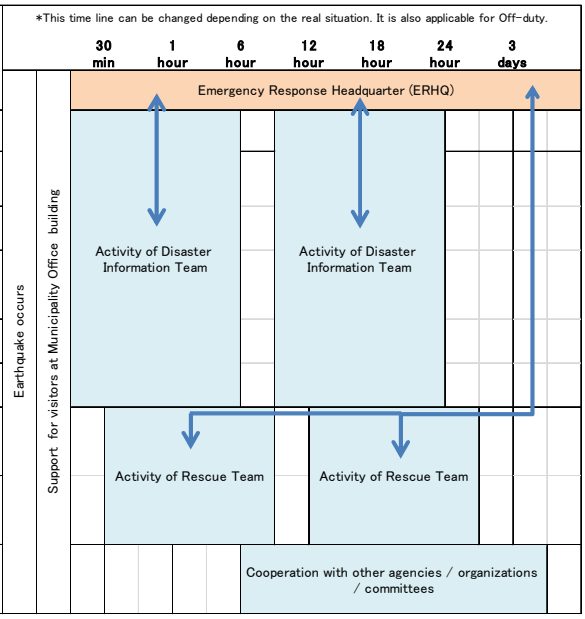


Figure 5-5 Format A Activity Flowchart of SOP for Earthquake

■4-1-14: Formulation of "community carte" for summarized information of current conditions on DRRM at the community level

(Examples of contents)

・Community Profiles(Population, Geography, Location)

・DRRM related information (Status of preparedness, Vulnerable people, Evacuation places/routes, etc.)

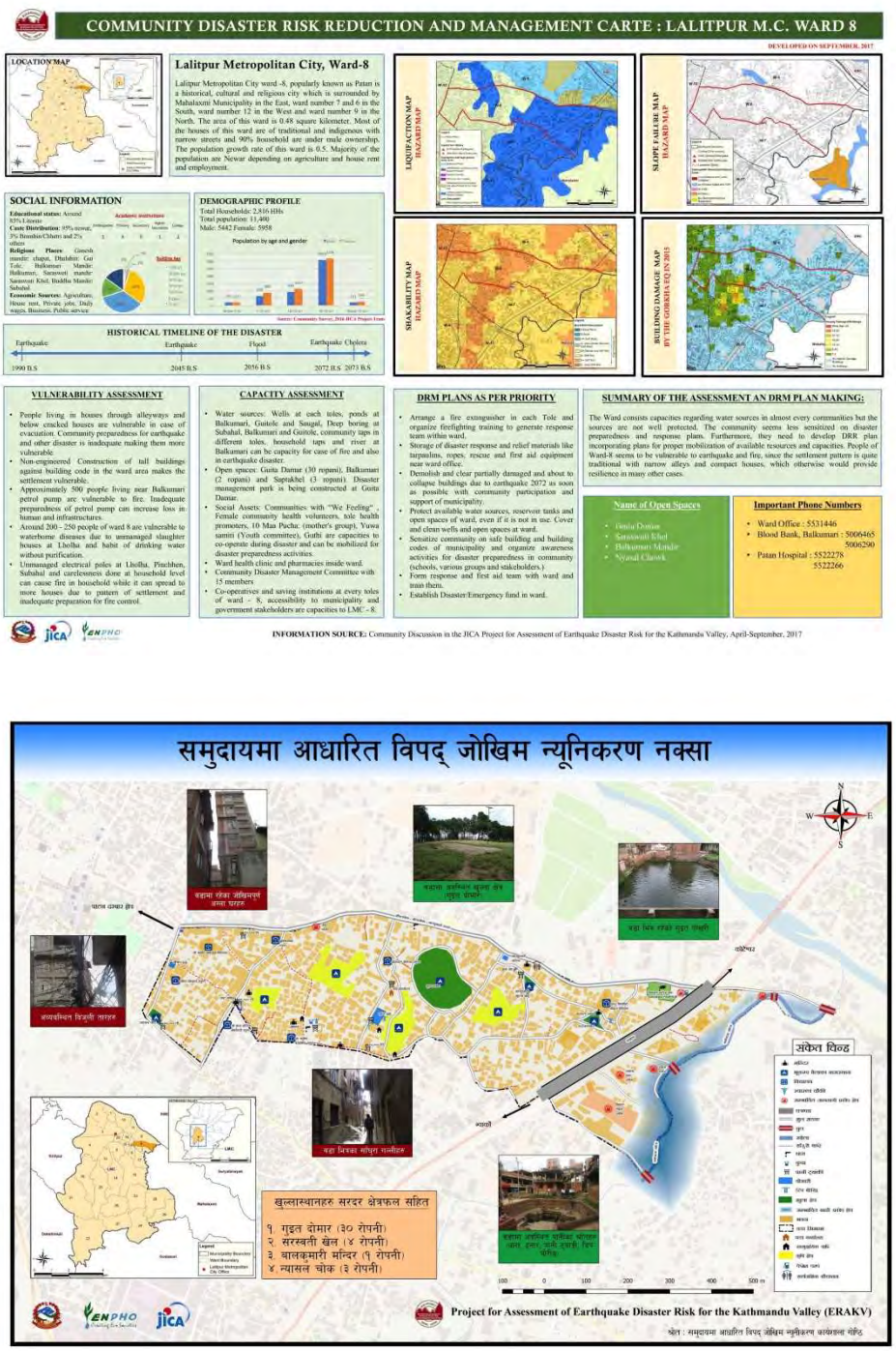


Figure 5-6 Community DRR Carte (Top) and DRR Map (Bottom) (Example of Ward 8, LMC)

CHAPTER 6. MONITORING, EVALUATION AND UPDATE OF PLAN

6-1. Monitoring and Evaluation

(1) Monitoring

Monitoring is an activity to observe the progress of the implementation of the DCR Plan in LMC and to identify as well as anticipate emergence of problems, so that they can be prevented or solved as early as possible.

Monitoring is carried out to observe the progress in the delivery of funds, achievement of outputs and emerging constraints. Monitoring needs to be done regularly to obtain accurate information of the implementation of the activities, the performance of the program and the results achieved.

Monitoring and evaluation are conducted with regard to the following principle;

a. Efficiency, that is the degree of interrelatedness between the goods/services produced by a program/activity and the resources needed to produce the goods/services that is measured by the cost per unit output
b. Effectiveness, that is the degree of how far a program/activity reaches its desired result and benefit
c. Benefit, which is the expected condition if the output can be accomplished within the timeframe, in the right location and the right target, and can function optimally.
d. Impact, namely long-term change is achieved as a result of a function of an output.
e. Sustainability, which is the process of implementing an activity to produce an output continuously.

The monitoring and evaluation sub-committee of LDCRC shall be formed in LMC shall monitor the effectiveness of program related to DRM and recommend to metropolitan city as required.

(2) Evaluation

Evaluation of the implementation of the DCR Plan in LMC will be done to program outputs in the form of goods or services and to program outcomes in the form of impact or benefit for the community and/or government. In principle, evaluation is a series of activities that compare the realization of program inputs, outputs and outcomes with the plan and benchmark. Evaluation is done based on the resources used and the performance indicators and targets of an activity and/or program performance indicators and targets.

Table 6-1 Monitoring and Evaluation

Action	Budget		Indicator		Level of Achievement	Notes
	Planned	Realisation	Planned	Realisation		

As in monitoring, the evaluation of the implementation of the DCR Plan in LMC will be done by the all stake-holders in accordance to their respective duties and responsibilities of implementation of the DCR Plan.

(3) Reporting

Monitoring and evaluation report has to be submitted once in a year to the related agency, local agency and the ministry of local development.

6-2. Review and Update of Plan

(1) Review

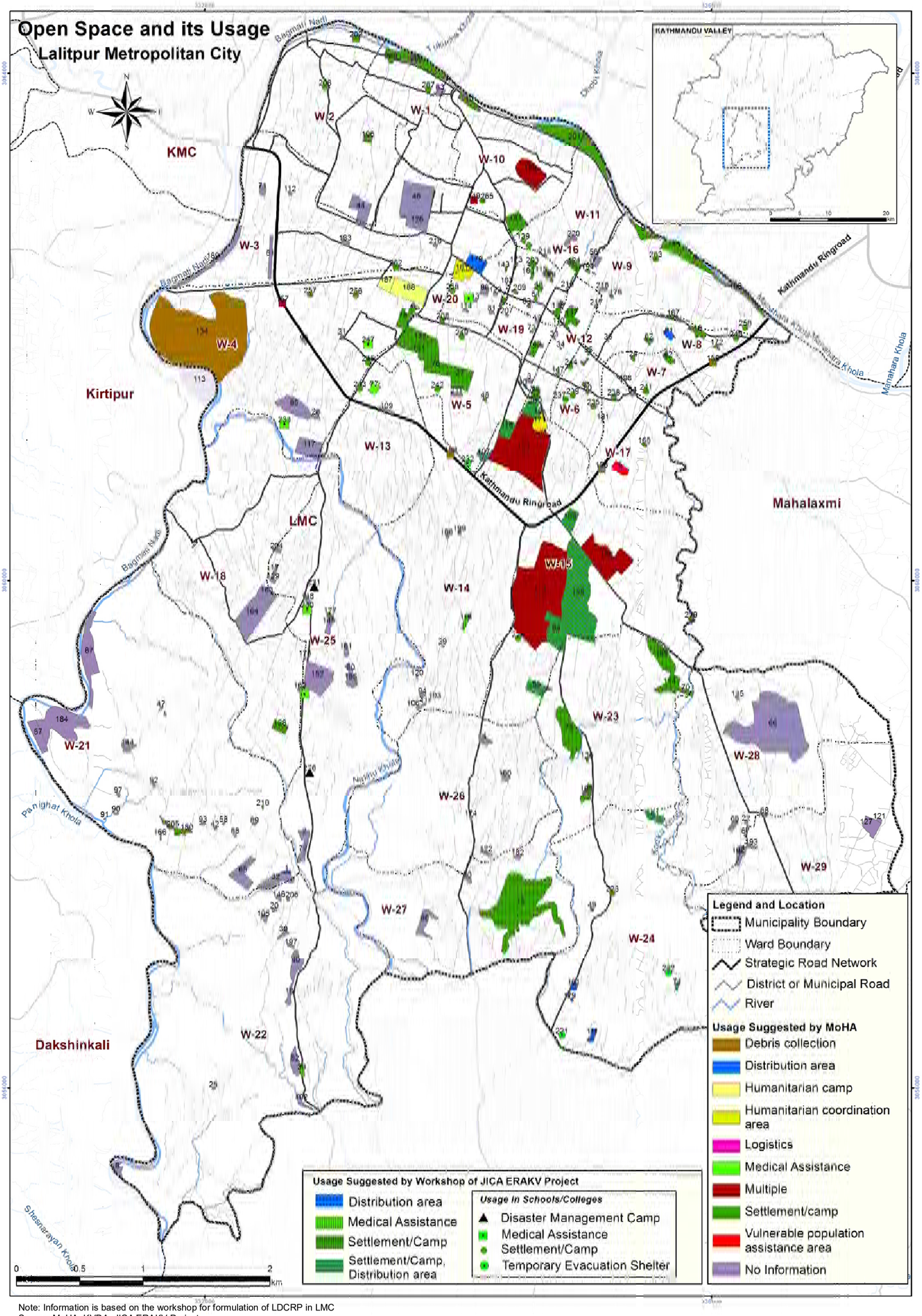
The DCR Plan shall be reviewed every year and reflected in annual programs and plans to address relevant changes in vulnerability, capacity and risk due to disaster in any sector of the metropolitan city. This periodical review is intended to assess the achievement result through the implementation of DCR activities/programs as well as their effectiveness and efficiency.

(2) Update

To make the DCR activity more effective, the DCR Plan will be revised regularly every five years or at any time when a disaster occurs.

APPENDIX

Open Space Map with its Usage based on the workshop for formulation of LDCRP by JICA ERAKV Project



Note: Information is based on the workshop for formulation of LDCRP in LMC
Source: MoHA, KVDA, JICA ERAKV Project

Figure: Open Space Map with its usage

Table: Open Space List with its usage

Ward No.	S/N	Name of Open Space	Latitude	Longitude	Area (m^2)	Ownership	Usage	Source for Open space	Source for Usage Information
1	63	Gurudwara Guru Nanak Satsang	27.688718	85.315167	3,003	Religious institutions	No Information	KVDA	No Information
1	200	UN Park	27.690768	85.313247	31,521	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
2	44	CNC Headquater	27.680228	85.308948	23,993	Office	No Information	KVDA	No Information
2	196	Tika Bidhyashram Higher Secondary School	27.685311	85.309446	4,158	School	Settlement/Camp	KVDA	JICA ERAKV Workshop
2	202	UN Park Gusingal	27.6924	85.3084	81,380	No Information	Settlement/camp	MoHA	MoHA
3	46	Department of Civil Personnel Records	27.680926	85.313403	63,628	No Information	No Information	KVDA	No Information
3	51	Dhobighat Environmental Garden	27.676757	85.301784	7,852	Nepal Government	No Information	KVDA	No Information
3	71	Indreni Utthan Sanepa	27.681538	85.301084	3,952	Nepal Government	No Information	KVDA	No Information
3	112	Metropolitan Police	27.681333	85.30327	899	Office	No Information	KVDA	No Information
3	126	Nepal Bhupu sainik Association	27.679291	85.313479	14,146	Office	No Information	KVDA	No Information
3	133	Opposite of Mata Temple	27.677906	85.30775	2,989	No Information	No Information	KVDA	No Information
3	179	Shree Madan Smrak Higher Secondary School	27.676523	85.318267	14,942	School	Distribution area	KVDA	MoHA
3	189	Sundarighat	27.676501	85.297193	23,353	Nepal Government	No Information	KVDA	No Information
3	216	-	27.677783	85.314954	985	No Information	No Information	KVDA	No Information
4	6	At the Side of Jawalakhel Football Ground	27.673129	85.31326	3,290	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
4	21	Bhanimandal Basket Court	27.67122	85.307593	447	Lease	No Information	KVDA	No Information
4	26	Bishnu Devi Temple	27.665484	85.305601	2,771	Nepal Government	No Information	KVDA	No Information
4	37	Children park, Jawalakhel	27.673339	85.313108	1,513	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
4	78	Jawalakhel Youth Club football Ground	27.672455	85.312455	10,405	Office	Settlement/camp	KVDA	MoHA
4	85	Khadhye Sansthan,Nakkhu	27.666115	85.303855	28,078	Nepal Government	No Information	KVDA	No Information
4	95	Krishna Mohan Nudup Smriti Park	27.670768	85.304583	756	Nepal Government	No Information	KVDA	No Information
4	113	Modern Indian School	27.667711	85.29625	60,064	Nepal Government	No Information	KVDA	No Information
4	117	Nakkhu Jail	27.663194	85.305094	24,762	Nepal Government	No Information	KVDA	No Information
4	134	Oxidation Pond/Oxygenation Park	27.671108	85.296399	362,728	Office	Debris collection	KVDA	MoHA
4	157	Ringroad Ekantakuna Balkhu	27.6735	85.3028	166,805	No Information	Multiple	MoHA	MoHA
4	187	ST. mary's school	27.674972	85.31108	11,137	School	Humanitarian camp	KVDA	MoHA
4	188	St. Xavier School	27.674466	85.312879	36,491	No Information	Humanitarian camp	KVDA	MoHA
5	27	British Gorkha headquater	27.668397	85.317071	29,470	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
5	45	Dakshinkali temple	27.666839	85.319089	798	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
5	76	Japanese embassy resident	27.669039	85.315142	16,766	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
5	131	Opposite of Jawalakhel Football Ground-1	27.67015	85.313753	20,011	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
5	132	Opposite of Jawalakhel Football Ground-2	27.67098	85.313852	38,159	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
5	140	Patan Mental Hospital	27.667812	85.322298	1,026	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
5	208	Welhams College	27.672449	85.315637	2,291	Lease	Settlement/camp	KVDA	JICA ERAKV Workshop
5	211	-	27.667183	85.316812	3,348	No Information	No Information	KVDA	No Information
6	35	Chalanse	27.670189	85.32733	338	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
6	60	Gajubahal	27.669613	85.327004	1,640	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
6	80	Kanibahal	27.66745	85.327276	1,000	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
6	130	Okubahal	27.668049	85.327078	1,790	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
6	181	Sichahiti	27.665427	85.328554	362	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
7	24	Bhinche Bahal	27.66993	85.330906	1,644	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
7	82	Kathmandu University	27.669915	85.333732	4,895	College	Settlement/camp	KVDA	JICA ERAKV Workshop
7	198	Tyagal	27.668198	85.330297	190	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
8	16	Balkumari Temple	27.671814	85.336036	6,681	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
8	36	Chapata tole	27.671125	85.328881	205	Religious institutions	No Information	KVDA	No Information
8	61	Gokulchaur	27.671633	85.333736	5,058	Religious institutions	Distribution area	KVDA	MoHA
8	62	Guin Tole	27.671177	85.332141	3,049	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
8	156	Ringroad Balkumari Gwarko	27.6697	85.3373	78,169	No Information	Debris collection	MoHA	MoHA
8	167	Sankhamul Bagmati Chetra	27.672895	85.334067	2,022	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
8	172	Saraswati sthan	27.670828	85.337583	1,223	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop

Ward No.	S/N	Name of Open Space	Latitude	Longitude	Area (m^2)	Ownership	Usage	Source for Open space	Source for Usage Information
9	7	Bagmati Kinar-2	27.676837	85.33581	8,470	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
9	9	Bagmati Nadi Kinar-1	27.678895	85.331558	11,771	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
9	43	Chyasal Football Ground/ANFA Football Ground	27.677744	85.334203	19,838	Office	Settlement/camp	KVDA	MoHA
9	168	Sankhamul Bagmati Kinar	27.674865	85.339017	13,236	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
9	176	Shramik Shanti School	27.674321	85.329108	1,045	School	Settlement/camp	KVDA	JICA ERAKV Workshop
9	194	Taranani	27.676084	85.327171	1,082	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
9	212	-	27.675921	85.327673	370	No Information	No Information	KVDA	No Information
9	213	-	27.676763	85.327898	3,853	No Information	No Information	KVDA	No Information
9	218	-	27.674771	85.328385	1,558	No Information	No Information	KVDA	No Information
10	10	Bagmati River Kinar, Near Thapathali Bridge	27.687921	85.317525	7,933	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
10	141	Patan Multiple Campus	27.679492	85.321359	18,322	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
10	149	Pulchowk Engg. College	27.681	85.318	20,516	No Information	Multiple	MoHA	MoHA
10	150	Pulchowk Engg. College 2	27.683014	85.32247	35,129	No Information	Multiple	KVDA	MoHA
10	201	UN Park	27.685337	85.325976	54,587	No Information	Settlement/camp	KVDA	MoHA
11	38	Chowo Nani	27.67689	85.327387	222	Nepal Government	No Information	KVDA	No Information
11	56	Ewa Hitar	27.677144	85.327629	1,420	Nepal Government	No Information	KVDA	No Information
11	124	Near Banglamukhi Temple	27.676515	85.32608	6,862	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
11	139	Patan Higher Secondary School	27.678187	85.321984	1,562	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
11	214	-	27.678094	85.325552	3,192	No Information	No Information	KVDA	No Information
11	215	-	27.677146	85.323733	797	No Information	No Information	KVDA	No Information
11	220	-	27.678425	85.325998	1,862	No Information	No Information	KVDA	No Information
12	33	Chakra Bahil	27.671283	85.324561	447	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	34	Chakra Bahil	27.670544	85.325095	159	Religious institutions	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
12	98	Lagankhel Buspark	27.667313	85.323154	5,133	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	110	Mangalbazar chowk	27.67223	85.325004	423	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	137	Patan Durbar area	27.672811	85.32591	10,800	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	147	prayag pokhari	27.66874	85.324908	711	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	217	-	27.673568	85.327892	562	No Information	No Information	KVDA	No Information
13	77	Jawalakhel Hastakala Kendra/Tibetan Refugee Camp	27.667538	85.310217	6,156	Office	Medical assistance	KVDA	MoHA
13	109	Majuwachaur	27.665974	85.311234	3,035	Nepal Government	No Information	KVDA	No Information
14	29	Budha Marga Youth club	27.649291	85.315974	629	Nepal Government	No Information	KVDA	No Information
14	41	Chuniya Binan Ganesh Lower Secondary School	27.645073	85.314542	599	School	No Information	KVDA	No Information
14	94	Kirateshwar Ashram	27.645723	85.314426	1,553	Religious institutions	No Information	KVDA	No Information
14	103	Lokeshwar Mahadev Temple	27.645409	85.31498	559	Nepal Government	No Information	KVDA	No Information
14	106	Mahalaxmi Lower Secondary School	27.644864	85.314173	1,074	School	No Information	KVDA	No Information
14	116	Nakhipot Sport	27.651067	85.317817	3,748	Nepal Government	Medical Camp	KVDA	JICA ERAKV Workshop
14	120	Nark, Panitanki	27.647027	85.313976	391	Nepal Government	No Information	KVDA	No Information
14	159	Ringroad Satdobato Ekantakuna	27.6629	85.3164	117,111	No Information	Debris collection	MoHA	MoHA
14	186	Soma Hiti	27.657053	85.316243	514	Nepal Government	No Information	KVDA	No Information
14	199	Umamaheshwar Park	27.657317	85.317208	552	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
15	18	Batuk Bhairab Temple	27.665815	85.323339	1,266	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	28	Buddhi Bikash Mandal	27.666515	85.322911	2,466	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	53	District Livestock service center	27.666007	85.322674	7,334	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	55	ECIMOD	27.646356	85.323556	14,389	Office	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	84	Kendriye Tarkari Biu Utpadan Kendra	27.65039	85.325059	35,184	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	107	Mahalaxmi temple	27.662822	85.31905	5,799	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	108	Mahendra Adarsha Bidhyashram	27.658354	85.326034	15,235	School	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	118	Namuna Machhindra Boarding School	27.664736	85.320887	12,482	School	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	119	NARC	27.653077	85.323678	247,622	Office	Multiple	KVDA	MoHA
15	153	Rajdal Gan/Lagankhel Football Ground	27.66323	85.322212	149,353	Nepal Government	Multiple	KVDA	MoHA
15	155	Rastriye Prakriti Samrakshen Kosh	27.652942	85.326758	142,462	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	160	RONAST	27.655623	85.328977	69,306	Office	Multiple	KVDA	MoHA
15	171	Saptapatal Pokhari/Lagankhel Stupa	27.665149	85.3235	7,771	Nepal Government	Humanitarian coordination area	KVDA	MoHA
16	11	Bajukha Chowk	27.672978	85.322401	621	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	48	Dhapagal Vegetable Market	27.674797	85.323275	3,137	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop

Ward No.	S/N	Name of Open Space	Latitude	Longitude	Area (m^2)	Ownership	Usage	Source for Open space	Source for Usage Information
16	54	Dobahal	27.674082	85.323034	1,256	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	83	Kayaguni	27.673578	85.32252	922	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	99	Lalanani	27.675455	85.324286	1,600	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	104	Lokkriti Mahabhir	27.675755	85.322674	2,494	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	115	Nagbahal	27.675886	85.32393	3,922	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	138	Patan Durbar Square	27.673314	85.324843	4,761	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
16	151	Purna chandi	27.673906	85.320413	2,275	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	173	Sawanimha	27.676509	85.321443	677	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	203	Vaskarbarna Mahabir	27.676503	85.322753	3,611	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	209	Yasodhara Mahabir	27.674529	85.321358	1,021	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	219	-	27.674832	85.32556	486	No Information	No Information	KVDA	No Information
17	5	ANFA Football Ground	27.662047	85.32999	9,310	Office	Vulnerable population assistance area	KVDA	MoHA
17	64	Gwarko Tyagal	27.667388	85.330888	1,314	School	No Information	KVDA	No Information
17	158	Ringroad Gwarko Satdobato	27.662	85.3285	71,129	No Information	Debris collection	MoHA	MoHA
17	165	Samata Sikshya Niketan	27.663774	85.331885	1,104	School	Settlement/camp	KVDA	JICA ERAKV Workshop
18	14	Balkumari Lower Secondary School	27.656167	85.295975	535	Nepal Government	No Information	KVDA	No Information
18	128	Nepal Khanepani Sanstha	27.643336	85.303073	7,659	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
18	162	Sainbu Prahari Chauki Mahilaghar	27.646016	85.304624	1,259	Nepal Government	No Information	KVDA	No Information
18	163	Sainbu Prastabit Bidhyalaya	27.652764	85.301865	10,948	Office	No Information	KVDA	No Information
18	164	Sainbu Samsad Awas Sachibalaya	27.651228	85.300702	49,771	Nepal Government	No Information	KVDA	No Information
19	3	Advance International Higher Secondary School	27.668217	85.322625	1,941	Lease	No Information	KVDA	No Information
19	12	Bal Bidhyashram Primary School	27.672404	85.32319	675	No Information	No Information	KVDA	No Information
19	73	ita Pokhari	27.671724	85.322759	618	Nepal Government	No Information	KVDA	No Information
19	142	Patan Rato Machhindra Bahal	27.670509	85.323036	6,854	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
19	207	Walima Aaganisal	27.67288	85.320748	515	Nepal Government	No Information	KVDA	No Information
20	13	Bal Binod SS	27.673854	85.31822	795	Nepal Government	No Information	KVDA	No Information
20	31	Caspian Valley College	27.673058	85.319548	951	Office	No Information	KVDA	No Information
20	86	Khayabadi kamukanam Mahabir	27.67454	85.318949	3,860	Nepal Government	No Information	KVDA	No Information
20	101	Lalitpur Municipality Office	27.675933	85.317112	17,572	No Information	Humanitarian coordination area	KVDA	MoHA
20	114	Na. Tole, Pulchowk	27.673166	85.31747	1,006	Nepal Government	No Information	KVDA	No Information
20	123	Nawahal	27.67437	85.319803	957	Religious institutions	No Information	KVDA	No Information
20	143	Pim Bahal	27.676183	85.320664	1,451	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
20	183	Sija Bahal	27.675044	85.320705	121	Nepal Government	No Information	KVDA	No Information
21	1	Adarsha saul Primary School	27.633013	85.303768	2,207	School	Distribution Area	KVDA	JICA ERAKV Workshop
21	32	Chabahil-Nani	27.632365	85.302898	19,255	Nepal Government	No Information	KVDA	No Information
21	42	Chyaa Laachi	27.63605	85.298015	641	Nepal Government	No Information	KVDA	No Information
21	47	De-Tuna	27.644568	85.293539	681	Nepal Government	No Information	KVDA	No Information
21	57	Fagapokhari	27.642469	85.283745	17,380	Nepal Government	No Information	KVDA	No Information
21	58	Gabhu Lachhi	27.63641	85.298672	265	Nepal Government	No Information	KVDA	No Information
21	65	Gyanodaya Awasiye School	27.632837	85.300264	21,627	School	No Information	KVDA	No Information
21	87	Khdawa, Bagmati Nadi Kinar	27.648296	85.287736	46,455	Nepal Government	No Information	KVDA	No Information
21	88	Khokana-11	27.635569	85.299608	425	Nepal Government	No Information	KVDA	No Information
21	89	Khokana-14	27.636401	85.301143	709	Nepal Government	No Information	KVDA	No Information
21	90	Khokana-15	27.637038	85.290048	562	Nepal Government	No Information	KVDA	No Information
21	91	Khokana-4	27.63663	85.289155	146	Nepal Government	No Information	KVDA	No Information
21	92	Khokana-7	27.63912	85.293048	343	Nepal Government	No Information	KVDA	No Information
21	93	Khuma Laachi	27.636392	85.297016	1,021	Nepal Government	No Information	KVDA	No Information
21	97	Kudeshako Chaitye	27.63838	85.290206	764	Nepal Government	No Information	KVDA	No Information
21	125	Nehu Lachhi	27.63684	85.297974	35	Nepal Government	No Information	KVDA	No Information
21	144	Pina-Cha	27.641797	85.290908	6,819	Nepal Government	No Information	KVDA	No Information
21	166	Sana- Laa	27.635429	85.29366	282	Nepal Government	No Information	KVDA	No Information
21	170	Sano Khokana	27.644165	85.293867	462	Nepal Government	No Information	KVDA	No Information
21	180	Shree Rudrayeni School	27.635815	85.295744	2,468	School	Settlement/Camp	KVDA	JICA ERAKV Workshop
21	184	Sikaliko Chaur	27.643366	85.285618	66,606	Nepal Government	No Information	KVDA	No Information
21	205	Waa-Kha	27.636026	85.294629	6,278	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
21	210	Yuwa Prativa Bidhya Mandir	27.637637	85.301778	354	School	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
22	8	Bagmati Nadi Kinar	27.611673	85.290551	8,937	Nepal Government	No Information	KVDA	No Information
22	19	Bhandari Ban	27.62423	85.304119	4,183	Nepal Government	No Information	KVDA	No Information
22	20	Bhandari Chaur	27.630324	85.302807	1,116	Nepal Government	No Information	KVDA	No Information

Ward No.	S/N	Name of Open Space	Latitude	Longitude	Area (m^2)	Ownership	Usage	Source for Open space	Source for Usage Information
22	25	Bhunna Tole	27.617536	85.298151	369	Nepal Government	No Information	KVDA	No Information
22	30	Bungmati Buspark	27.628667	85.303579	2,368	Nepal Government	No Information	KVDA	No Information
22	39	Chunidevi Lower Secondary School	27.61885	85.305184	2,750	School	Medical Camp	KVDA	JICA ERAKV Workshop
22	40	Chunidevi Temple	27.626476	85.304598	15,620	Nepal Government	No Information	KVDA	No Information
22	52	District Health Center	27.619489	85.304638	11,318	Nepal Government	No Information	KVDA	No Information
22	102	Laptan Gaunko Chaur	27.616722	85.305192	3,597	Nepal Government	No Information	KVDA	No Information
22	105	Machhindra Bahal	27.629745	85.30203	2,755	Nepal Government	No Information	KVDA	No Information
22	146	Prathampur Bihar	27.63113	85.303168	1,262	Nepal Government	No Information	KVDA	No Information
22	197	Triratna Sahakari School	27.627769	85.304179	1,044	School	No Information	KVDA	No Information
22	206	Wakhel Kumari Primary School	27.631098	85.303896	638	School	No Information	KVDA	No Information
23	70	IJ Payaniyer School	27.646247	85.335457	4,990	Office	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	75	James School	27.64326	85.326174	45,333	Lease	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	136	Padam Prakash Secondary School	27.641324	85.327645	918	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	154	Rastriye Aalu Anusandhan Karyekram	27.64669	85.33417	16,869	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	169	Sano Hattiban	27.64872	85.333505	28,778	Lease	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	178	Shree Krishna Higher Secondary School	27.638547	85.327789	1,288	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	195	Tewa	27.638932	85.327634	7,201	Office	Settlement/Camp	KVDA	JICA ERAKV Workshop
24	49	Dhapakhel Boardding SS	27.630666	85.328201	513	Lease	Distribution	KVDA	JICA ERAKV Workshop
24	74	Jalapa SS	27.62531	85.335081	1,882	Nepal Government	Settlement/Camp, Distribution	KVDA	JICA ERAKV Workshop
24	79	Kalyan SS	27.624203	85.326685	378	School	Distribution	KVDA	JICA ERAKV Workshop
24	81	Kantipur Engineering College	27.637242	85.333147	9,033	College	Settlement/Camp, Distribution	KVDA	JICA ERAKV Workshop
24	111	Mastisk Pakshyeghat Swabalamban Samuha	27.621683	85.328368	3,626	Lease	Distribution	KVDA	JICA ERAKV Workshop
24	190	Sunhawa Antararaa Academy School	27.624528	85.326333	788	School	Distribution	KVDA	JICA ERAKV Workshop
24	191	Suryodaya English School	27.625165	85.326825	3,394	Lease	Distribution	KVDA	JICA ERAKV Workshop
25	2	Adarsha Saula Yuwak Higher Secondary School	27.635653	85.305144	6,076	School	No Information	KVDA	No Information
25	17	Basketball Court	27.654395	85.302464	2,026	Office	No Information	KVDA	No Information
25	50	Dharako Pakho	27.647354	85.308671	3,472	Nepal Government	No Information	KVDA	No Information
25	72	Infront of Adarsha Soul School	27.634414	85.305054	6,283	Nepal Government	No Information	KVDA	No Information
25	129	Nepal Telecom	27.653765	85.302341	1,519	Office	No Information	KVDA	No Information
25	145	Play Ground	27.650641	85.306866	5,297	Nepal Government	No Information	KVDA	No Information
25	148	Proposed Police Office	27.652353	85.305129	1,855	Nepal Government	No Information	KVDA	No Information
25	152	Radio Nepal Broadcasting Station	27.646843	85.306016	42,302	Nepal Government	No Information	KVDA	No Information
25	161	Sainbu Football Ground	27.648847	85.308256	3,035	Nepal Government	No Information	KVDA	No Information
25	175	Shiva Temple	27.648281	85.304986	467	Nepal Government	No Information	KVDA	No Information
25	177	Shree Janaudaya Secondary School	27.651333	85.306957	1,564	School	Settlement/Camp	KVDA	JICA ERAKV Workshop
25	185	Sip Bikash Talim Kendra	27.646679	85.308671	7,069	Nepal Government	No Information	KVDA	No Information
25	204	VDC Office	27.655927	85.302618	1,702	Nepal Government	No Information	KVDA	No Information
26	4	Amar jyoti School	27.642592	85.319427	5,605	School	No Information	KVDA	No Information
26	100	Lalitpur Academy	27.639988	85.32111	3,626	Lease	No Information	KVDA	No Information
26	122	Nawa Suryodaya English School	27.634554	85.319684	2,416	Lease	No Information	KVDA	No Information
26	174	Shankhadhar Park	27.637069	85.318416	728	Nepal Government	No Information	KVDA	No Information
27	15	Balkumari School	27.630872	85.322491	168,476	Religious institutions	Settlement/Camp	KVDA	JICA ERAKV Workshop
27	23	Bhimeshwar Temple	27.632727	85.318233	3,000	Religious institutions	No Information	KVDA	No Information
27	96	Krishna Pranami Temple	27.629569	85.314858	14,805	Nepal Government	No Information	KVDA	No Information
27	182	Siddhartha Boarding School	27.634317	85.32221	1,853	Lease	No Information	KVDA	No Information
28	22	Bhawani Temple	27.636991	85.340429	280	Religious institutions	No Information	KVDA	No Information
28	59	Gahala	27.636588	85.339243	2,693	Nepal Government	No Information	KVDA	No Information
28	66	Harisiddhi Bricks-Tile Industry	27.6438	85.342465	200,986	Lease	No Information	KVDA	No Information
28	67	Harisiddhi Guthi Niwa	27.636095	85.340394	496	Religious institutions	No Information	KVDA	No Information
28	68	Harisiddhi Higher Secondary School	27.637552	85.341888	1,155	Nepal Government	No Information	KVDA	No Information
28	69	Harisiddhi-2	27.636919	85.339526	365	Nepal Government	No Information	KVDA	No Information
28	135	Pabitra Prathana SS	27.645856	85.339595	691	School	No Information	KVDA	No Information
29	121	Nawa jiwan Gospel Church	27.637277	85.351077	986	Religious institutions	No Information	KVDA	No Information
29	127	Nepal Electricity Authority	27.636863	85.350441	14,100	Nepal Government	No Information	KVDA	No Information
29	192	Tahapakhal	27.634709	85.340003	8,415	Nepal Government	No Information	KVDA	No Information
29	193	Tahapakhal	27.635318	85.34087	2,289	Nepal Government	No Information	KVDA	No Information

Note: Information is based on the workshop for formulation of LDCRP in LMC, No Information: Usage information is not available.
Source: MoHA, KVDA, JICA ERAKV Project

Table: School List with its usage

Ward No.	S/N	Name of Schools/Colleges	Latitude	Longitude	Classification	Ownership	Usage
1	267	Rupak Memorial International Higher Secondary School	27.688866	85.314227	Secondary	Private	Settlement/Camp
1	269	Nightingale Nursing College	27.690879	85.311217	Higher Secondary	Private	Settlement/Camp
2	266	Shree Tika Vidyashram Higher Secondary School	27.68535	85.309445	Higher Secondary	Government	Settlement/Camp
2	268	Radiant Readers Academy	27.688927	85.305957	Secondary	Private	Settlement/Camp
3	262	St. Mary's School	27.676173	85.311836	Secondary	Private	Settlement/Camp
4	233	Grace Academy	27.664898	85.303101	Secondary	Private	Medical Camp
4	245	Little Angels (Junior Wing)	27.669336	85.309728	Primary	Private	Settlement/Camp
4	247	Asian College	27.670675	85.309706	College	Private	Medical Camp
4	256	DAV Sushil Kedia Vishwa Bharati School	27.67413	85.308665	Secondary	Private	Settlement/Camp
4	257	Himalayan International Ideal School	27.674141	85.305005	Secondary	Private	Settlement/Camp
4	259	St. Xavier's School	27.674583	85.31289	Secondary	Private	Settlement/Camp
5	232	Delight School	27.66229	85.317789	Secondary	Private	Temporary Evacuation Shelter
5	242	AVM High School	27.667515	85.315289	Higher Secondary	Private	Settlement/Camp
5	249	Prasadi Academy	27.671293	85.317188	College	Private	Settlement/Camp
5	251	Welhams College	27.672545	85.315642	College	Private	Medical Camp
6	234	Emerald Academy and NIMS	27.666397	85.325453	Secondary	Private	Settlement/Camp
6	235	Vidya Sadan School	27.666455	85.32777	Secondary	Private	Settlement/Camp
6	237	Milestone School	27.666918	85.325552	Secondary	Private	Settlement/Camp
6	239	National Children School	27.667209	85.326107	Secondary	Private	Settlement/Camp
6	244	Yasodhara Baudha Secondary School	27.669267	85.325865	Secondary	Government	Settlement/Camp
7	241	Lok Smriti Secondary School	27.667576	85.331987	Secondary	Private	Settlement/Camp
7	246	Kathmandu University School of Management/ Education	27.669914	85.333738	College	Private	Settlement/Camp
8	248	Nepal College of Information Technology(NCIT)	27.671441	85.339121	College	Private	Settlement/Camp
9	250	Milestone International College	27.672216	85.33983	College	Private	Settlement/Camp
9	255	Shramik Shanti Higher Secondary School	27.674347	85.329105	Higher Secondary	Government	Settlement/Camp
9	263	Himalaya College of Engineering	27.677016	85.332603	College	Private	Settlement/Camp
10	265	Pulchowk Campus-Dean's Office	27.68099	85.318693	College	Government	Settlement/Camp
11	264	Shree Patan H.S.School	27.677842	85.322453	Higher Secondary	Government	Settlement/Camp
12	252	Adarsha Kanya Niketan Higher Secondary School	27.673487	85.326076	Higher Secondary	Government	Settlement/Camp
13	243	Mahendra Bhrikuti Ma Vi	27.667492	85.309083	Secondary	Government	Settlement/Camp
15	228	Ullens School	27.649864	85.322021	Secondary	Private	Settlement/Camp
15	229	Little Angel's School	27.651411	85.335801	Higher Secondary	Private	Settlement/Camp
15	236	Namuna Macchindra Higher Secondary School and College	27.666526	85.322877	Secondary	Government	Settlement/Camp
17	238	Shramjit Kishor School	27.667148	85.329401	Secondary	Government	Settlement/Camp
17	240	Prabhat Higher Secondary School	27.667357	85.330845	Higher Secondary	Government	Settlement/Camp
20	253	Bal Binod Secondary School	27.673845	85.318241	Secondary	Government	Settlement/Camp
20	254	Danphe English Boarding School	27.674018	85.317707	Secondary	Private	Medical Camp
20	258	Sagarmatha Higher Secondary School	27.674542	85.31639	Higher Secondary	Private	Settlement/Camp
20	260	Tri-Padma Higher Secondary School	27.675633	85.316814	Higher Secondary	Government	Settlement/Camp
20	261	Madan Smarak Secondary School	27.676141	85.318192	Higher Secondary	Private	Settlement/Camp
23	225	Shree Krishna Higher Secondary School	27.638561	85.327537	Higher Secondary	Government	Temporary Evacuation Shelter
24	221	Balodaya Primary School	27.621691	85.325936	Primary	Government	Temporary Evacuation Shelter
24	222	Shree Jalpa Secondary School	27.626263	85.334378	Secondary	Government	Temporary Evacuation Shelter
24	223	New Modern English Academy	27.63183	85.329826	Lower Secondary	Private	Settlement/Camp
25	224	Adarsha Shila Yubak Higher Secondary School	27.635828	85.3051	Higher Secondary	Government	Medical Camp
25	226	Bright Baby Boarding School	27.64014	85.305502	Primary	Private	Disaster Management Camp
25	227	Green Tara College of Health Science	27.645721	85.305002	College	Private	Medical Camp
25	230	Deep Kunj Higher Secondary English School	27.651725	85.305115	Higher Secondary	Private	Medical Camp
25	231	Asmita English Secondary School	27.653353	85.30566	Secondary	Private	Disaster Management Camp

Note: Information is based on the workshop for formulation of LDCRP in LMC
Source: JICA ERAKV Project

ललितपुर महानगरपालिका
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माघ, २०७४

ललितपुर महानगरपालिका
ललितपुर महानगरपालिका
नगर कार्यपालिकाको कार्यालय
पुल्चोक, ललितपुर, ३ नं. प्रदेश, नेपाल

ललितपुर महानगरपालिका
पुल्चोक, ललितपुर
२०७३

शुभकामना

वि. सं. २०७२ बैशाख १२ गते गएको विनाशकारी गोरखा भूकम्पको कारण ललितपुर महानगरपालिकाले जनधनको धेरै क्षति बेहोर्नु पऱ्यो । साथै अन्य प्राकृतिक र अप्राकृतिक विपद्हरूबाट पनि जोखिम निकै बढ्दै आएको छ । अहिलेको अवस्थामा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन र जलवायु उत्थानशीलताको दिगो विकाससित प्रत्यक्ष सम्बन्ध रहेको छ । ललितपुर महानगरपालिकाको विकास कार्यक्रमहरूमा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका पहलहरूलाई प्राथमिकता दिन आवश्यक रहेको छ ।

नेपालको संविधान, २०७२ र स्थानीय सरकार सञ्चालन ऐन, २०७४ ले स्थानीय सरकारको काम, कर्तव्य र अधिकार भित्र विपद् व्यवस्थापन सम्बन्धी सबै चरणका कार्यहरू समावेश गरेको छ । विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन ऐन, २०७४ अनुसार आवश्यक गतिविधिहरू कार्यान्वयन गर्नको लागि स्थानीय विपद् व्यवस्थापन योजना तर्जुमा गर्ने अधिकार स्थानीय सरकारसित रहेको छ । ललितपुर महानगरपालिकाको विपद् तथा जलवायु उत्थानशील योजना संघीय मामिला तथा स्थानीय विकास मन्त्रालयको विपद् तथा जलवायु उत्थानशील योजनाको प्राविधिक निर्देशिका अनुसार २०७४ मा तर्जुमा गरिएको हो ।

विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनलाई ललितपुर महानगरपालिकामा संस्थागत गर्ने र साथै विपद् तथा जलवायु उत्थानशील गतिविधिहरूको कार्यान्वयनबाट जनधनको सुरक्षा गर्ने यस विपद् तथा जलवायु उत्थानशील योजनाको मुख्य उद्देश्य रहेको छ । यस विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमा सँगै प्रस्तावित गतिविधिहरूलाई विकास योजनाहरूमा मूलधार गरेर लगिनेछ भन्ने अपेक्षा गरिएको छ ।

यस योजनाको तर्जुमाको लागि सहयोग पुऱ्याइदिनु भएकोमा म सम्पूर्ण वडा अध्यक्षज्यूहरू, सचिवज्यूहरू र सदस्यज्यूहरू प्रति आभार व्यक्त गर्दछु । काठमाडौं उपत्यका भूकम्प विपत्ति जोखिम मूल्याङ्कन परियोजनाका जाइका परियोजना टोलीलाई यस योजना तर्जुमाका लागि सहकार्य र सहयोग गरिदिनु भएकोमा म हार्दिक धन्यवाद ज्ञापन गर्न चाहन्छु । अन्त्यमा विपद् तथा जलवायु उत्थानशील गतिविधिहरूलाई प्राथमिकता दिई कार्यान्वयन गर्ने हाम्रो आफ्नै कर्तव्य हो भन्दै ललितपुर महानगरपालिकाले जनधनको सुरक्षाका निम्ति सकुशल र सुरक्षित शहरी विकास गर्नेछ भन्ने दृढता जनाउन चाहन्छु ।

चिरीबाबु महर्जन
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ललितपुर महानगरपालिका
विपद् तथा जलवायु उत्थानशील योजना

विषयवस्तु

१. परिचय
१.१ पृष्ठभूमि
१.२ योजनाको उद्देश्य
१.३ योजनाको आवश्यकता तथा महत्व
१.४ योजना को सिमा
१.५ विधि
१.६ योजना कार्यान्वायन रणनीति

२. नगरपालिकाको सामान्य विवरण
२.१ नगरपालिकाको भौतिक अवस्था
२.२ नगरपालिकाको सामाजिक अवस्था

३. प्रकोप, संकटासन्नता, क्षमता तथा जोखिम विश्लेषण
३.१ ऐतिहासिक विपदका घटनाक्रम
३.२ विपद् पहिचान तथा स्तरीकरण
३.३ प्रकोप विश्लेषण
३.४ संकटासन्नता विश्लेषण
३.५ क्षमता विश्लेषण
३.६ जोखिम पहिचान तथा विश्लेषण

४. स्थानीय विपद् तथा जलवायु उत्थानशील नीति
४.१ दीर्घकालिन सोच तथा लक्ष्य
४.२ स्थानीय विपद् तथा जलवायु उत्थानशील रणनीति
४.३ विपद् तथा जलवायु उत्थानशीलताका लागि संस्थागत संरचना

५. स्थानीय विपद् तथा जलवायु उत्थानशील गतिविधिहरू
५.१ विपद् जोखिमको बोध
५.२ विपद् जोखिम व्यवस्थापनका लागि विपद् जोखिम शासनको सुदृढीकरण
५.३ उत्थानशीलताका लागि विपद् जोखिम न्यूनीकरणमा लगानी
५.४ प्रभावकारी प्रतिकार्यका लागि विपद् पूर्वतयारीमा अभिवृद्धि तथा पुनर्स्थापना, पुनर्निर्माण तथा पुनर्लाभ को अवधिमा "अझ राम्रो र बलियो निर्माण" अवधारणा अनुसरण

६. अनुगमन, मूल्याङ्कन तथा अद्यावधिक
६.१ अनुगमन तथा मूल्यांकन
६.२ योजना पुनरावलोकन तथा अद्यावधिक

उद्देश्य

विपद् जोखिम र क्षति न्यूनीकरण तथा जनधनको सुरक्षा गर्नका लागि विपद् तथा जलवायु उत्थानशील गतिविधिहरू कार्यान्वयन गर्ने ।

प्रकोप, संकटासन्नता, क्षमता तथा जोखिम विश्लेषण (खण्ड ३)

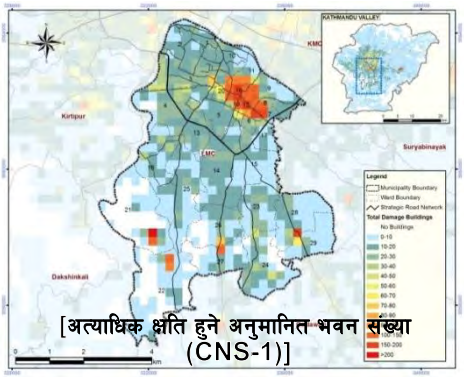
[भूकम्पीय जोखिम विश्लेषणका नतिजा]

भवनको अनुमानित क्षति (अनुपात) [CNS-1]	
अत्याधिक क्षति	९,६०३ (१८.२ %)
मध्यम क्षति	६,२७७ (११.९ %)
सामान्य क्षति	९,३२२ (१७.६ %)

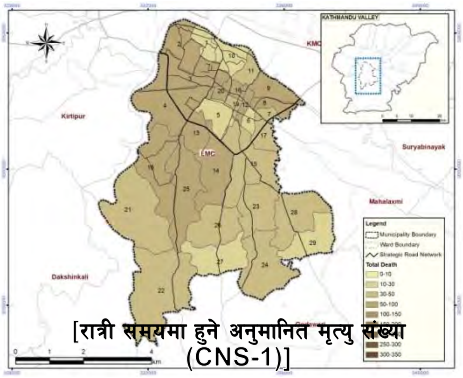
अनुमानित मानवीय क्षति (अनुपात) [CNS-1]	
मृत्यु	१,३६४ (०.४२ %)
घाइते	५,३४१ (१.६६ %)
विस्थापित	९१,९७५ (२८.५८ %)

विद्यालय (अत्याधिक क्षति) [CNS-2]	२६९ (३४.५ %)
स्वास्थ्य संस्था (अत्याधिक क्षति) [CNS-2]	२३ (३२.९ %)
आर्थिक क्षति (भवन क्षतिसँग सम्बन्धित) [CNS-1]	५७३,५५० लाख ने.रु.

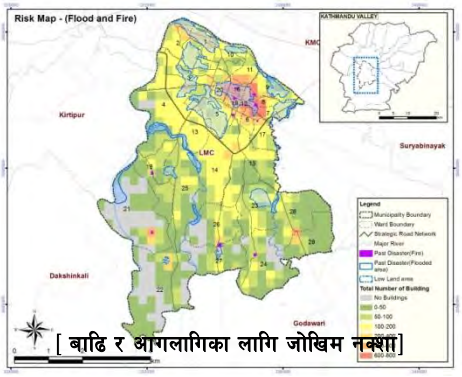
*CNS-1,2: परिदृश्य भूकम्प (मुख्य दस्तावेजमा विस्तृत जानकारी उपलब्ध छ।)



[अत्याधिक क्षति हुने अनुमानित भवन संख्या (CNS-1)]

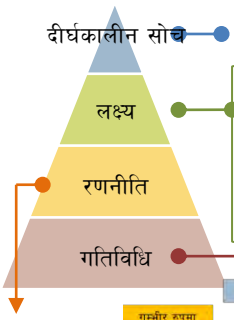


[रात्री समयमा हुने अनुमानित मृत्यु संख्या (CNS-1)]



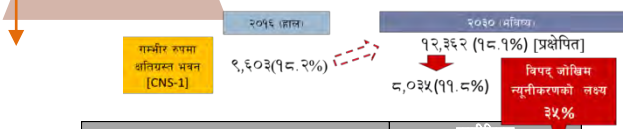
[बाढि र आगलागिका लागि जोखिम नक्शा]

स्थानीय विपद् तथा जलवायु उत्थानशील नीति (खण्ड ४)



विपद् उत्थानशील तथा सुरक्षित महानगर

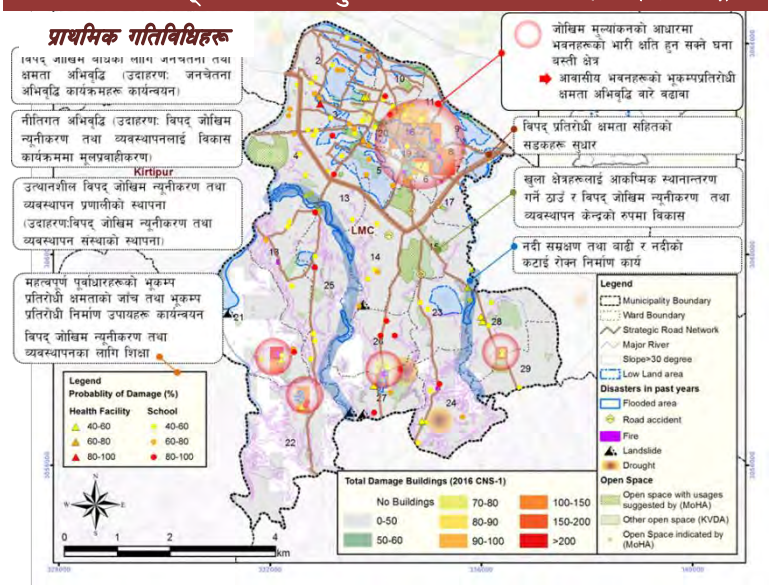
१. सर्वसाधारणको जीवन रक्षाका लागि सबैमा भवन संहिता, निर्माण मापदण्ड, भू-उपयोग योजना र अन्य नीतिहरु अपनाई भूकम्प प्रतिरोधी घर निर्माणमा प्रोत्साहन
२. योजनाबद्ध, एकीकृत, समन्वित तथा विस्तृत रुपमा विपद् प्रतिरोधात्मक र अल्पीकरण, पूर्वतयारी, आकस्मिक प्रतिकार्य, पुनर्स्थापना र पुनर्निर्माणका गतिविधिहरु कार्यान्वयन गर्ने क्षमता तथा चेतना अभिवृद्धि
३. विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका गतिविधिहरु विकास निर्माणका कार्यसँगै मूलधारमा ल्याई विपद्बाट सुरक्षित भई बाँच्न पाउने अधिकार सुनिस्चित गर्नु



Sendai Framework for DRR 2015-2030 का लक्ष्यहरू	रणनीतिहरू (सन् २०३०को लागि लक्ष्य)
(क) विश्वव्यापी विपद् **मृत्युदर**लाई २०३० सम्मा उल्लेखनीय रूपमा घटाउने	लगभग ३५% कम गर्ने १,७६१ ⇒१,१५० (जनसंख्या)
(ख) **प्रभावित व्यक्तिहरुको संख्या**लाई २०३० सम्मा उल्लेखनीय रूपमा घटाउने	लगभग ३५% कम गर्ने (विस्थापित) ११८,४८५ ⇒ ७७,००० (जनसंख्या)
(ग) वश्वव्यापी कुल घरेलु उत्पादनमा विपद्बाट हुने प्रत्यक्ष **आर्थिक क्षति**लाई २०३० सम्ममा घटाउने	लगभग १५% कम गर्ने भवनमा हुने भारी क्षति सम्बन्धि ४३,३७७ ⇒ ३७,००० (दश लाख रुपिया)
(घ) विपद्का कारण **महत्वपूर्ण संरचनाहरु**मा हुने क्षति तथा **स्वास्थ्य र शैक्षिक सेवा** लगायतका आधारभूत सेवाहरुको अवरोधहरुलाई २०३० सम्ममा तिनीहरुको उत्थनशिलता विकास गरेर उल्लेखनीय रूपमा घटाउने	कम गर्ने
(ङ) राष्ट्रिय तथा **स्थानीय विपद् जोखिम न्यूनीकरणका रणनीति** भएका देशहरुको संख्या २०२० सम्ममा उल्लेखनीय रूपमा बढाउने	यो योजना र रणनीति

स्थानीय विपद् तथा जलवायु उत्थानशील गतिविधिहरू (खण्ड ५)

प्राथमिक गतिविधिहरू



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अनुसूची: JICA ERAKV परियोजनाले स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति संचालन गरेको कार्यशालाको आधारमा खुला क्षेत्रहरु तथा तिनको प्रयोग

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तालिका ५-५ CNS-2 भूकम्पको अवस्थामा स्वास्थ्य संस्थाहरूमा हुन सक्ने सम्भावित भारि क्षति (Probability of heavy damage for health facilities in case of CNS-2 (Probability≧0.3) ५१
तालिका ५-६ CNS-2 भूकम्पको अवस्थामा विद्यालयहरूमा हुन सक्ने सम्भावित भारि क्षति ५२
तालिका ५-७ प्रभावकारी प्रतिकार्य र पूनर्स्थापना, पूनर्निर्माण तथा पूनर्लाभमा «अझ राम्रो र बलियो» (Build Back Better) अवधारणाको अवलम्वन गरि तयार पारिएका विपद् पुर्वतयारीका गतिविधिहरु.....५७
तालिका ६-१ अनूगमन तथा मूल्याङ्कन.....६८

खण्ड १.

परिचय

१-१. पृष्ठभुमि

धार्मिक, सांस्कृतिक एवं ऐतिहासिक तथा मन्दिरहरुको नगरीको रुपमा परिचित ललितपुर नगर, काठमाडौं महानगर र भक्तपुर नगरपालिका लगायत काठमाण्डौ उपत्यकाको प्राचीन तथा महत्वपूर्ण ३ नगरहरु मध्ये पुरानो नगर हो । यस ललितपुर महानगरपालिकाको इतिहास २,३०० वर्ष अगाडीसम्म रहेको छ । ललितपुर महानगरपालिका काठमाण्डौ उपत्यकाको दक्षिण भागमा अवस्थित छ ।

वि.सं. २०६८ को जनगणना अनुसार ललितपुर महानगरपालिकाको जनसंख्या २८४,९२२ रहेको छ र यो काठमान्डौ उपत्यकाको दोश्रो ठुलो नगरी हो । २०७४ सालमा भएको राज्य पुनर्संरचना पश्चात् साविकको ललितपुर उपमहानगरपालिका र कार्यविनायक नगरपालिकाका भागहरूलाई समायोजन गरी ललितपुर महानगरपालिकाको रुपमा स्थापित गरिएको थियो । ललितपुर महानगरपालिकको पूर्वमा महालक्ष्मी नगरपालिका, पश्चिममा किर्तिपुर तथा दक्षिणकाली नगरपालिका, उत्तरमा काठमाण्डौ महानगरपालिका तथा दक्षिणमा गोदावरी नगरपालिका रहेको छ। यस महानगरलाई २९ वटा वडाहरूमा विभाजन गरिएको छ ।

विपद् जोखिमको दृष्टिकोणबाट हेर्दा ललितपुर महानगरपालिकाले विगतमा विभिन्न विपद्हरुको सामना गर्नु परेको छ । २०७२ सालमा गएको गोरखा भूकम्पका कारण साविकको ललितपुर उपमहानगरपालिकामा ४९ जनाको मृत्यु भएको थियो भने १२८ जना घाइते भएका थिए र २३०० भवनहरु पूर्ण रुपमा क्षतिग्रस्त भएका थिए । प्रकोप, सङ्कटासन्नता, क्षमता तथा जोखिम विश्लेषणको आधारमा हेर्दा, ललितपुर महानगरपालिका भूकम्पीय दृष्टिकोणबाट हेर्दा उच्च जोखिममा रहेको छ र यसका साथै बाढी, सडक दुर्घटना, आगलागी, पहिरो, खडेरी लगायतका अन्य विपद्हरु पनि आउने अवस्था छ । यस्ता विपद्हरुको सामना गर्नका लागि नगरपालिका तथा वडातहमा विपद् तथा जलवायु उत्थानशील समितिहरु गठन गरिएका छन । वडास्तर, जिल्लास्तर, प्रदेश सरकार, संघीय सरकार तथा गैर-सरकारीसंस्थाहरुको स्थानीय विपद् तथा जलवायु उत्थानशील समितिहरु सँगको सहकार्यमा विपद् जोखिम न्यूनीकरण र व्यवस्थापन तथा जलवायु उत्थानशीलताका प्रयासहरु अघि बढाउनु अत्यावश्यक रहेको छ ।

१-२. योजनाको उद्देश्य

भविष्यमा आउन सक्ने विपद्लाई मध्यनजर गरेर सुरक्षित समुदाय निर्माण गर्नका लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन र जलवायु उत्थानशील गतिविधिहरुलाई संस्थागत गर्ने र त्यसलाई स्थानीय तहको आवधिक तथा वार्षिक विकास कार्यक्रमहरुसँग मुलधारमा लगी

दिगो विकास सुनिश्चित गर्न यो योजना स्थानीय विपद् तथा जलवायु उत्थानशीलता निर्देशिका (२०७४), तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन ऐन २०७४ र स्थानीय सरकार सञ्चालन ऐन, २०७४ मा नगरपालिकाको लागि तोकिएको जनादेश बमोजिम तर्जुमा गरिएको छ । यस योजनाको मुख्य उद्देश्य विपद् पूर्व, विपद्को समयमा तथा विपद् पश्चात्का हरेक चरणका विपद् रोकथाम तथा अल्पीकरण, पूर्वतयारी, आकस्मिक प्रतिकार, पुनर्निर्माण तथा पुनर्स्थापना लगायतका त्यहाँका स्थानीयहरुको जनधनको सुरक्षाका लागि समयानुकम अनुसारमा विपद् तथा जलवायु उत्थानशील गतिविधिहरु कार्यान्वयन गर्नु हो ।

यस योजनाका अन्य उद्देश्यहरु निम्नानुसारका छन् :

क. महानगरमा भएका प्रकोप, सङ्कटासन्नता तथा क्षमताको पहिचान तथा विश्लेषण

ख. विपद् जोखिमको बुझाइ

ग. विपद् उत्थानशीलतामा लगानीका लागि विपद् तथा जलवायु उत्थानशील गतिविधिहरुको प्राथमिकीकरण

घ. सबै सरोकारवालाहरुको समान सहभागिता सुनिश्चित गरी विपद् तथा जलवायु उत्थानशीलतालाई संस्थागत गर्नका लागि विपद् जोखिम शासनको सुदृढीकरण गर्ने

ङ. न्युनतम आधार तथा समान सिद्धान्त निश्चय गर्ने

च. विपद् तथा जलवायु उत्थानशील समुदाय निर्माणका लागि सहयोग गर्ने

छ. विपद्को सामना गर्न सक्ने दक्ष मानवीय श्रोत तथा क्षमता तयार गर्ने

ज. प्रभावकारी प्रतिकार्यका लागि विपद् पूर्वतयारीमा अभिबृद्धि तथा प्रभावित समुदाय तथा परिवारहरुलाई सुरक्षित तथा सम्मानजनक जीविकोपार्जनका लागि आधारभूत तथा मानवीय सहायता प्रदान गर्ने ।

१-३. योजनाको आवश्यकता तथा महत्व

विपद् तथा जलवायु उत्थानशीलता अन्तर्गतका विभिन्न चरणहरुको व्यवस्थापनका लागि यो योजना तर्जुमा गरिन्छ र विकास योजना तर्जुमाको प्रमुख हिस्साका रुपमा निरन्तरता दिईन्छ । सम्पूर्ण विकास निर्माणका गतिविधिहरुलाई विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन गतिविधिहरुसँग गाभेर लग्नुका साथै दिगो विकासका गतिविधिहरु समुदायको सक्रिय सहभागिता अघि बढाउनु पर्छ । स्थानीय विपद् तथा जलवायु उत्थानशील योजनाको आवश्यकता तथा महत्व निम्नानुसारका छन् :

क. संस्थागत संरचना महानगरपालिका तहमा तयार हुनेछ ।

ख. नगरस्तरीय विपद् जोखिम न्यूनीकरण सूचनाको पहुँच बढ्नेछ ।

ग. विपद् जोखिम न्यूनीकरणलाई विकास योजनाहरुसँग मुलधारमा लागि स्थानीय तहको विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका उपायहरु अनुकुलन गर्नेछ ।

घ. नगरपालिका तहमा विपद् तथा जलवायु उत्थानशील कोषको स्थापना हुनेछ ।

ङ. बहु–प्रकोप जोखिम न्यूनीकरण तथा क्षमता विकासका लागि अनुकुल वातावरण निर्माण गर्नका लागि समुदायको सहभागिता, प्रेरणा तथा क्षमता सुनिश्चित हुनेछ ।

च. समुदायहरुले व्यवस्थापन गरिरहेको श्रोत साधनमा समान पहुँच हुनेछ ।

छ. सामाजिक सुव्यवस्था, समाज कल्याण र सामाजिक सद्भावमा अभिवृद्धि हुनेछ ।

ज. विपद्को समयमा मानवीय सहायताको व्यवस्थापन सुनिश्चित हुनेछ ।

१-४. योजनाको सिमितता

सरकारी, गैर-सरकारी, तथा स्थानीय निकायहरुले तयार पारेको सबै तहको योजना तथा कार्यक्रमहरुको आफ्नै महत्व तथा कार्यक्षेत्र हुन्छ । यस योजनामा निम्न अनुसार अपनाईएका विधिहरु, सिमितता, कार्यान्वयन, अनुगमन र मूल्याङ्कनका प्रभावकारी तरिकाहरू रहेका छन् :

क. यस योजनाको कार्यान्वयन ललितपुर महानगरपालिकाले विकास योजनाको प्रमुख भागको रुपमा गर्ने हुँदा यसलाई विकास निर्माण कार्य सँगसँगै निरन्तर रुपमा कार्यान्वयन गर्नुपर्छ ।

ख. यस योजना स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमा निर्देशिका २०७४ बमोजिम तर्जुमा गरिएको छ ।

ग. यस योजनाको कार्यान्वयन, अनुगमन तथा मूल्याङ्कन का लागि आवश्यक वित्तीय र दक्ष मानवीय श्रोत ललितपुर महानगरपालिकामा पर्याप्त मात्रामा उपलब्ध नहुन सक्छ । तसर्थ यसको निम्ति प्रदेश तह, राष्ट्रिय तह र अन्य सरोकारवालाहरू सँग सहकार्य गर्न जरुरी छ ।

१-५. विधि

ललितपुर महानगरपालिकाका समुदाय, वडा र प्रभावित तथा सङ्कटासन्न समूहहरुको प्रत्यक्ष र समावेशी सहभागिता सुनिश्चित गरी यस योजनालाई स्थानीय अवस्था अनुसार व्यावहारिक बनाउन निम्न उल्लेखित प्रक्रियाहरु अपनाईएका छन् :

(१) योजना तजूर्माको लागि अभिमुखीकरण कार्यशाला (पहिलो कार्यशाला) :

जाइका परियोजना टोलीको सहयोगमा महानगरपालिकामा अभिमुखीकरण कार्यशाला आयोजित गरिएको थियो । यस कार्यशालामा सहभागीहरुद्वारा ललितपुर महानगरपालिकाको विपद् तथा जलवायु उत्थानशील योजनाको उद्देश्य, तर्जुमा प्रक्रिया, र दीर्घकालीन सोच तथा लक्ष्यका बारेमा छलफल गरिएको थियो ।

(२) ललितपुर महानगरपालिकाको सुचना सङ्कलनः

विपद् तथा जलवायु उत्थानशील योजना तर्जुमा प्रक्रियामा विभिन्न सूचनाहरु सङ्कलन गरिएको थियो । खासगरी, जिल्ला तथा राष्ट्रिय तहको सम्बन्धित नीति तथा योजनाहरू, सामाजिक तथा आर्थिक सूचना, समृद्धताको स्तरीकरण, नगरपालिकाका विपद्हरु, ऐतिहासिक अभिलेख, साथै विगतका के–कस्ता गतिविधिहरू सञ्चालन गरिएका थिए तथा कुन स्थानमा सञ्चालन भएका थिए भन्ने बारे सूचना सङ्कलन गरिएको थियो ।

(३) भूकम्पको लागि जोखिम विश्लेषण:

जाइका परियोजनाद्वारा भूकम्पबाट हुने जोखिम बुझ्न तथा त्यसको न्यूनीकरणका प्रत्युपायहरू अवलम्वन गर्नका लागि भूकम्पीय जोखिम विश्लेषण गरिएको छ ।

(४) प्रकोप, सङ्कटासन्नता तथा क्षमता विश्लेषण (VCA) (दोस्रो कार्यशाला) , तथा जोखिम विश्लेषण :

विपद् तथा जलवायु उत्थानशीलता सम्बन्धी समुदाय र वडा स्तरीय सूचना सङ्कलन गर्नको निम्ति ललितपुर महानगरपालिका र जाइका परियोजनाद्वारा दोस्रो कार्यशाला आयोजना गरिएको थियो । यस कार्यशालामा विभिन्न प्रक्रियाहरू प्रयोग गरी ललितपुर महानगरपालिकाको प्रकोप, सङ्कटासन्नता तथा क्षमता विश्लेषण गरिएको थियो । सङ्कटासन्नता तथा क्षमता विश्लेषणका विभिन्न स्वीकार्य प्रक्रियाहरु जस्तै ललितपुर महानगरपालिकाको ऐतिहासिक विपद्हरुको घटनाक्रम, प्रकोप तथा सङ्कटासन्नताको नक्साङ्कन तथा सामाजिक तथा प्राकृतिक श्रोतहरुको विश्लेषण रहेका छन् । यी विश्लेषणका नतिजाका आधारमा विपद् जोखिमहरूको पहिचान र मूलयाङ्कन गरिएको थियो ।

(५) योजनाको मस्यौदा तर्जुमा :

विपद् जोखिमहरूको पहिचान र मूल्याङ्कनको आधारमा विपद् तथा जलवायु उत्थानशील योजनाको मस्यौदा तयार गरिएको थियो ।

(६) सुझाव सङ्कलनको लागि कार्यशाला संचालन (तेस्रो कार्यशाला) :

कार्यढाँचाको रुपमा बनाइएको विपद् तथा जलवायु उत्थानशील योजनाको बारेमा छलफल गर्नका निम्ति जाइका परियोजनाको सहयोगमा ललितपुर महानगरपालिकामा तेस्रो कार्यशाला आयोजना गरिएको थियो । यस कार्यशालामा विपद् तथा जलवायु उत्थानशील गतिविधिहरूको प्राथमिकताको बारेमा छलफल गरिएको थियो र आवश्यक सुझावहरू सङ्कलन गरिएको थियो ।

(७) योजनालाई अन्तिम रूप दिइएको :

नगरपालिका तथा कार्यशालाबाट प्राप्त रायसुझाव संलग्न गरी ललितपुर महानगरपालिकाको विपद् तथा जलवायु उत्थानशील योजनालाई अन्तिम रुप दिइयो ।

१-६. योजना कार्यान्वयन रणनीति

(१) योजना अनुमोदन :

क. नगरस्तरीय विपद् व्यवस्थापन समितिले तयार पारेको नगरस्तरीय स्थानीय विपद् तथा जलवायु उत्थानशील योजनाको नगर सभाबाट आवश्यक प्रक्रिया अनुसार अनुमोदन गरिने छ ।

(२) योजनाको मूलप्रवाहिकरण:

क. विपद् तथा जलवायु उत्थानशील गतिविधिहरूलाई प्राथमिकताका आधारमा आवधिक, वार्षिक र अन्य विकास प्रक्रियाहरूमा मूलधारमा ल्याइनेछ ।

ख. अन्य विषयगत संस्थाहरूले क्षेत्रगत योजना बनाउँदा विपद् तथा जलवायु उत्थानशील गतिविधिहरूका निम्ति तिनको प्राथमिकताका आधारमा क्रमिक बजेट छुट्याउनेछन् ।

(३) बजेट व्यवस्थापनः

क. ललितपुर महानगरपालिकाले योजनाद्वारा निर्धारित प्राथमिक गतिविधिहरूको लागि बजेट विनियोजन गर्नेछ ।

ख. जिल्लातह, जिल्ला समन्वय समिति, विषयगत कार्यालय, प्रदेश सरकार, नेपाल रेडक्रस सोसाइटी, राष्ट्रिय तथा अन्तर्राष्ट्रिय गैर–सरकारी संस्थाहरू, तथा दातृ निकायहरुको समन्वय तथा सहयोगमा योजना कार्यान्वयनका लागि बजेटको व्यवस्थापन हुनेछ ।

(४) योजना कार्यान्वयनः

क. नगरस्तरीय विपद् व्यवस्थापन समिति मार्फत ललितपुर महानगरपालिकाको अनुमोदित स्थानीय विपद् तथा जलवायु उत्थानशील योजना कार्यान्वयन कार्यको प्राथमिकीकरण गरिनेछ ।

ख. ललितपुर महानगरपालिकाले विषयगत कार्यालय, समुदाय, संघ–संस्था तथा निजि क्षेत्र, र समुदाय विपद् तथा जलवायु उत्थानशील समितिको सहयोगमा नगरस्तरीय विपद् तथा जलवायु उत्थानशील समितिद्वारा अनुमोदित योजनाको कार्यान्वयन गर्नेछ ।

खण्ड २.

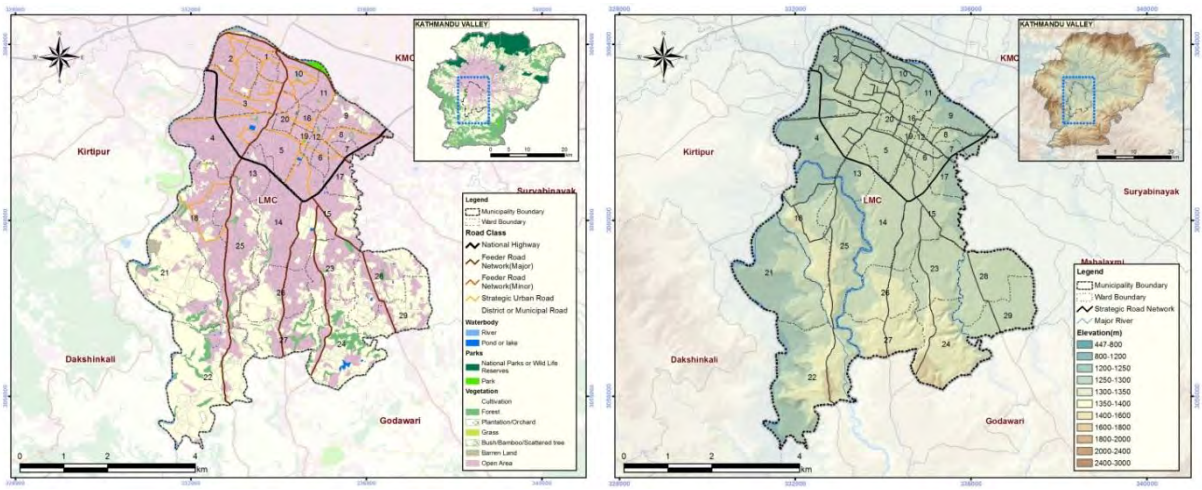
महानगरपालिकाको सामान्य विवरण

२-१. भौतिक अवस्था

(१) स्थलाकृतिक र भौगोलिक अवस्था (Topographic and Geographic conditions)

१) स्थलाकृतिक अवस्था

सामान्यतया कुनै एउटा ठाउँको स्थालाकृति अवस्था त्यहाँको प्राकृतिक विशेषताले निर्धारण गर्दछ । ललितपुर महानगरपालिकाको स्थलाकृतिक अवस्था चित्र २-१ र तालिका २-१ मा देखाइएको छ ।



तथ्याङ्कको श्रोत : (बायाँ) JICA RRNE Project , (दायाँ) UNDP तङ्कक

चित्र २-१ ललितपुर महानगरपालिकाको स्थलाकृत नक्शा (बायाँ) तथा उचाइ वितरण नक्शा (दायाँ)

तालिका २-१ ललितपुर महानगरपालिकाको स्थलाकृत अवस्था

स्थलाकृति		क्षेत्रफल (रोपनी)	%
जलक्षेत्र	नदि	१८.६३	०.५ %
	पोखरी वा ताल	१२.१४	०.३%
पार्क		६.८४	०.२%
वनस्पति	खेती	१,२९१.३१	३५.८%
	वन	१२१.९०	३.४%
	घाँस	०.७४	०.०%
	झाडी \ बाँस \ छरिएका रुखहरू	१८.१२	०.५%
	बाजो जमिन	६७.६९	१.९%
	खुला क्षेत्र	२,०१२.८२	५५.७%
अन्य		६०.६२	१.७%
जम्मा		३,६१०.८१	१००.०%

तथ्याङ्कको श्रोत: JICA RRNE परियोजना

यस महानगरपालिकाको उत्तरी भू-भागमा बस्ती क्षेत्र (built-up area) रहेको छ भने दक्षिणी भू-भाग प्रमुख सडक संजालसँगैको बस्ती बाहेक मुख्य रूपमा खेती गरिने क्षेत्र तथा बनले

ओगटेको छ । ललितपुर महानगरपालिका समुन्द्री सतह देखि १,२०० देखि १,४०० मिटर उचाईमा रहेको छ र यसको दक्षिणी भू-भाग आंशिक रूपमा भिरालो रहेको छ ।

ललितपुर महनगरपालिकाको भू-आकृतिक नक्सा चित्र २-२ मा देख्न सकिन्छ भने काठमाण्डौ उपत्यकाको भू-आकृति वर्गीकरण तालिका २-२ मा र सरोवरबाट बनेको समतल भूमि तालिका २-३ मा देख्न सकिन्छ । ललितपुर महानगरपालिकाको धेरै जसो भू-आकृतिक बनावट T_1 समतल भूमि देखि T_3 समतल भूमिबाट बनेको समतल भूमि (deltaic-lacustrine) ले समेटेको छ । ललितपुर महानगरपालिकाको दक्षिणी भेग उपत्यकाको समतल भूमि र उठेको भूभागहरूबीच कटान भएर सिर्जित क्षेत्र हो । नदी छेउका समतल भू-भागहरूमा नयाँ सतहको श्रृजना भएको पाइएको छ, जसलाइ तालिका २-२ र चित्र २-२ मा देखाइएको छ । पूर्व भौगोलिक समयावधिको काठमाडौंको ताल (Paleo-Kathmandu Lake) को वातावारणीय अवस्थामा यी समतल भू-भागहरू निर्माण भएका थिए । महाभारत पर्वतको उथल-पुथलका कारण १० लाख वर्ष अघि पूर्व भौगोलिक समयावधिको काठमाडौंको ताल (Paleo-Kathmandu Lake) देखा पर्यो । तर, त्यो दस हजार वर्ष अघि सुकेर हराएर गयो । पचास हजार वर्ष अघि देखिको पूर्व भौगोलिक समयावधिको काठमाडौंको ताल (Paleo-Kathmandu Lake) को पानीको सतहको अस्थिरताका कारण T_1 देखि T_3 समतल भूमिका रुपमा बनेको हो ।

T_1 (पाटन) समतल भूमि ललितपुर महानगरपालिकाको उत्तर भागमा फैलिएको छ , T_2 (थिमि) र T_3 (गोकर्ण) समतल भूमि दक्षिण भागमा फैलिएको छ । प्रत्येक समतल भूमि उत्तरतिर हलुका भिरालो परेको छ । T_1 समतल भूमिको उचाई १,३१० मि. देखि १,३३० मि. सम्म रहेको छ , T_2 समतल भूमिको उचाई १,३३० मि. देखि १,३६० मि. सम्म रहेको छ र T_3 समतल भूमिको उचाई १,३८० मि. देखि १,४१० मि.सम्म रहेको छ । चित्र २-२ मा देखाइए अनुसार T_2 समतल भूमिको मध्य भागमा चन्द्रागिरी नामको सक्रिय दरार रहेको छ ।

(Northern topography of city is built-up area and southern part is mainly cultivation area and forest area except the built-up area along major road network. LMC lies at an altitude of around 1,200 m – 1,400m and southern are is partly undulating with steep slope.

The geomorphological map of LMC is shown in Figure 2-2 and geomorphological classification of Kathmandu valley is shown in Table 2-2, and the age and altitude of the deltaic-lacustrine terraces are shown in Table 2-3. The majority of geomorphology in LMC occupies the deltaic-lacustrine terraces as T_1 to T_3. The Southeast part in LMC was resulted in the cutbank formation of the terrace faces and valley plain. Regarding the valley plain along the river, the new fluvial surfaces were formed, which is shown in Table 2-2 and Figure 2-2. The deltaic-lacustrine terraces were formed under the environment of the Paleo-Kathmandu Lake. The Paleo-Kathmandu Lake had appeared by upheaval of Mahabharat Mountain around a million years ago. However, the Paleo-Kathmandu Lake had disappeared around ten thousand years ago. The terraces of T_1 to T_3 are flat surface which were formed from the fluctuation of water level in the Paleo Kathmandu Lake since fifty thousand years ago.

The T_1 (Patan) terrace is distributed in north area, T_2 (Thimi) and T_3 (Gokarna) terrace is distributed in south area of LMC. Each terrace is flat surface with gentle slope to the northern direction. Elevation of T_1 terrace is 1,310 m to 1,330 m, T_2 terrace is 1,330 m to 1,360 m and T_3 terrace is 1,380 m to 1,410 m. There is active fault called Chandragiri fault in the middle of T_2 terrace as shown in red line of Figure 2-2.)

तालिका २-२ काठमाडौं उपत्यकाको भु-आकृतिक वर्गीकरण

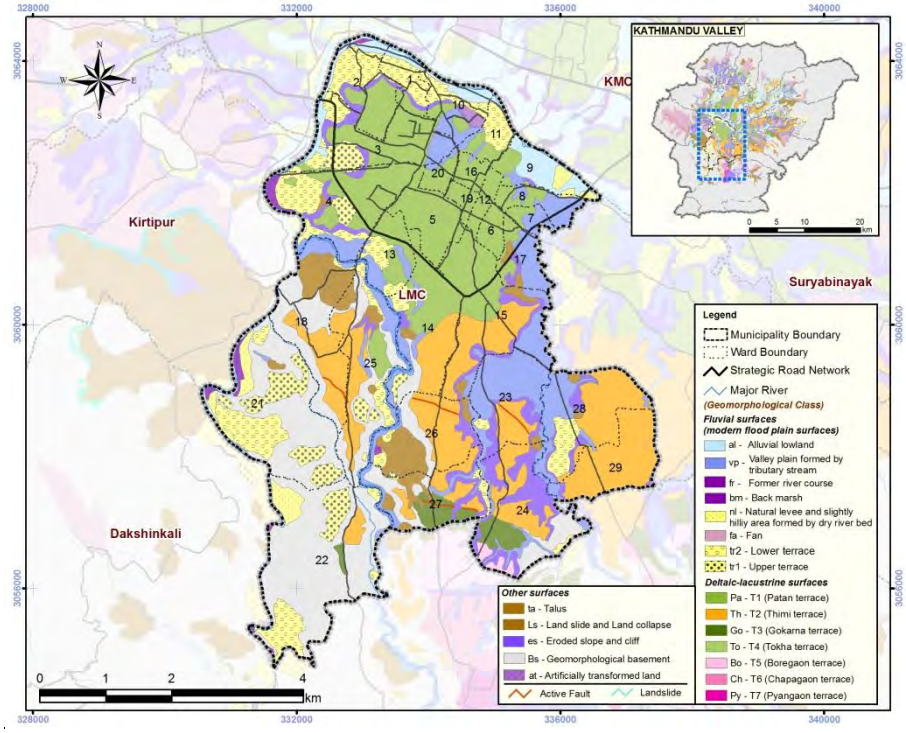
Classification	Detailed classification	Abbrev.	Characteristics
Fluvial surfaces (modern flood plain)	Alluvial lowland	al	Lowland along modern rivers
	Valley plain	vp	Lowland in the narrow valleys
	Former river course	fr	Long and narrow depression
	Back marsh	bm	Marshes between natural levees
	Natural levee	nl	Long-narrow and slightly hilly area
	Alluvial fan	fa	Gentle slope with concentric contours at the exit of valley
	Lower terrace	tr2	Slightly hilly area
	Higher terrace	tr1	Fluvial terraces on the hillside
Deltaic-lacustrine terraces	T1(Patan) terrace	T1	Terrace formed under environment of the Paleo-Kathmandu Lake. The terraces are sub-divided into T1 to T7 depending on the altitudes
	T2(Thimi) terrace	T2	
	T3(Gokarna) terrace	T3	
	T4(Tokha) terrace	T4	
	T5(Boregaon) terrace	T5	
	T6(Chapagaon) terrace	T6	
	T7(Pyangaon) terrace	T7	
Other surfaces	Talus	ta	Relatively steep slope formed by collapse of cliff
	Landslide and slope failure	Ls	Relatively gentle slope formed by sliding of mountainous slope
	Eroded slope and cliff	es	Cliff at the side of terraces
	Geomorphological basement	Bs	Hill and mountainous slope where hard rocks and Kalimati formation expose
	Artificially transformed land	at	Developed land by back on the lowland Flat surface by cutting of terraces

श्रोत: JICA ERAKV परियोजना

तालिका २-३ सरोवरबाट बनेका समतल भूमि (Lacustrine Delta Terraces)को उमेर तथा उचाइ

Terrace	Age of terraces (cal ka years BP)	Altitude of terraces(m above sea level)	
		Northern region	Southern region
T1(Patan)	17-10	1,300 – 1,330	1,310 – 1,330
T2(Thimi)	35-29	1,330 – 1,350	1,330 – 1,360
T3(Gokarna)	>50-38	1,350 – 1,390	1,380 – 1,410
T4(Tokha)	23-17	1,360 – 1,390	-
T5(Boregaon)	>50	-	1,420 – 1,440
T6(Chapagaon)	>50	-	1,440 – 1,460
T7(Pyangaon)	>50	-	1,470 – 1,510

श्रोत: JICA ERAKV Project



श्रोत: JICA ERAKV परियोजना

चित्र २-२ ललितपुर महानगरपालिकाको भौगोलिक नक्शा

२) भौगोलिक अवस्था

ललितपुर महानगरपालिकाको भौगर्भिक स्तरीकरण (geological stratigraphy) तालिका २-४ मा देखाइएको छ । चित्र २-३ ले ललितपुर महानगरपालिकाको भौगर्भिक नक्सा देखाउँदछ । ललितपुर महानगरपालिकाको भूगर्भ दुई प्रकारमा वर्गीकृत छन् – काठमाडौंको घाटी बनावट र सरोवरबाट बनेको समतल भूमि (deltaic-lacustrine terrace) जसलाई तालिका २-३ मा देखाइएको छ ।

काठमाडौंको घाटी बनावट पूर्व भौगोलिक समयावधिको काठमाडौंको ताल (Paleo-Kathmandu Lake) को थिग्रो जमेर बनेको हो र यो बनावट कालिमाटी बनावट र लुकुन्डोल बनावटबाट अलगिएको छ । लुकुन्डोल बनावट ललितपुर महानगरपालिकाको दक्षिण क्षेत्रमा फैलिएको छ र यो सतह पूर्व भौगोलिक समयावधिको काठमाडौंको ताल (Paleo-Kathmandu Lake) को बेलामा थुप्रिएर बनेको हो । लुकुन्डोल बनावटको निक्षेपमा खरानी रंगको , कालो देखि खरानी रंगको असंघतित माटो, बालुवा र रोडा देखिएको छ । कालिमाटी बनावट ललितपुर महानगरपालिकामा विस्तृत रूपमा फैलिएको छ र यो सतह पूर्व भौगोलिक समयावधिको काठमाडौंको ताल (Paleo-Kathmandu Lake) गहिरिदै जाँदा बनेको हो । यस कालिमाटी बनावटमा गाढा खरानी देखि कालो नरम माटो, जैविक माटो र मसिनो बालुवा रहेको छ ।

सरोवरबाट बनेको समतल भूमि (deltaic-lacustrine terrace) पहाडी क्षेत्रमा फैलिएर बसेको छ र T_1, T_2 र T_3 समतल भूमिहरूबाट उचाई अनुसार छुट्टिएको छ । यस सतहमा साना देखि ठूला रोडाहरू पाइन्छ ।

ललितपुर महानगरपालिकाको उत्तर पश्चिम किनारामा Paleozoic देखि Pre-Cambrian

भूगृह उत्पन्न भएको छ । यो भूगृहमा फिलाइट , स्लेट , बालुवा पत्थर र चून पत्थर रहेको छ । T_1 समतल भूमिको बोरिङबाट गरिएको उत्खनन अनुसार यो भूगृह पूर्व-दक्षिणपूर्व दिशातिर चट्टान पर्वतश्रेणीमा कम गहिराईमा रहेको छ ।

(The geological stratigraphy which is distributed in LMC is shown in Table 2-4. Figure 2-3 shows the geological map in LMC. The geology of LMC is categolized into two types which are Kathmandu basin group and deltaic-lacustrine terrace as shown in Table 2-4.

Kathmandu basin group is the sediment deposits of the Paleo-Kathmandu Lake and is separated Kalimati formation and Lukundol formation. The Lukundol formation is distributed south area of LMC and is the layer which was piled up at the lake in the initial period of the Paleo Kathmandu Lake. The facies of Lukundol formation consist of alternate layers with clay of grey from the black to grey, sand and silt. The Kalimati formation is widely distributed in LMC and is the layer which was piled up when the depth of water of Paleo Kathmandu Lake was deepening. The facies of Kalimati formation consist of slightly soft clay from dark grey to black and organic clay.

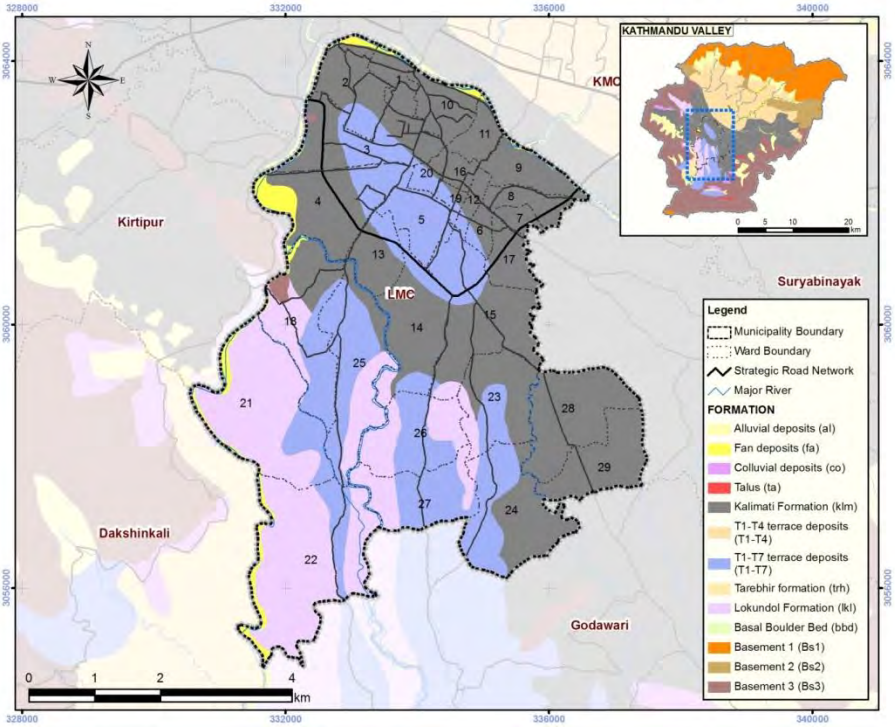
Deltaic-lacustrine terrace is distributed flat surface in the hilly area and is separated T_1, T_2 and T_3 terrace deposits depending on the altitude. It consists of gravel layer which is included sub-rounded to rounded pebbles and cobbles.

The basement from Paleozoic to Pre-Cambrian is cropped out in northwest edge of LMC. The basement consists of phyllite, slate, sandstone and limestone. Basement is presumed a rocky ridge around west-northwest to east-southeast direction and is confirmed in layer of shallow depth by boring exploration in T_1 terrace.)

तालिका २–४ ललितपुर महानगरपालिकाको भौगर्भिक स्तरीकरण (Geological stratigraphy)

Geological age			Stratigraphy		Abbrev.	Facies
Cenozoic	Quaternary	Holocene	Alluvium	Alluvial deposits	al	Clay, sand, gravel
		Pleistocene	Deltaic-lacustrine terrace	T1(Patan) terrace deposits	T1	Sand, sandy clay with sub-rounded to rounded pebbles and cobbles
				T2(Thimi) terrace deposits	T2	
				T3(Gokarna) terrace deposits	T3	
			Kathmandu basin group	Kalimati formation	klm	Dark grey to black clay, organic clay, and fine sand
				Lukundol formation	lkl	Weakly consolidated and laminated clay, silt, and fine sand with granules
Paleozoic to Pre-Cambrian		-	Basement	-	Bs	Phyllite, slate, sandstone, limestone, quartzite

श्रोत: JICA ERAKV परियोजना

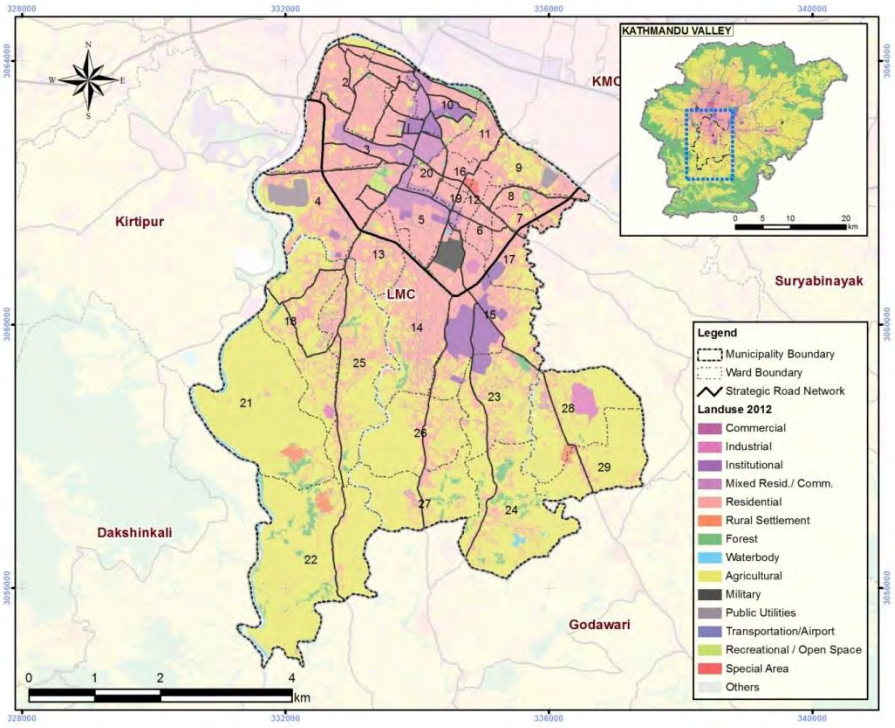


श्रोत: खानी तथा भूगर्भ विभाग, JICA ERAKV परियोजनाद्वारा सम्पादित
नोट: नक्सावारे संकेत (legend) तालिका २-३ मा देखाईएको छ ।

चित्र २-३ ललितपुर महानगरपालिकाको भौगर्भिक नक्शा

(२) भु-उपयोग

ललितपुर महानगरपालिकाले ३५.१ वर्ग कि.मि. क्षेत्र ओगटेको छ । सन् २०१२ को भू–उपयोग तथ्याङ्क (Comprehensive Study of Urban Growth Trend and Forecasting of Land use in the Kathmandu Valley, UNDP, 2012) अनुसार यस नगरपालिकामा करिब ३७.७% कृषि योग्य भूमि रहेको छ भने ४२.२% आवासीय तथा १९.५ % मिश्रित आवासीय/व्यावसायिक (mix-residential/commercial) क्षेत्र रहेको छ । यहाँको बस्ती क्षेत्र (built-up area) सहरको दक्षिणी भागमा रहेको छ जसमा विशेषगरी पाटन क्षेत्र आस-पासमा उच्चतम घना वस्ती रहेको छ जुन विस्तारै उत्तरी भाग तिर पातलिदै गएको छ । उत्तरी भागमा अझ पनि मुख्यतया कृषि योग्य भूमि तथा जङ्गल क्षेत्र रहेको छ । महानगरपालिकाको सबै जसो भू–भागमा विकसित सडकको पहुँच रहेको छ । यहाँ विभिन्न क्षेत्रमा धेरैवटा विकास निर्माणका परियोजनाहरू सञ्चालन भईरहेका छन् ।

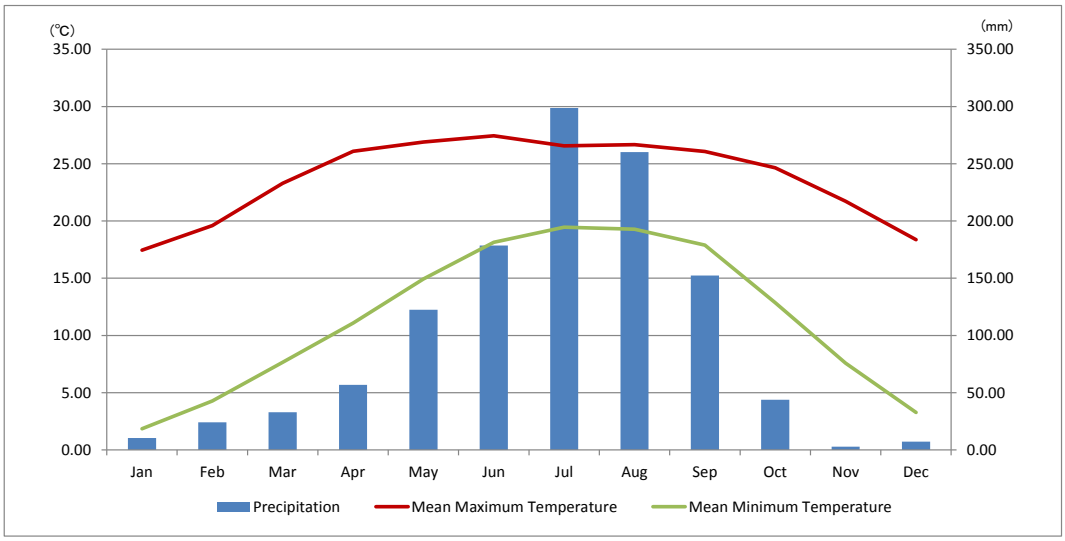


श्रोत: Comprehensive Study of Urban Growth Trend and Forecasting of Land use in the Kathmandu Valley, UNDP, 2012, JICA ERAKV परियोजनाद्वारा सम्पादित

चित्र २-४ भु-उपयोग नक्शा

(३) जलवायुको अवस्था

ललितपुर महानगरपालिकाको जलवायुको अवस्था निम्न रुपमा देखईएको छ। जेठ/अषाढ (June) देखि श्रावण/भाद्र (August) सम्म वर्षाको कुल परिमाण २५०-३०० मि.मि. पाइएको छ। वर्षा याममा बाढी, पहिरो र अन्य हुरी, वर्षा सम्बन्धी विपद्को खतरा बढ्ने गर्दछ। अर्को तर्फ सुख्खा याममा खडेरीको खतरा बढ्ने गर्दछ। जल तथा मौसम विभागको "Observed Climate Trend Analysis of Nepal" अनुसार नेपालको न्यूनतम तापक्रम वर्षा याममा उल्लेखनीय रूपमा बढ्ने प्रवृत्ति देखाउँदछ (जल तथा मौसम विभाग, २०१७)। कुनै पनि मौसममा वर्षाको उल्लेखनीय प्रवृत्ति देखिएको छैन। नेपालको वार्षिक अधिकतम तापक्रमले वर्षा याममा सकाराकत्मक प्रवृत्ति देखाउँदछ (0.056°C/yr)। नेपालको वार्षिक न्यूनतम तापक्रमले पनि बढ्ने प्रवृत्ति देखाउँदछ तर यो धेरै उल्लेखनीय रुपमा बढेको देखिँदैन (0.002°C/yr)। ललितपुर जिल्लाको जलवायु प्रवृत्ति तालिका २-५ मा दिइएको छ।



तथ्याङ्कको श्रोत: जल तथा मौसम विज्ञान विभाग

चित्र २-५ सन् १९९७ देखि २०१६ सम्मको वर्षा र तापक्रम (Khumaltar station)

तालिका २-५ ललितपुर जिल्लाको जलवायू प्रवृत्ति

	Winter		Pre-monsoon		Monsoon		Post-monsoon		Annual	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
Precipitation	0	0.118333	0	0.21	0	-4.94	0	-0.24	+	-4.95
Maximum temperature	***	0.043	***	0.045	***	0.046	***	0.049	***	0.045
Minimum temperature	+	0.014	+	0.013	***	0.019	*	0.013	***	0.017

Extreme climate	Rainy days		Consecutive dry days		Consecutive wet days		Very wet days		Extremely wet days	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
	0	0.0	0	0.2	0	-0.1	0	-0.1	0	0.0
	Warm days		Cool days		Warm spell duration		Warm nights		Cool nights	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
	***	1.1	***	-0.8	**	0.3	***	1.0	0	-0.2
	Cold spell duration									
	α	Trend								
	0	0.0								

नोट Significance (α): * 95% Confidence Level (CL), ** 99% CL and *** 99.9% CL; insignificant at 95% CL: +, 0
तथ्याङ्कको श्रोत: Observed Climate Trend Analysis of Nepal, Department of Hydrology and Meteorology, 2017

२-२. सामाजिक अवस्था

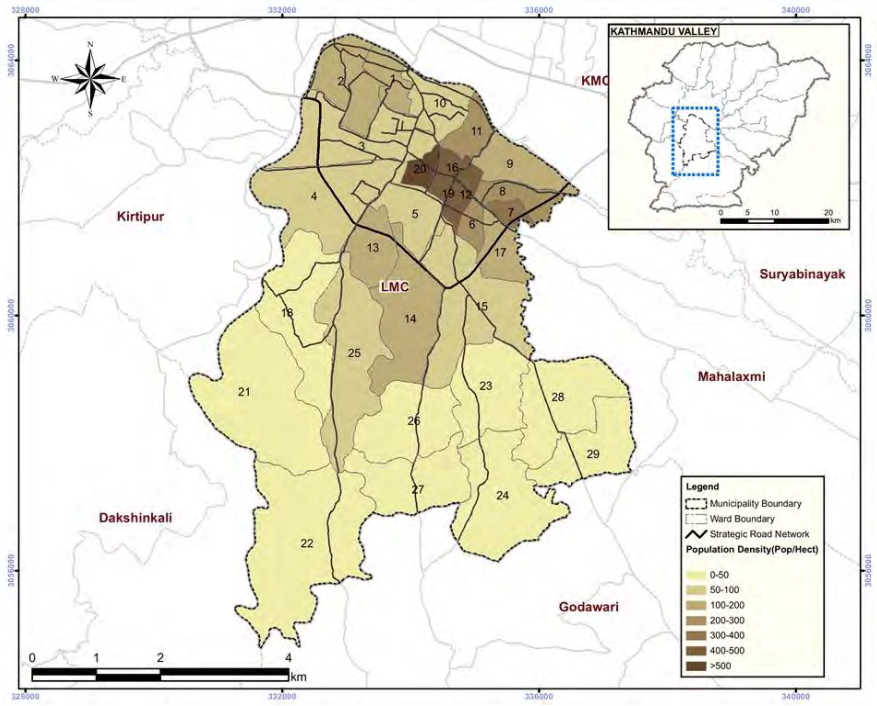
(१) जनसंख्या

जनसंख्याको तथ्याङ्क विपद् तथा जलवायु उत्थानशीलताका लागि महत्वपूर्ण विवरण हो । ललितपुर महानगरपालिकाका लागि जनसंख्याको तथ्याङ्कको प्रमुख श्रोत केन्द्रीय तथ्याङ्क विभागले तयार पारेको जनगणनाको तथ्याङ्क हो । ललितपुर महानगरपालिकाको वडातहको जनसंख्याको विवरण तालिका २-६ तथा जनघनत्व चित्र २-६ मा देखाईए अनुसार रहेको छ । ललितपुर महानगरपालिकाको मध्य क्षेत्रमा रहेको पाटन क्षेत्रमा घना बस्ती रहेको छ ।

तालिका २-६ जनगणना २०६८ बमोजिमको वडा तहको जनसंख्या तथा घरधूरी संख्या

Ward	HH	Total	Male	Female	Ward	HH	Total	Male	Female
1	2,221	8,434	4,665	3,769	16	2,058	10,139	5,007	5,132
2	4,839	19,061	10,369	8,692	17	2,678	10,644	5,551	5,093
3	3,528	14,082	7,315	6,767	18	2,007	8,146	4,112	4,034
4	3,913	15,367	7,580	7,787	19	1,774	7,385	3,779	3,606
5	1,516	6,404	3,152	3,252	20	3,121	12,380	6,342	6,038
6	1,563	6,780	3,474	3,306	21	1,056	4,927	2,452	2,475
7	1,839	7,849	4,075	3,774	22	1,304	5,966	2,981	2,985
8	2,816	11,400	5,958	5,442	23	1,854	7,002	3,645	3,357
9	3,484	13,908	7,385	6,523	24	1,324	5,676	2,790	2,886
10	1,729	6,554	3,508	3,046	25	2,996	11,575	5,823	5,752
11	2,460	10,109	5,403	4,706	26	1,377	5,813	2,834	2,979
12	2,352	10,349	5,301	5,048	27	1,020	4,279	2,128	2,151
13	3,772	14,867	7,400	7,467	28	1,667	6,577	3,315	3,262
14	5,438	21,232	10,518	10,714	29	1,070	4,159	2,063	2,096
15	3,480	13,858	6,999	6,859	Total	70,256	284,922	145,924	138,998

श्रोत: जनगणना २०६८, केन्द्रिय तथ्याङ्क विभाग



तथ्याङ्को श्रोत: जनगणना २०६८, केन्द्रिय तथ्याङ्क विभाग

चित्र २-६ जनगणना २०६८ बमोजिमको जनघनत्व नक्शा

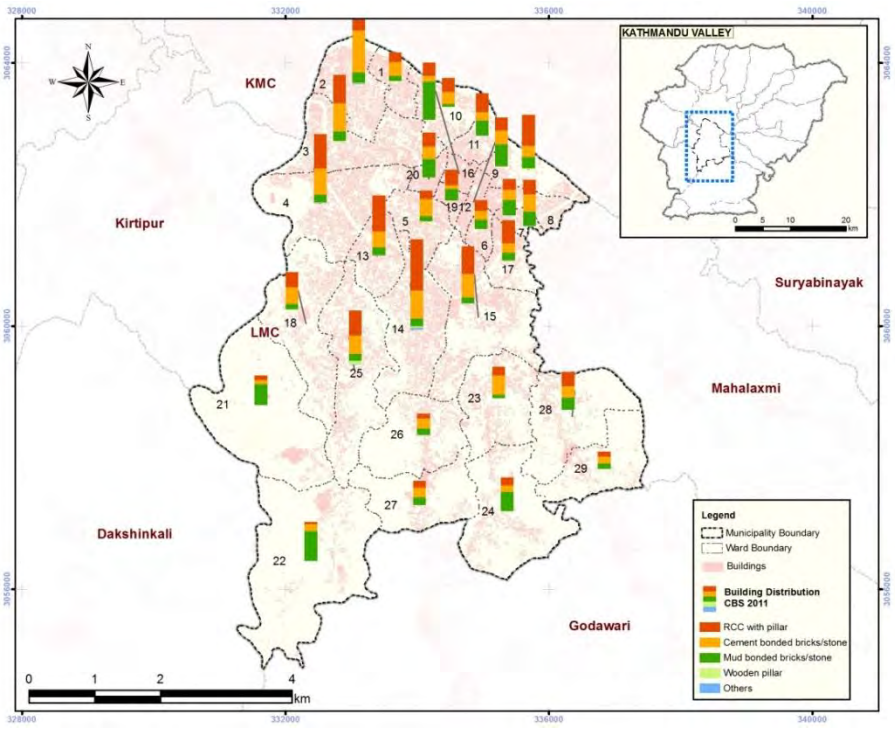
(२) भवन

भवनको संरचनात्मक विवरण विपद् तथा जलवायु उत्थानशीलताका लागि अर्को महत्वपूर्ण तथ्याङ्क हो । ललितपुर महानगरपालिकाका लागि वडातहको भवनहरुको तथ्याङ्क तालिका २-७ तथा चित्र २-७ मा देखाईए अनुसार रहेको छ । महानगरपालिकाकको दक्षिणी भागमा माटो र इटा/ढुङ्गाले बनेका भवनको अनुपात तुलनात्मक रूपमा धेरै पाइएको छ ।

तालिका २-७ वि.सं २०६८ मा भवनको जगकाको प्रकारको आधारमा घरधूरी संख्या

Ward	MBBS	CBBS	RCCP	WP	Oth
1	136	384	268	6	5
2	287	1170	671	22	17
3	266	774	798	22	5
4	216	723	966	8	4
5	144	476	236	5	1
6	259	246	300	3	0
7	420	287	302	10	3
8	404	478	401	8	4
9	311	306	870	28	3
10	80	330	387	5	2
11	418	234	525	3	2
12	606	389	359	3	2
13	213	438	1006	12	8
14	213	783	1423	36	53
15	160	658	767	10	8
16	1053	170	372	0	0
17	221	260	642	3	4
18	155	451	429	7	7
19	314	103	431	3	0
20	510	339	392	0	1
21	570	116	131	2	1
22	822	197	58	0	4
23	102	529	254	5	5
24	535	191	227	0	0
25	197	513	690	97	11
26	180	276	140	3	1
27	216	271	194	0	4
28	336	314	402	2	7
29	152	195	136	5	0
Total	5363	3925	4498	127	45

श्रोत: [क्षतिको तथ्याङ्क] ललितपुर उप-महानगरपलिका, [जनगणना २०६८] केन्द्रिय तथ्याङ्क विभाग
MBBS: Mud bonded bricks/stone, CBBS: Cement bonded bricks/stone, RCCP: RCC with pillar, WP: Wooden pillar
Oth: Not stated



तथ्याङ्को श्रोत: जनगणना २०६८, केन्द्रिय तथ्याङ्क विभाग

चित्र २-७ वि.सं २०६८ मा भवनको जगकाको प्रकारको आधारमा घरधूरी संख्या

खण्ड ३.

प्रकोप, संकटासन्नता, क्षमता तथा जोखिम विश्लेषण

३-१. ऐतिहासिक विपद्हरुको घटनाक्रम

ललितपुर महानगरपालिकामा विगतमा घटेका विपद्हरुले निम्त्याएको जटिल परिणामहरुको बारेमा सूचना सङ्कलन गर्नका लागि त्यहाँको ऐतिहासिक विपद्हरुको घटनाक्रम तयार पारिएको छ । यसबाट हामीले विपद्को प्रवृत्ति र बारम्बारताको अवस्था बारे सूचना पाउन सक्छौ । ललितपुर महानगरपालिकाको ऐतिहासिक विपद्हरुको घटनाक्रम तालिका २-१ मा देखाइए अनुसार रहेको छ ।

तालिका ३-१ विगत ३० वर्षको ऐतिहासिक विपद्हरुको घटनाक्रम

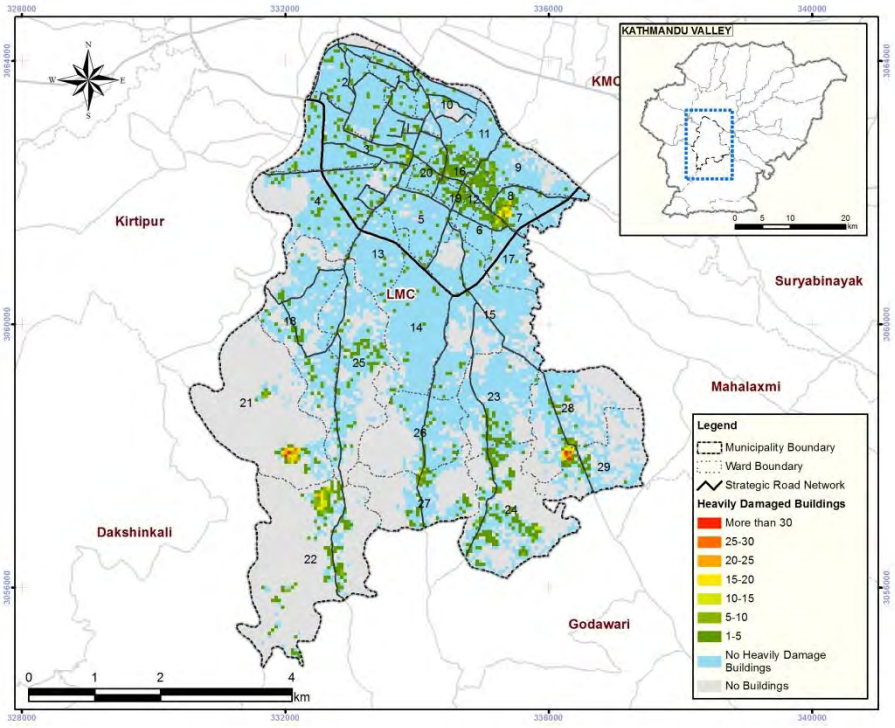
S/N	Disaster Type	Year (Approximately)	Cause, Causal Factor	Damage Descriotion
1	Flood	2046 (1989/90 AD)	-	-
2	Drought	2047 (1990/91 AD)	-	Socil loss, economic loss and damage on natural condition
3	Drought	2049 (1992 AD)	Deforestation	Damage on natural condition
4	Flood	2049 (1992/93 AD)	-	Building damage, social loss, economic loss
5	Epidemic	2054 (1997 AD)	Lack of purified drinking water	3-4 dead
6	Fire	2054 (1997 AD)	High dense settlement	Economic loss
7	Epidemic	2055 (1998/99 AD)	-	1 injured, 1 dead
8	Fire	2058 (2001/02 AD)	-	-
9	Flood	2061 (2004/05 AD)	-	1 dead
10	Fire	2070 (2013/14 AD)	Load shedding	Social loss and economic loss
11	Epidemic	2072 (2015 AD)	-	1 injured, 1 dead
12	Earthquake	2072 (2015 AD)	Huge 7.8 magnitude (USGS) earthquake	Around 2,300 private houses collapsed completely, around 5,000 buildings damaged partially 49 dead, 128 injured and, social, economic loss
13	Fire	2072 (2015/16 AD)	Many old buildings	9 houses damaged, 4 injured
14	Heavy rainfall	2072 (2015/16 AD)	-	Building damage, 1 dead
15	Fire	2072 (2015/16 AD)	Gas cylinder explosion	3 dead and economic loss
16	Fire	2072 (2015/16 AD)	Electric pole fell down	-
17	Fire	2073 (2016/ 17 AD)	-	Social loss and economic loss
18	Flood, Landslide	2074 (2017 AD)	River encroachment	-

द्रष्टव्य : उक्त जानकारी ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमाका लागि आयोजित कार्यशालामा आधारित छ ।
श्रोत: JICA ERAKV परियोजना

तालिका ३-१ मा उल्लेख भएका अतिरिक्त बाढी, पहिरो, आगलागी र सडक दुर्घटना जस्ता विपद्हरू लगभग हरेक वर्ष घटेका छन् ।

हालैका वर्षहरूमा सबै भन्दा बढी क्षति गरेको विपद् २०७२ को गोरखा भूकम्प हो, जसले

गर्दा साविकको ललितपुर उपमहानगरपालिकामा ४९ जनाको मृत्यु भयो र १२८ जना घाइते भए । लगभग २३,०० निजी घरहरू पूरै भत्किएको थियो र लगभग ५,००० भवनहरूमा आंशिक क्षति भएको थियो । विद्यालय र अस्पताल जस्ता सार्वजनिक भवनहरूमा पनि प्रभाव देखिएको थियो । विश्व सम्पदा सूचीमा रहेका सांस्कृतिक सम्पदाहरूमा पनि गम्भीर क्षति देखिएको थियो । चित्र ३-१ मा ललितपुर महानगरपालिकामा गोरखा भूकम्पले भवनहरूमा पुऱ्याएको क्षति देखाइएको छ ।



श्रोत: JICA ERAKV परियोजना

चित्र ३-१ २०७४ सालको गोरखा भूकम्पका कारण भारी क्षति भएका घरहरु

३-२. प्रकोप पहिचान तथा स्तरीकरण

ललितपुर महानगरपालिकामा विगतका विपद्हरुको आधारमा खतराको स्थिति निम्त्याएर जन–धन तथा वातावरणीय क्षतिको जोखिम निम्त्याउन सक्ने विभिन्न किसिमका सम्भावित विपद्हरु रहेका छन् । स्थानीय विपद् तथा जलवायु उत्थानशील योजना निर्माणका लागि आयोजना गरिएको कार्यशालामा गरिएको छलफलका आधारमा, विपद् पहिचान तथा स्तरीकरण तालिका ३-२ मा संक्षेपीकरण गरिएको छ, जसमा वडाहरूमा गरिएको स्तरीकरणका आधारमा प्राथमिकतामा रहेका ६ वटा प्रमुख विपद्हरु देखाइएका छन् । भूकम्पीय विपद्लाई सबैभन्दा विनाशकारी विपद्का रुपमा प्राथमिकीकरण गरिएको छ ।

तालिका ३-२ ललितपुर महानगरपालिकाको सम्भावित विपद्

* पहिलो प्राथमिकतामा रहेको विपद् : भूकम्प

प्रकोप	बाढी	सडक दुर्घटना	आगलागी	पहिरो	खडेरी
बाढी					
सडक दुर्घटना					
आगलागी					
पहिरो					
खडेरी					
स्तर	दोस्रो	तेस्रो	चौथो	पाँचौ	छैठौँ

द्रष्टव्य : उक्त जानकारी ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमाका लागि आयोजित कार्यशालामा आधारित छ। विगतका विपद्हरू अनुसार अन्य सम्भावित विपद्हरू : महामारी , ग्यास सिलिन्डर पड्कने , चट्याङ्ग , वन्य जन्तु हमला , हुरीबतास र असिना ।

श्रोत: JICA ERAKV परियोजना

३-३. प्रकोप विश्लेषण

महानगरपालिका तथा त्यहाँको समुदायमा जोखिम सिर्जना गर्न सक्ने प्रकोपका कारक तत्वहरुलाई बुझ्ने माध्यम नै प्रकोप विश्लेषण हो । एउटा क्षेत्र र त्यहाँको समुदायमा विद्यमान प्रकोपको विशेषता अन्य क्षेत्र र समुदायको भन्दा फरक हुन्छ । प्रकोपको विशेषताको विश्लेषण गर्दा एउटा निश्चित स्थानको जोखिम तत्वहरुको पहिचान गरी विभिन्न तहगत हिसाबले गरिन्छ ।

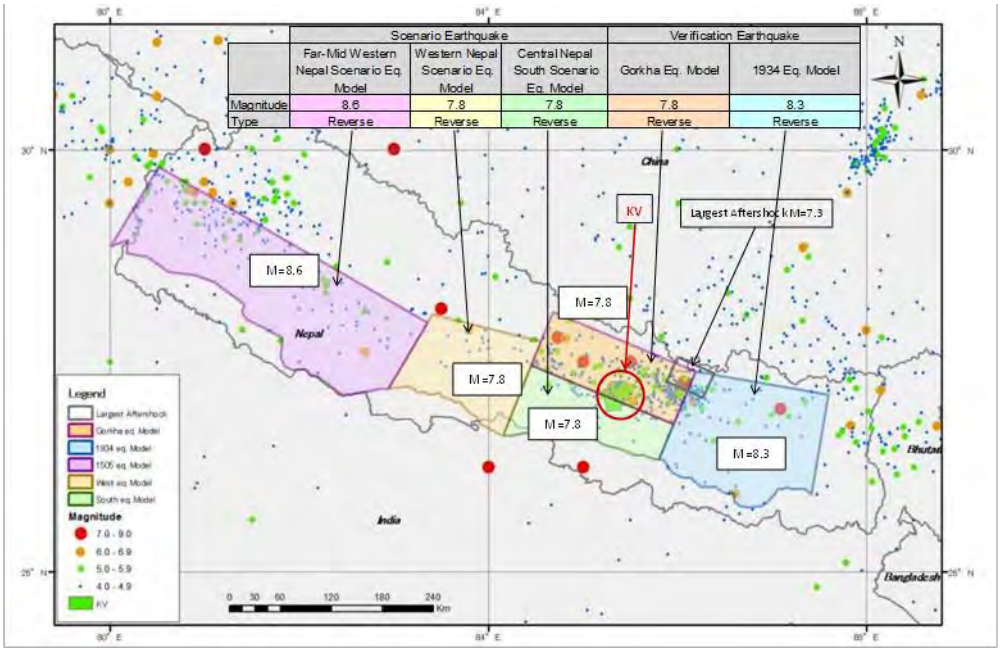
प्रकोप भनेको सम्भावित क्षति निम्त्याउन सक्ने जैविक विशेषता, जलवायु विज्ञान, भूगोल, भूविज्ञान, समाज, अर्थतन्त्र, राजनीति, संस्कृति वा प्रविधिको अवस्था हो । विपद्को सामना गर्ने क्षमता नभएको क्षेत्रमा यस्तो सम्भाव्यता धेरै नै जोखिमपूर्ण हुन सक्छ । तसर्थ त्यस्ता क्षेत्रहरुमा सम्भावित प्रकोपको तहको बारेमा विश्लेषण गर्न आवश्यक हुन्छ ।

(१) भूकम्प

JICA द्वारा संचालित ERAKV परियोजनाले ललितपुर महानगरपालिका सहित सम्पूर्ण काठमाण्डौ उपत्यकाका लागि प्रकोप तथा जोखिम विश्लेषण कार्यान्वायन गरेको छ । JICA ERAKV परियोजनाले सञ्चालन गरेको प्रकोप विश्लेषण निम्न अनुसार रहेको छ ।

१) परिदृश्य भूकम्प निर्धारण

परिदृश्य भूकम्प निर्धारणको आधार तथा ऐतिहासिक भूकम्पहरु सँगको सम्बन्ध चित्र ३-२ मा देखाइए अनुसार रहेको छ । परिदृश्य भूकम्पहरु अर्को भूकम्पको भविष्यवाणी होइन । यसलाई विगतका भूकम्पहरुको सूचना तथा तथ्याङ्कहरू, हालको भूकम्पीय गतिविधि, चलायमान चट्टान (tectonics) तथा सक्रिय दरार (active faults), तथा राष्ट्रिय तथा अन्तर्राष्ट्रिय विज्ञहरुसंगको परामर्शको आधारमा निर्धारण गरिएको छ ।



श्रोत: JICA ERAKV परियोजना

चित्र ३-२ परिदृश्य भूकम्प दरार नमुना (Scenario Earthquake Fault Model)

जमिनको गतिलाई आँकलनका लागि सुदूर मध्य-पश्चिम भूकम्प (Far-Mid Western Nepal Scenario Earthquake) / पश्चिम नेपाल परिदृश्य भूकम्प (Western Nepal Scenario Earthquake) का लागि attenuation formula सोझै प्रयोग गरिएको हो भने, मध्य दक्षिण नेपाल परिदृश्य भूकम्प (Central Nepal South Scenario Earthquake) मा गोरखा भूकम्पमा जमिनको अधिकतम प्रवेग (peak ground acceleration, PGA) attenuation formula बाट हिसाब गरिए भन्दा धेरै कम मापन (रेकर्ड) भएका कारणलाई आधार मानी मध्य दक्षिण नेपाल परिदृश्य भूकम्प (Central Nepal South Scenario Earthquake) लाई १/३, १/२, २/३, र १/१ मा खण्डीकृत परिमार्जन गरिएको हो । जोखिम मूल्याङ्कनको नतिजाको वास्तविकतालाई मध्य नजर गर्दा, जोखिम विश्लेषणका लागि मध्य दक्षिण नेपाल परिदृश्य भूकम्प (Central Nepal South Scenario Earthquake) को जमिनको हल्लाई परिमार्जित खण्डीकरण गरी (modification factor) attenuation formula बाट आउने जमिनको हल्लाई १/३, १/२ र २/३ तपसिलको तालिका ३-३ मा देखाइए बमोजिम लिइएको छ ।

(For ground motion estimation, attenuation formula was directly used for Far-Mid Western Nepal Scenario Earthquake and Western Nepal Scenario Earthquake, while four modification factors: 1/3, 1/2, 2/3 and 1/1, were applied to estimate peak ground acceleration (PGA) from the attenuation formula for Central Nepal South Scenario Earthquake because recorded PGA from Gorkha Earthquake was much smaller than that calculated from the attenuation. Since considering the reality of risk assessment results, ground motion from Western Nepal Scenario Earthquake shall be directly used for risk assessment and, ground motions with modification factor of 1/3, 1/2 and 2/3 from Central Nepal South Scenario Earthquake shall be used for risk assessment as shown in Table 3-3.)

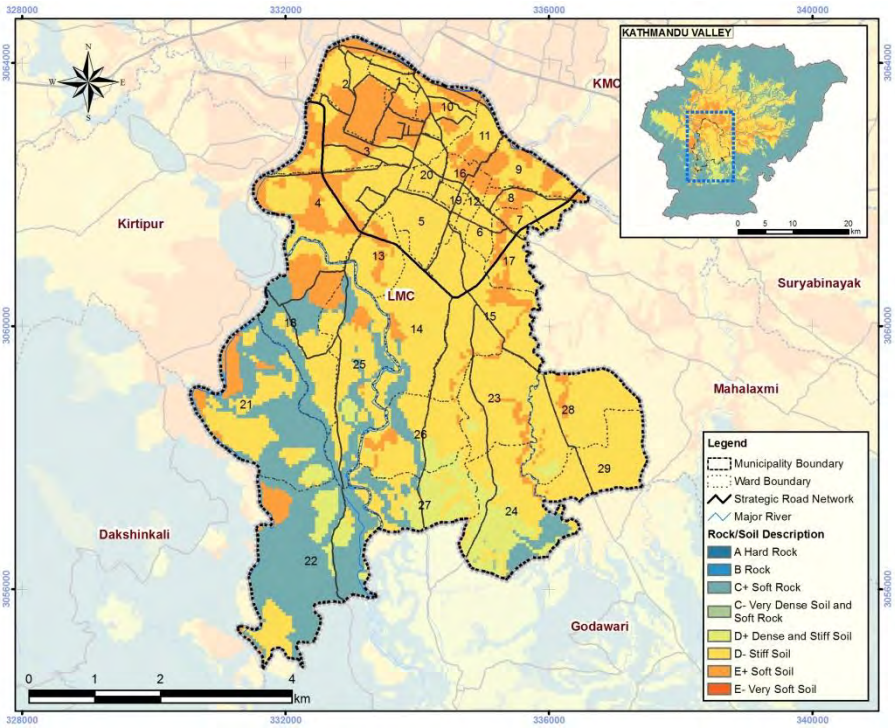
तालिका ३-३ जोखिम विश्लेषणका लागि परिदृश्य भूकम्पका कारण जमिनको गति (Scenario ground motion for risk assessment)

Scenario Earthquake	Modification Factor for PGA	Remarks
Far-Mid Western Nepal Scenario Earthquake	1/1 (Normal)	Not for risk assessment
Western Nepal Scenario Earthquake	1/1 (Normal)	For risk assessment (WN)
Central Nepal South Scenario Earthquake	1/1 (Normal)	Not for risk assessment
	1/3 (cover max. main shock)	For risk assessment (CNS-1)
	1/2 (average of aftershock)	For risk assessment (CNS-2)
	2/3 (cover max. aftershocks)	For risk assessment (CNS-3)

श्रोत: JICA ERAKV परियोजना

२) प्रकोप विश्लेषण

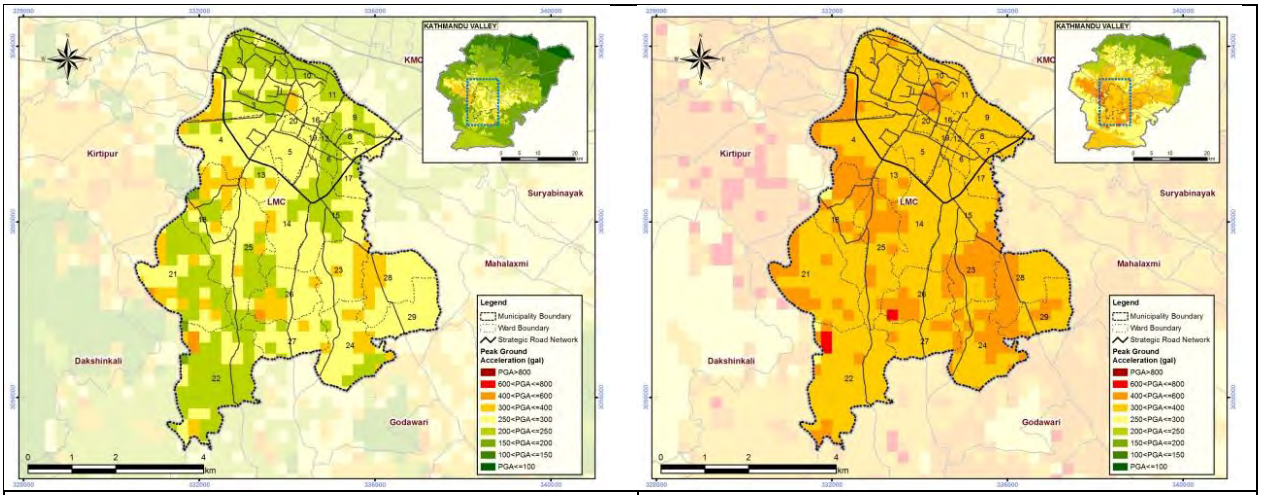
भूकम्पको प्रकोप विश्लेषण अनुसार सतह भन्दा ३० मि. को गहिराईमा कजभबच धबखभ खभयिअष्तथ को औसत मूल्याङ्कन (AVS30) तल दिइएको छ । यो मूल्याङ्कन भौगर्भिक एकाइ (geomorphological unit), चित्र ३-३) र विभिन्न सर्वेक्षणको परिणाममा आधारित छ र यसले हरेक स्थानको जमिनको नरमता देखाउँछ ।



श्रोत: JICA ERAKV परियोजना

चित्र ३-३ भौगर्भिक एकाइ (geomorphological unit) मा आधारित AVS30 नक्शा

चित्र ३-३ को आधारमा PGA (Peak Ground Acceleration) र MMI (Modified Mercalli Intensity) गणना गरिएको छ । CNS-1 र CNS-2 को परिणामहरू निम्न रुपमा देखाइएका छन् :

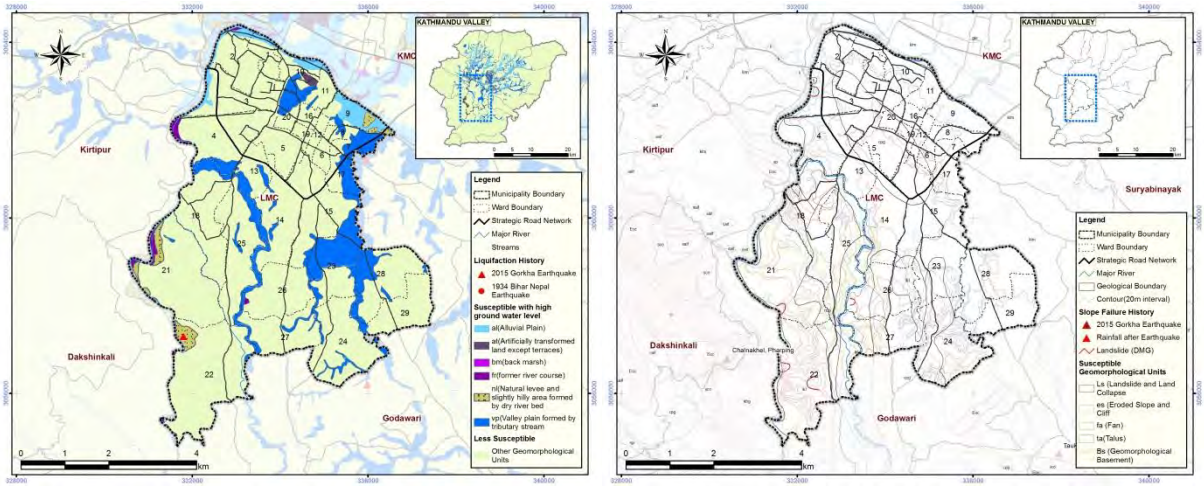


PGA (CNS-1)	PGA (CNS-2)
MMI (CNS-1)	MMI (CNS-2)

श्रोत: JICA ERAKV परियोजना

चित्र ३–४ परिदृश्य भूकम्पको PGA (माथि) र MMI (तल)

साथै, भूकम्प पश्चात त्यस भूकम्पका कारण प्रेरित तरलीकरण (liquefaction) तथा पहिरो (slope failure) हुने सम्भावना रहेको हुन्छ । JICA ERAKV परियोजनाले अनेक सर्वेक्षणका परिणामहरूको आधारमा तरलीकरण (liquefaction) तथा पहिरो (slope failure) को सम्भावनाको विश्लेषण गरेको छ । यसका नतिजाका नक्शाहरू चित्र ३–५ मा देखाइएका छन् :

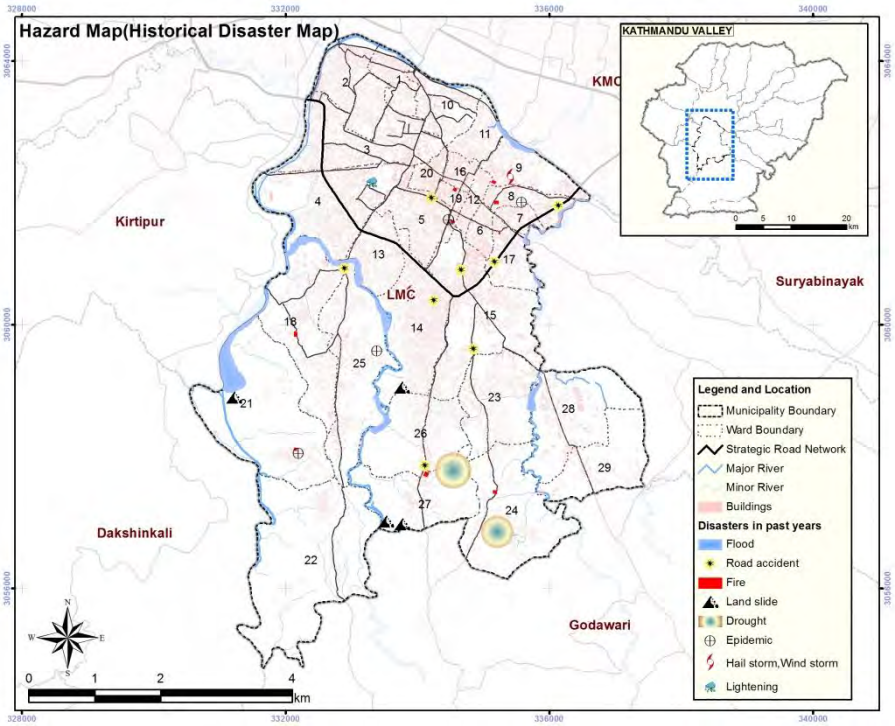


श्रोत: JICA ERAKV परियोजना

चित्र ३-५ तरलीकरण सम्भावना नक्शा (बायाँ) र भूकम्पका कारण प्रेरित पहिरो सम्भावना नक्शा (दायाँ)

३) अन्य विपद्हरू

ललितपुर महानगरपालिकामा स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका लागि सञ्चालन गरिएको कार्यशालाको नतिजाहरूका आधारमा ऐतिहासिक विपद्हरूलाई हेरी भूकम्प वाहेकका प्रकोपहरूको कारणले उत्पन्न हुने विपद्हरूलाइ चित्र ३-६ मा संक्षेपीकरण गरिएको छ । घना वस्ती र जनसंख्या भएको उत्तरी भागमा रहेको पाटन लगायतको सहरको केन्द्रिय क्षेत्रमा सडक दुर्घटना र आगलागी भएको पाइन्छ र साथै नगरपालिकाको दक्षिणी भागमा अनावृष्टि र पहिरो गएको पाइन्छ ।



द्रष्टव्य : उक्त जानकारी ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमाका लागि आयोजित कार्यशालामा आधारित छ ।

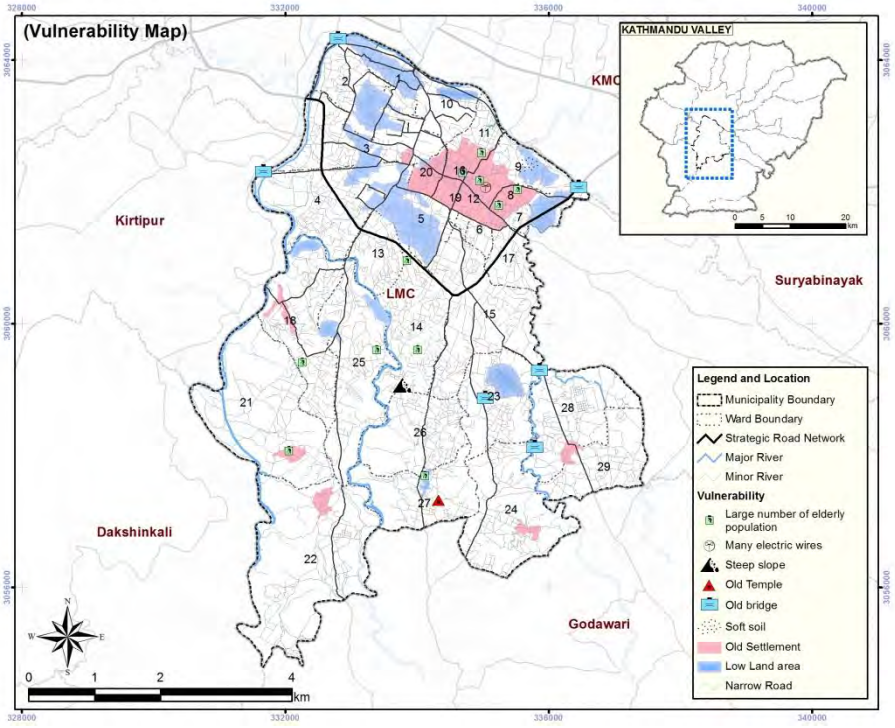
श्रोत: JICA ERAKV परियोजना

चित्र ३-६ भूकम्प वाहेकका विपद्हरूको लागि प्रकोप नक्शा

३-४. सङ्कटासन्नता विश्लेषण

कुनै पनि समुदाय, प्रणली अथवा सम्पत्तिलाई हानिकारक प्रभाव पार्न सक्ने विशेषता अथवा अवस्थालाई नै सङ्कटासन्नता भनेर बुझ्न सकिन्छ (UNISDR, 2009) । भवनहरूको नराम्रो डिजाइन र निर्माण, सम्पत्तिको अपर्याप्त सुरक्षा जस्ता विभिन्न भौतिक, सामाजिक, आर्थिक तथा वातावरणीय कारकहरूबाट उत्पन्न हुन सक्ने सङ्कटासन्नताका धेरै पक्षहरू छन् । समुदाय र समय अनुसार सङ्कटासन्नतामा विविधता हुन सक्छ ।

ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमाका लागि आयोजित कार्यशालामा आधारित सङ्कटासन्नता विश्लेषणको नतिजा चित्र ३-७ मा देखाइएको छ । मुख्यतया पाटन क्षेत्रमा पुराना वस्ती रहेको पाइन्छ तथा खोला क्षेत्रको वरपर तल्लो समथल भाग (lowland area) रहेको छ जहाँ वाढी र डुवानको जोखिम रहेको छ ।



द्रष्टव्य : उक्त जानकारी ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमाका लागि आयोजित कार्यशालामा आधारित छ ।
श्रोत: JICA ERAKV परियोजना

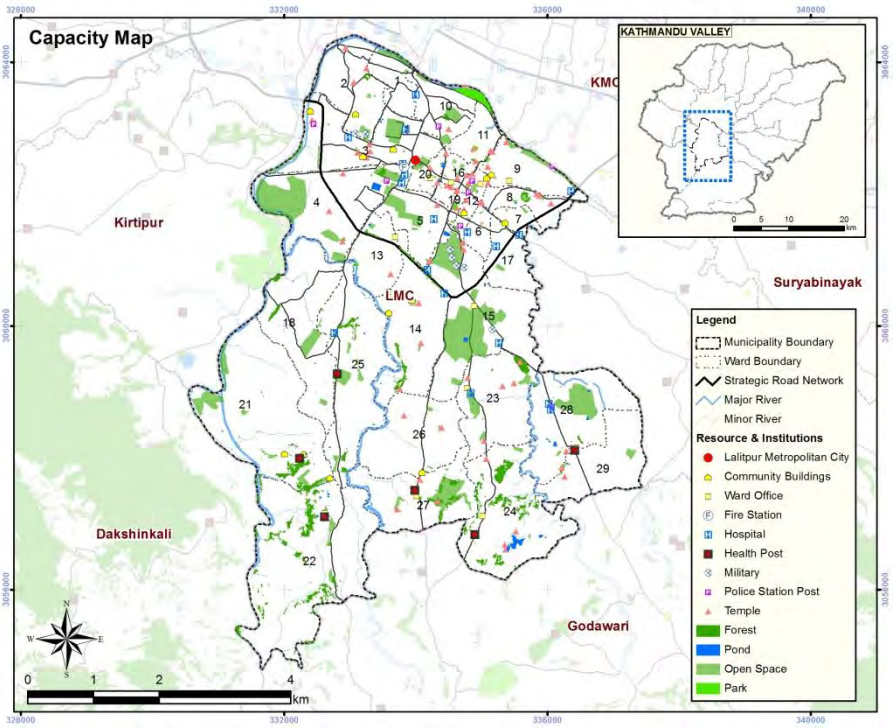
चित्र ३-७ सङ्कटासन्नता नक्शा

३-५. क्षमता विश्लेषण

समुदाय, समाज अथवा संस्थामा उद्देश्यहरू प्राप्त गर्नमा प्रयोग गर्न सकिने उपलब्ध सबै सामर्थ्य, विशेषता र श्रोतहरूलाई क्षमता भनेर बुझ्न सकिन्छ (UNISDR, 2009) । भौतिक पूर्वाधारहरू, संस्थाहरू, समस्या सामना गर्न सक्ने सामाजिक क्षमता,

तथा सामाजिक सम्बन्ध, नेतृत्व र व्यवस्थापन जस्ता मानवीय ज्ञान, सीप र सामुहिक विशेषताहरू क्षमताका स्वरूप हुन् ।

ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमाका लागि आयोजित कार्यशालाका आधारमा क्षमता विश्लेषणको नतिजा चित्र ३-८ मा देखाइएको छ । यी कारकहरू स्थिर रहँदैनन् र यसलाई भविष्यमा विपद् जोखिम न्यूनीकरणको लागि सुधार गर्दै लानु पर्छ ।



द्रष्टव्य : यस जानकारी ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका लागि आयोजित कार्यशाला तथा JICA RRNE Project बाट लिइएको जानकारीमा आधारित छ ।
श्रोत: JICA ERAKV परियोजना

चित्र ३-८ क्षमता नक्शा

३-६. जोखिम पहिचान तथा विश्लेषण

(१) भूकम्प

१) जोखिम विश्लेषणका विषयवस्तुहरू

भूकम्पीय प्रकोप विश्लेषण र संरचनात्मक तथा/वा सामाजिक सङ्कटासन्नताको आधारमा जोखिम मूल्याङ्कन कार्यान्वयन गरिएको छ । विपद्को अवस्थामा संरचनात्मक सङ्कटासन्नताका कारण पूर्वाधार तथा भवनमा क्षति हुन्छ भने मानवीय क्षतिको जोखिम तथा पर्यावरणीय प्रभाव सामाजिक सङ्कटासन्नताका परिणाम हुन् । सङ्कलित तथ्याङ्क, जोखिम मूल्याङ्कन तथा damage function लाई आधार मानेर हरेक परिदृश्य भूकम्पका कारण हुने क्षति मूल्याङ्कन गरिएको छ ।

भूकम्पीय विपद्का लागि जोखिम मूल्याङ्कन तल उल्लेखित विषयवस्तु तथा भूकम्प गएको समयलाई आधार मानेर कार्यान्वयन गरिएको छ ।

तालिका ३-४ भूकम्प जाने समय तथा तदनुसारको जोखिम विश्लेषणका विषयवस्तूहरु (Earthquake Occurrence Scenes and Corresponding Risk Assessment)

Year	Scene	Building	Infrastructure / Lifeline	Human Casualty	Economic Loss
2016	Night	○	○	○	○
	Weekday noon			○	
	Weekend afternoon			○	
2030	Extrapolation	○	-	○	-
	Seismic Stren.	○		○	

श्रोत: JICA ERAKV परियोजना

२) जोखिम विश्लेषणका नतिजाहरू

जेखिम विश्लेषणका नतिजाहरू र जोखिम नक्शाका सारांश तालिका ३-५, मा दिइएको छ । साथै JICA परियोजनाले गरेको जोखिम विश्लेषणका निम्न पूर्वशर्तहरू रहेका छन् ।

१. परिदृश्य भूकम्प अर्को भूकम्पको भविष्यवाणी होइन ।

२. परिदृश्य भूकम्पहरुका आधारमा काठमाण्डौ उपत्यकाको प्रकोप तथा जोखिमको विश्लेषण गरिएको छ, जसका नतिजाहरू नीति तथा योजना निर्माण लगायतका विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका प्रयासहरुलाई प्रभावकारी बनाउन प्रयोग गर्न सकिन्छ ।

३. जोखिम विश्लेषण हाल उपलब्ध तथ्याङ्क तथा सूचनाहरुका आधार मानिएको छ ।

तालिका ३–५ जोखिम विश्लेषणका नतिजाहरूको सारांश

Category		Physical damage				Economic loss (mil. NPR)*1			
		Scenario earthquake				Scenario earthquake			
		WN	CNS-1	CNS-2	CNS-3	WN	CNS-1	CNS-2	CNS-3
Building (2016) (Total building 52821)	Heavy damage (EMS DL4&5)	2,737	9,603	19,030	26,694	15,861.0	57,355.0	107,349.0	145,934.0
		5.2%	18.2%	36.0%	50.5%				
	Moderate damage (EMS DL3)	2,564	6,277	8,391	8,434				
		4.9%	11.9%	15.9%	16.0%				
	Slight damage (EMS DL2)	5,255	9,322	9,540	8,031				
		9.9%	17.6%	18.1%	15.2%				
Building (2030, EMS DL4&5) (Total building 68126)*2	Extrapolation	3,457	12,362	24,595	34,543				
		5.1%	18.1%	36.1%	50.7%				
	Case-1	3,032	11,384	23,245	33,102				
		12.3%	7.9%	5.5%	4.2%				
	Case-2	1,575	9,065	20,975	31,175				
		54.4%	26.7%	14.7%	9.8%				
	Case-3	1,381	7,842	18,454	28,000				
		60.1%	36.6%	25.0%	18.9%				
	Case-4	1,734	7,865	18,197	27,726				
		49.8%	36.4%	26.0%	19.7%				
	Case-5	1,199	6,359	15,977	25,322				
		65.3%	48.6%	35.0%	26.7%				
School (Total building 780)	Heavy	33	132	269	380	2,902.0	8,985.0	15,727.0	20,470.0
		4.2%	16.9%	34.5%	48.7%				
	Moderate	36	91	122	124				
		4.6%	11.7%	15.6%	15.9%				
	Slight	80	143	147	125				
		10.3%	18.3%	18.8%	16.0%				
Health facility (Total building 70)	Heavy	3	11	23	34	4,130.1	11,788.6	24,906.6	33,679.1
		4.3%	15.7%	32.9%	48.6%				
	Moderate	3	8	11	12				
		4.3%	11.4%	15.7%	17.1%				
	Slight	6	12	13	11				
		8.6%	17.1%	18.6%	15.7%				
Government building (Total building 107)	Heavy	6	18	36	51	733.2	2,644.8	4,718.3	6,226.4
		5.6%	16.8%	33.6%	47.7%				
	Moderate	5	12	16	17				
		4.7%	11.2%	15.0%	15.9%				
	Slight	11	18	19	17				
		10.3%	16.8%	17.8%	15.9%				
Road*3 (Total length 534)	Length by landslide (km)	0.0	0.0	0.0	6.3	0.0	137.4	204.8	228.3
		0.0%	0.0%	0.0%	1.2%				
	Length by liquefaction (km)	0.0	24.1	47.2	60.8				
		0.0%	4.5%	8.8%	11.4%				
Bridge (7 bridges assessed)*4	Heavy	0	0	1	2	37.7	46.1	60.4	85.1
		0.0%	0.0%	14.3%	28.6%				
	Moderate	0	2	1	0				
		0.0%	28.6%	14.3%	0.0%				
	Slight	2	0	0	0				
		28.6%	0.0%	0.0%	0.0%				
Water supply (Existing) (Total length 213 km)	Damage points	184	444	791	1159	6.8	16.4	29.3	42.9
	Damage ratio (point/km)	0.86	2.08	3.72	5.44				
Water supply (Planned) (Total length 204 km)	Damage points	40	92	165	242	1.5	3.4	6.1	8.9
	Damage ratio (point/km)	0.2	0.5	0.8	1.2				
Sewage (Total length 172km)	Damage Length (km)	0.7	1.5	1.8	3.2	11.0	25.0	33.0	50.1
		0.4%	0.9%	1.1%	1.8%				
Power distribution (Total pole 27814)	Pole broken	171	739	1,598	2,324	2.4	10.4	22.5	32.7
		0.6%	2.7%	5.7%	8.4%				
Mobile BTS tower (Total tower 140)	Tower damage	5	28	66	98	9.5	53.2	125.4	186.2
		3.6%	20.0%	47.1%	70.0%				

Human casualty (Population: 2016: Night & Weekend afternoon - 321841 ,WKDY Noon - 357240, 2030 - 415525)				
	Scenario earthquake			
	WN	CNS-1	CNS-2	CNS-3
Night (Weekday and weekend)				
Death	321	1,364	3,136	4,810
	0.10%	0.42%	0.97%	1.49%
Injured	1,257	5,341	12,281	18,838
	0.39%	1.66%	3.82%	5.85%
Evacuee	30,437	91,975	160,202	205,929
	9.46%	28.58%	49.78%	63.98%
Weekday (noon, 12:00)				
Death	301	1,308	3,050	4,710
	0.08%	0.37%	0.85%	1.32%
Injured	1,180	5,124	11,946	18,447
	0.33%	1.43%	3.34%	5.16%
Evacuee	32,127	99,030	174,468	225,554
	8.99%	27.72%	48.84%	63.14%
Weekend (afternoon, 18:00)				
Death	225	955	2195	3367
	0.07%	0.30%	0.68%	1.05%
Injured	880	3,739	8,597	13,187
	0.27%	1.16%	2.67%	4.10%
Evacuee	30,534	92,384	161,142	207,372
	9.49%	28.70%	50.07%	64.43%
Death	404	1,761	4,076	6,264
	0.10%	0.42%	0.98%	1.51%
Death	352	1,600	3,796	5,920
	0.08%	9.1%	6.9%	5.5%
Death	181	1,284	3,450	5,605
	55.2%	27.1%	15.4%	10.5%
Death	148	1,028	2,833	4,741
	63.4%	41.6%	30.5%	24.3%
Death	209	1,185	3,212	5,371
	48.3%	32.7%	21.2%	14.3%
Death	150	999	2,929	5,083
	62.9%	43.3%	28.1%	18.9%
Death	57	272	643	986
	0.05%	0.25%	0.58%	0.89%
Injured	223	1,065	2,518	3,861
	0.20%	0.97%	2.28%	3.50%

Caution

1. Scenario Earthquake are not the prediction of next earthquake
2. Based on Scenario earthquakes, hazard and risk are assessed for Kathmandu valley to utilize for the purpose of policy making and planning, and others for effective disaster risk reduction and management efforts.
3. Risk Assessment was carried out based on the available data at present.

Note:

*1 Economic loss is the direct loss due to the damage of building, infrastructure and lifeline, calculated by the necessary construction or repair cost.

*2 The building damage of 2030 accounts for heavy damage only. The ratio of each case is the reduction ratio with respect to that of extrapolation.

Extrapolation: The composition of the structure type of 2030 is assumed as same as that of 2016.

Case-1: Buildings increased from 2016 to 2030 are assumed masonry with cement mortar and RC engineered only. The ratio of masonry and RC is assumed as same as that at the time of 2016.

Case-2: 1) Same as Case-1, 2) All of the existing masonry building are assumed to change to masonry with cement mortar.

Case-3: 1) Same as Case-2, 2) All of the existing RC non-engineered building are assumed to change to RC engineered.

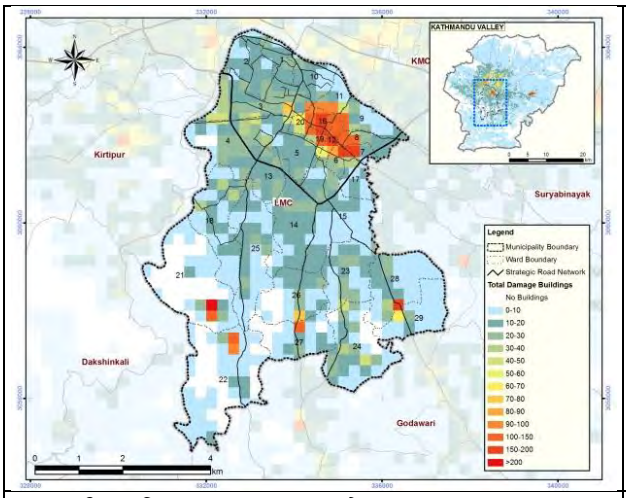
Case-4: 1) 50% of increased new masonry buildings are changed to RC engineered, 2) 50% of existing masonry buildings at 2016 are assumed be reconstructed to RC Engineered, 3) 30% of existing non-engineered RC buildings are assumed be reconstructed to RC engineered.

Case-5: 1) 70% of increased new masonry buildings are changed to RC engineered, 2) 70% of existing masonry buildings at 2016 are assumed be reconstructed to RC Engineered, 3) 50% of existing non-engineered RC buildings are assumed be reconstructed to RC engineered.

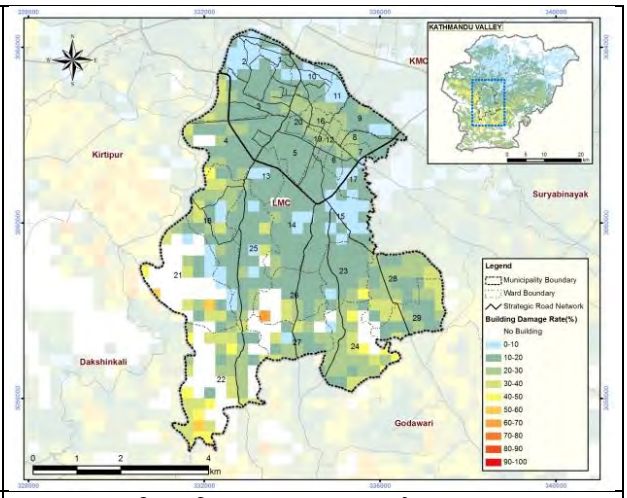
*3 The damage length of road means the road length which located in the high liquefaction and landslide potential area, not the damage length which will happen in the scenario earthquakes.

*4 There are a total of 145 bridges and, among them, 45 of RC multi span bridges were quantitatively assessed for each scenario. The remaining single span and multi span masonry bridges were qualitatively assessed from the point view of seismic performance without relating to scenario earthquakes.

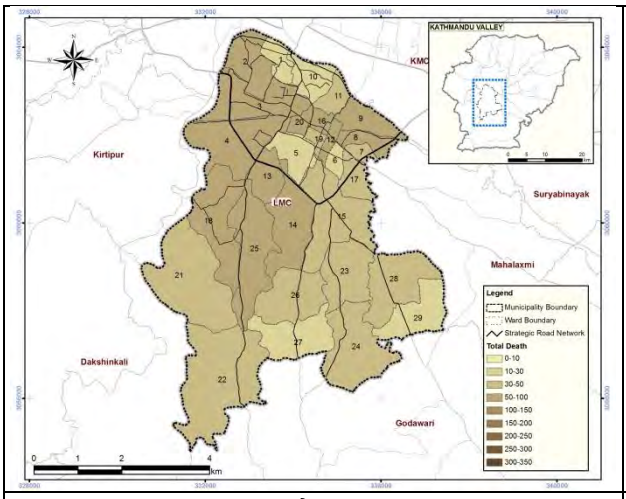
श्रोत: JICA ERAKV परियोजना



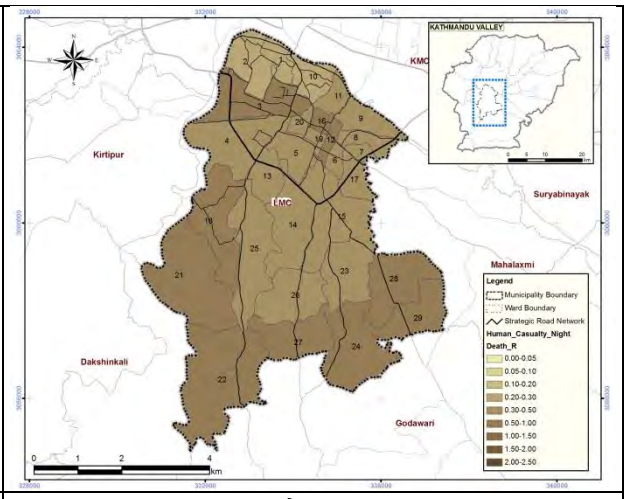
भारी क्षति भएका भवनको संख्या (CNS-1)



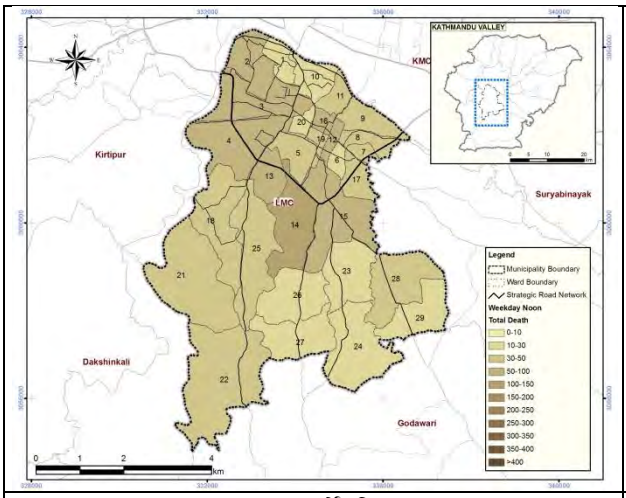
भारी क्षति भएका भवनको अनुपात (CNS-1)



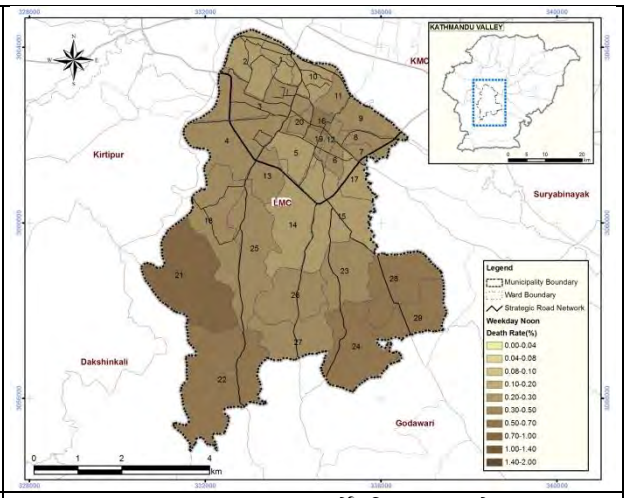
सन् २०१६ मा रातको समयमा मृत्यु संख्या (CNS-1)



सन् २०१६ मा रातको समयमा मृत्यु अनुपात (CNS-1)



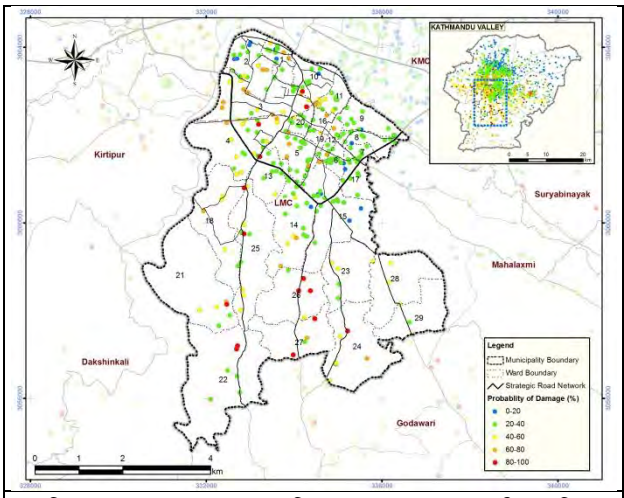
सन् २०१६ मा काम गर्ने दिनमा मृत्यु संख्या (CNS-1)



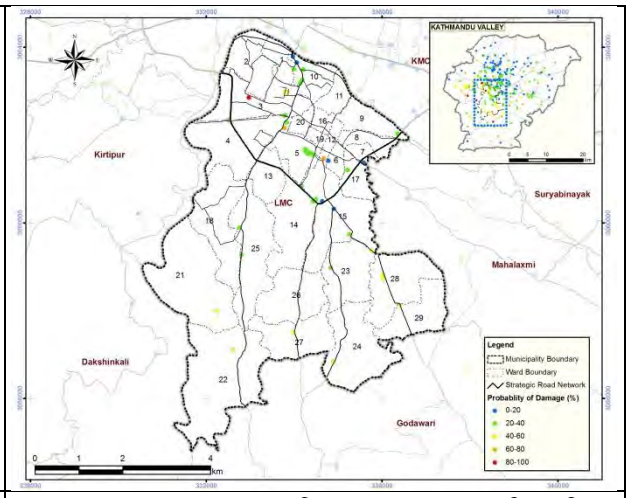
सन् २०१६ मा काम गर्ने दिनमा हुने मृत्यु अनुपात (CNS-1)

श्रोत: JICA ERAKV परियोजना

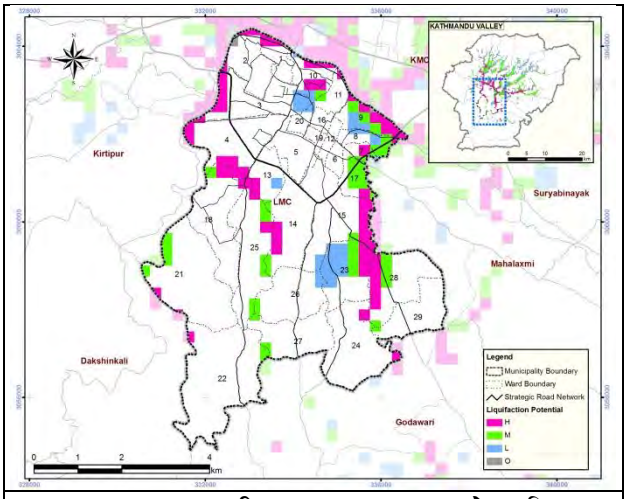
चित्र ३-९ जोखिम विश्लेषणको नतिजा (१)



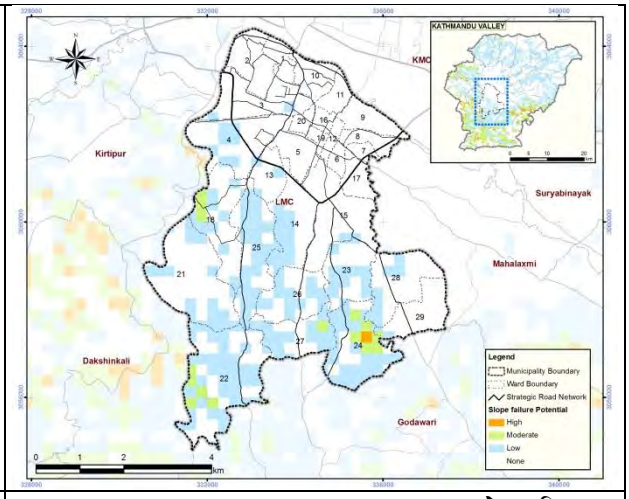
विद्यालय भवनमा क्षति (CNS-2), भारी क्षति हुने सम्भावना (Damage Level 4+5 by EMS-98)



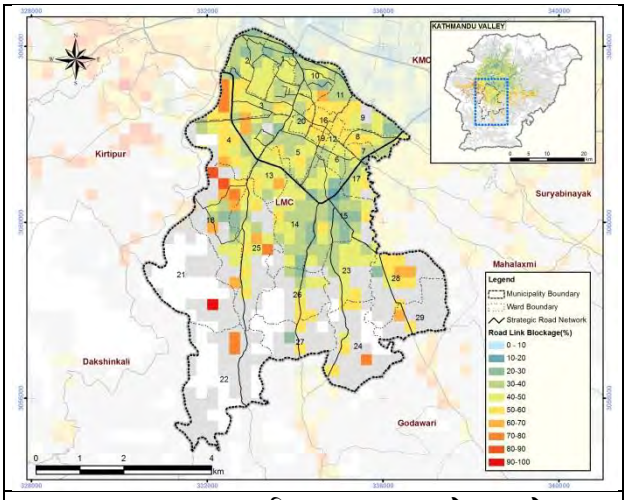
अस्पताल भवनमा क्षति (CNS-2), भारी क्षति हुने सम्भावना (Damage Level 4+5 by EMS-98)



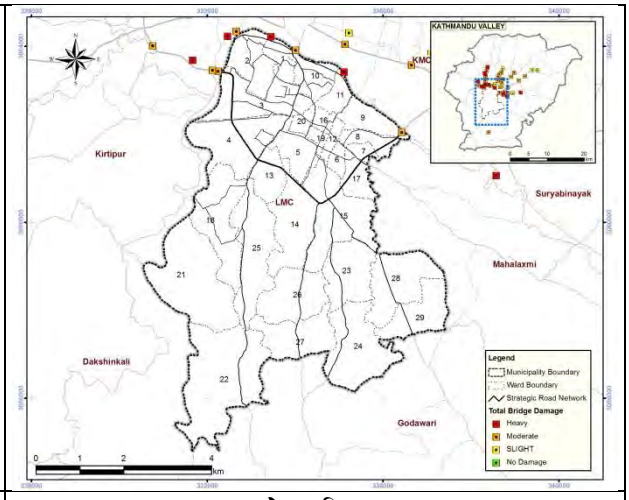
सडकमा तरलीकरणबाट हुन सक्ने क्षति (CNS-2)



सडकमा slope failure बाट हुन सक्ने क्षति (CNS-2)



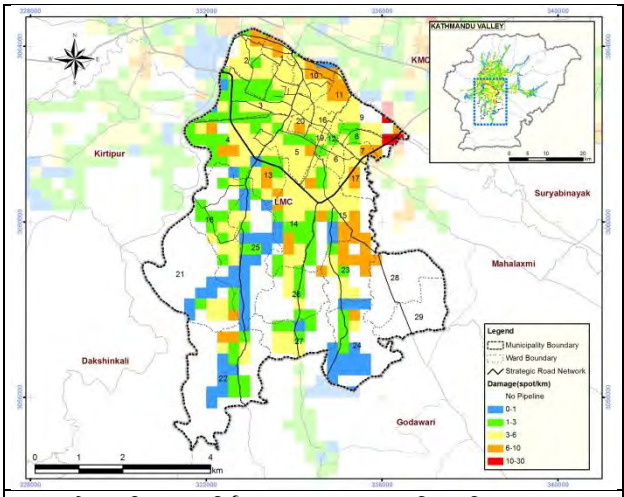
सडकमा भवन क्षतिबाट हुन सक्ने अवरोध (CNS-2)



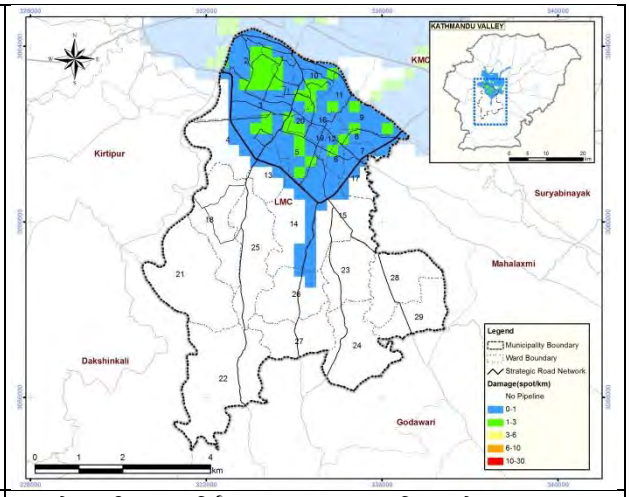
पुलमा हुने क्षति (CNS-2)

श्रोत: JICA ERAKV परियोजना

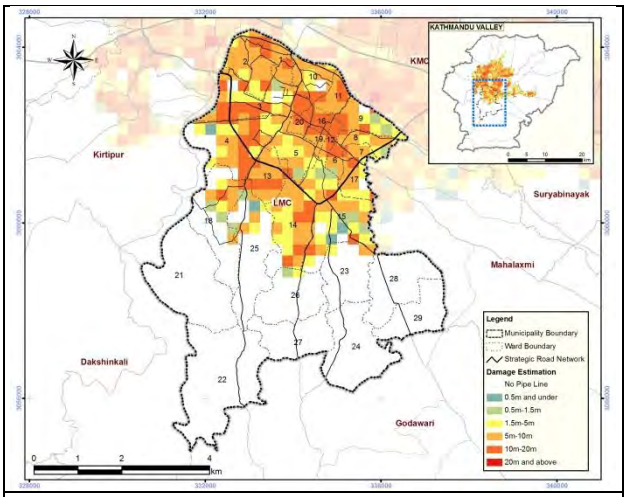
चित्र ३-१० जोखिम विश्लेषणको नतिजा (२)



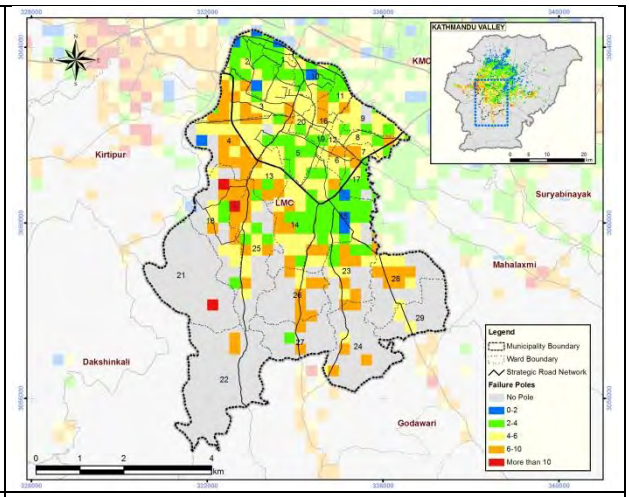
खानेपानी आपूर्ति सञ्जालमा क्षति (विद्यमान) (CNS-2)



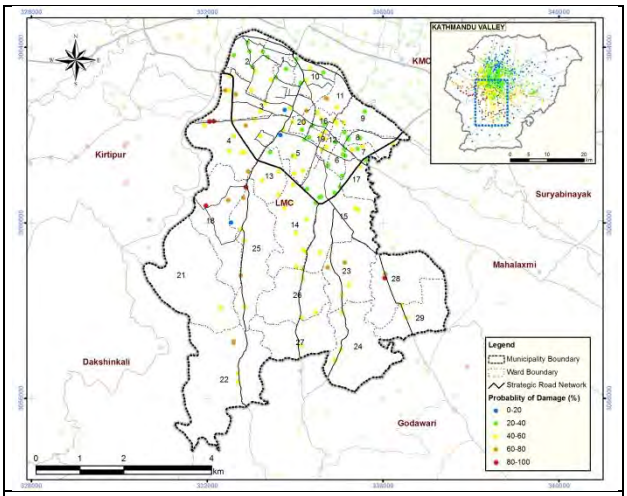
खानेपानी आपूर्ति सञ्जालमा क्षति (योजना बद्ध) (CNS-2)



ढल निकास सञ्जालमा क्षति (CNS-2)



बिजुली पोलमा क्षति (CNS-2)



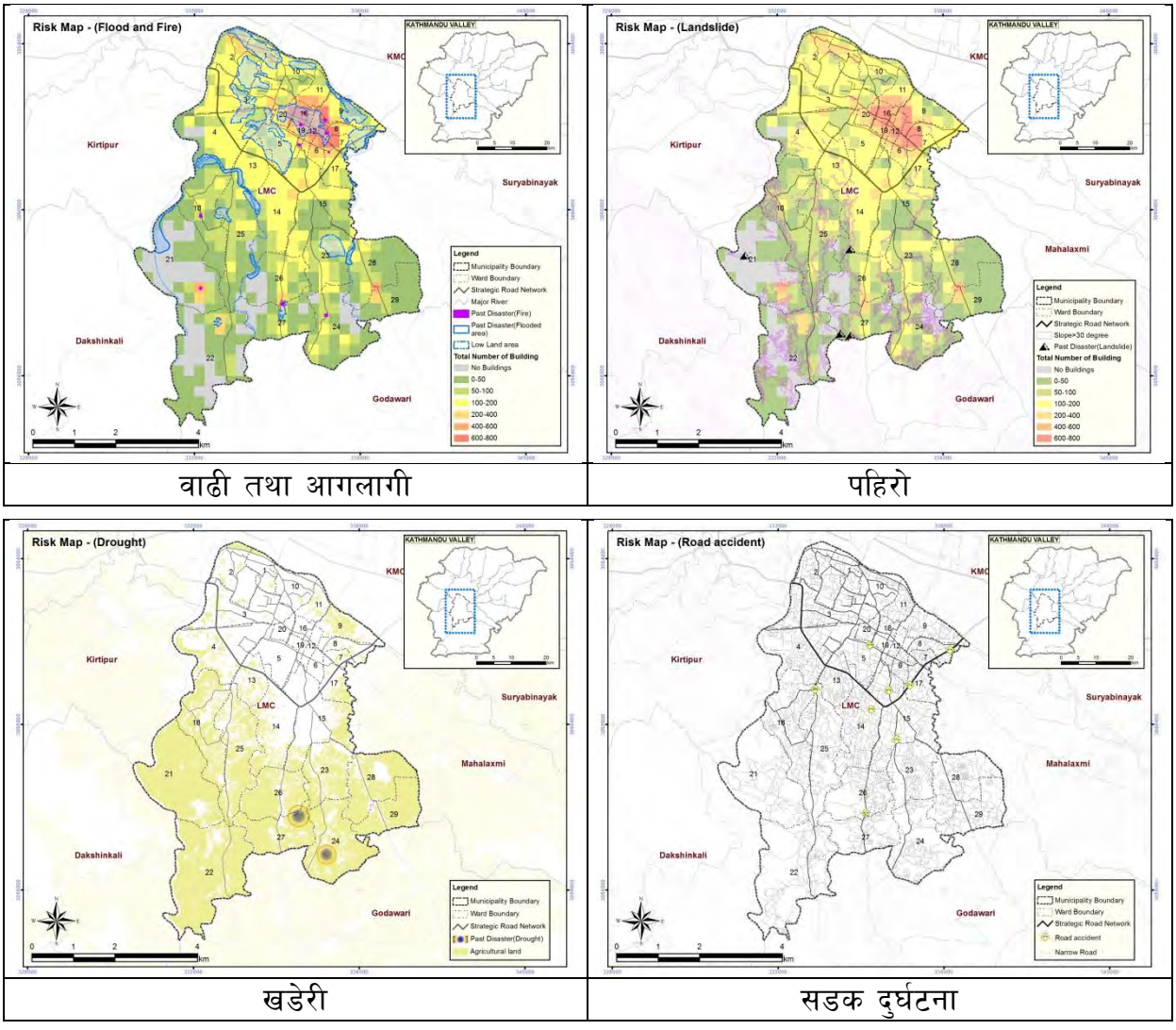
मोबाइल BTS टावरमा क्षति (CNS-2)

श्रोत: JICA ERAKV परियोजना

चित्र ३-११ जोखिम विश्लेषणको नतिजा (३)

(२) अन्य विपद्हरू

चित्र ३-१२ मा देखाइएको क्षतिको अनावरणलाई ध्यान दिनको लागि प्रकोप , संकटमसन्नता र क्षमता विश्लेषण तथा बस्ती विकसित क्षेत्र जस्ता भू–उपयोग अवस्थाहरूको अध्ययनबाट भूकम्प बाहेकका अन्य विपद्हरूको पहिचान गरिएको छ । उत्तरी भू–भागको पाटन लगायतको घना वस्ती र जनसंख्या भएको सहरको केन्द्रिय क्षेत्र समथल क्षेत्र (lowland area) भएकाले वाढी र साथै आगलागीको उच्च जोखिम रहेको पाइन्छ । अर्कोतर्फ, दक्षिणी क्षेत्र खडेरी तथा पहिरोका कारण उच्च जोखिममा रहेको छ।



वाढी तथा आगलागी	पहिरो
खडेरी	सडक दुर्घटना

द्रष्टव्य : उक्त जानकारी ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको तर्जुमाका लागि आयोजित कार्यशालामा आधारित छ ।
श्रोत: JICA ERAKV परियोजन

चित्र ३-१२ जोखिम नक्शा

खण्ड ४.

स्थानीय विपद् तथा जलवायु उत्थानशील नीति

४-१. दीर्घकालीन सोच तथा लक्ष्य

ललितपुर महानगरपालिकाको विपद् तथा जलवायु उत्थानशील योजनाको दीर्घकालीन सोच यस प्रकार रहेको छ :

विपद् उत्थानशील तथा सुरक्षित महानगर

Disaster Resilient and Safe Metropolitan

ललितपुर महानगरपालिकाको विपद् तथा जलवायु उत्थानशील योजनाको लक्ष्य यस प्रकार छ :

१. सर्वसाधारणको जीवन रक्षाका लागि सबैमा भवन संहिता, निर्माण मापदण्ड, भू-उपयोग योजना र अन्य नीतिहरु अपनाई भूकम्प प्रतिरोधी घर निर्माणमा प्रोत्साहन

२. योजनाबद्ध, एकीकृत, समन्वित तथा बिस्तृत रुपमा विपद् प्रतिरोधात्मक र अल्पीकरण, पूर्वतयारी, आकस्मिक प्रतिकार्य, पुनर्स्थापना र पुनर्निर्माणका गतिबिधिहरु कार्यान्वयन गर्ने क्षमता तथा चेतना अभिवृद्धि

३. विपद् तथा जलवायु उत्थानशीलताका गतिविधिहरु विकास निर्माणका कार्यसँगै मूलधारमा ल्याई विपद्बाट सुरक्षित भइ बाँच्न पाउने अधिकार सुनिश्चित गर्नु

- ललितपुर महानगरपालिकाको नगर प्रमुखको सन्देश -

विपद् तथा जलवायु उत्थानशीलताको लागि आधारभूत सिद्धान्त

ललितपुर महानगरपालिकाले विभिन्न विपद्हरू भोगिसकेको छ । २०७२ सालको गोरखा भूकम्पका कारण यस नगरपालिकामा ४९ जनाको मृत्यु , १२८ जना गम्भीर घाइते र २,३०० निजी घरहरू पूर्ण रुपमा क्षति भएको थियो । उक्त भूकम्प गएको २ वर्ष बितिसकेको भएता पनि हामीले उक्त विपद्बाट पाएको दु:खकष्टलाई नबिर्सि विपद् जोखिम न्यूनीकरण र व्यवस्थापनको संस्कृति निर्माण गर्दै लैजानु अत्यन्त महत्वपूर्ण छ ।

नेपालमा ठूला भूकम्पहरू समय–समयमा गइरहन्छन् र भूकम्पको जोखिम भविष्यमा अझै पनि छ ।

JICA ERAKV (The Project for Assessment of Earthquake Disaster Risk Assessment for Kathmandu Valley) परियोजनाद्वारा सञ्चालन गरिएको जोखिम विश्लेषणको नतिजा हेर्दा, अत्यधिक क्षति पुऱ्याउन सक्ने मध्य दक्षिण नेपाल परिदृश्य (CNS-1) भूकम्पका कारण ९,६०३ भवनहरूमा गम्भीर क्षति हुने देखाउँछ ।

ललितपुर महानगरपालिकाले जस्तोसुकै विषम् परिस्थितिमा पनि नगरवासीको जीवन सुरक्षाको लागि सुरक्षित सहरी योजनालाई आधारभूत सिद्धान्तको रुपमा प्रचार गर्नेछ । विशेषगरी "भवन क्षतिको न्यूनीकरण" नगरवासीको जीवनसँग प्रत्यक्ष सरोकार राख्ने हुँदा हामीले भवन निर्माणमा प्रकोप विरुद्धका प्रत्युपायहरूको प्रवर्द्धन गर्नेछौं ।

विपद्हरूको संयन्त्र तथा हाम्रो आफ्नो क्षेत्रीय विशेषताहरू बुझेर र विपद्लाई आधार मानी विपद् तथा जलवायु उत्थानशीलताका उपायहरूलाई मुख्य प्राथमिकता दिई कार्यान्वयन गर्ने अब हाम्रो जिम्मेवारी हो ।

४-२. विपद् जोखिम न्यूनीकरण तथा उत्थानशील रणनीति

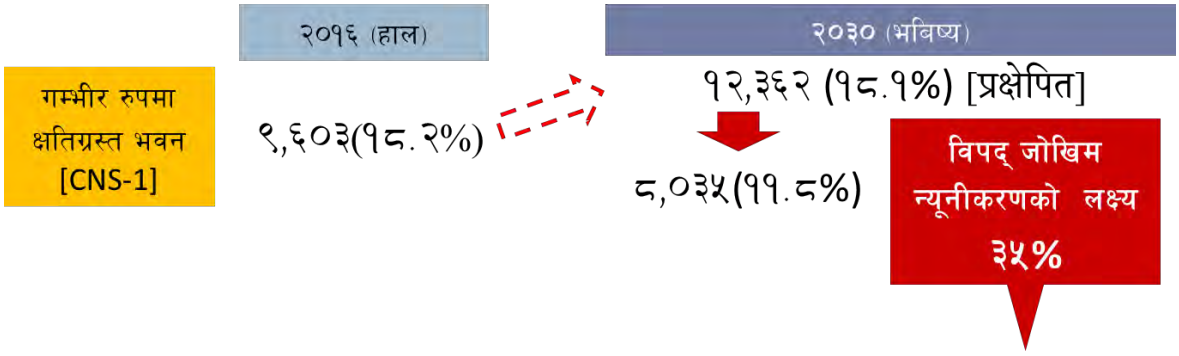
(१) परिदृश्य भूकम्पको लक्षित तह

जोखिम विश्लेषणको नतिजाका आधारमा ललितपुर महानगरपालिकाद्वारा विपद् जोखिम न्यूनीकरणका कार्यहरुका लागि परिदृश्य भूकम्पका कारण हुने कम्पनको लक्षित तह तपसिल बमोजिम निर्धारण गरेको छ :

- विद्यालय, अस्पताल, सरकारी भवनहरु, ठुला व्यापारिक भवनहरु, अग्ला भवनहरु (high-rise buildings), पुल, आदि जस्ता संवेदनशील संरचना तथा पूर्वाधारहरुका लागि CNS-2
- अन्य आवासीय तथा साना आवासीय-व्यापारिक भवनका संरचनाहरुका लागि CNS-1

(२) विपद् तथा जलवायु उत्थानशीलता रणनीतिहरू

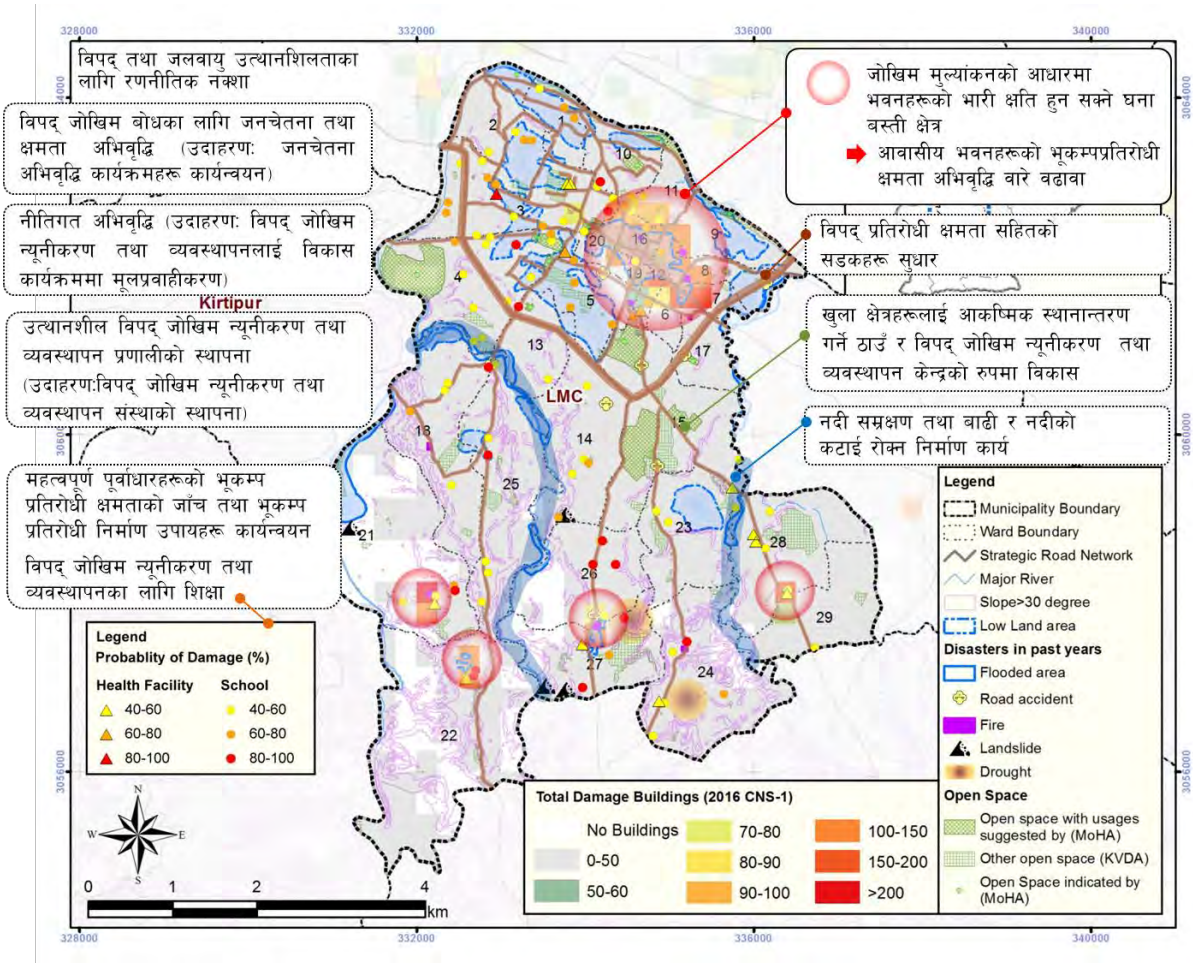
ललितपुर महानगरपालिकाको विपद् तथा जलवायु उत्थानशीलतामा योगदान पुऱ्याउनको लागि र Sendai Framework 2015-2030 को लक्ष्य हासिल गर्नको लागि विपद् तथा जलवायु उत्थानशीलता रणनीति तथा कार्य सञ्चालनका लागि प्राथमिकीकरण तपसिल बमोजिम रहेको छ:



Sendai Framework for DRR 2015-2030 का लक्ष्यहरू	रणनीतिहरू (सन् २०३०को लागि लक्ष्य)
(क) विश्वव्यापी विपद् **मृत्युदर**लाई २०३० सम्ममा उल्लेखनीय रूपमा घटाउने	लगभग ३५% कम गर्ने १,७६१ ⇒१,१५० (जनसंख्या)
(ख) **प्रभावित व्यक्तिहरुको संख्या**लाई २०३० सम्ममा उल्लेखनीय रूपमा घटाउने	लगभग ३५% कम गर्ने (विस्थापित) ११८,४८५ ⇒ ७७,००० (जनसंख्या)
(ग) वश्वव्यापी कुल घरेलु उत्पादनमा विपद्बाट हुने प्रत्यक्ष **आर्थिक क्षति**लाई २०३० सम्ममा घटाउने	लगभग १५% कम गर्ने भवनमा हुने भारी क्षति सम्बन्धि ४३,३७७ ⇒ ३७,००० (दश लाख रुपिया)
(घ) विपद्का कारण **महत्वपूर्ण संरचनाहरु**मा हुने क्षति तथा **स्वास्थ्य र शैक्षिक सेवा** लगायतका आधारभूत सेवाहरुको अवरोधहरुलाई २०३० सम्ममा तिनीहरुको उत्थनशिलता विकास गरेर उल्लेखनीय रूपमा घटाउने	कम गर्ने
(ङ) राष्ट्रिय तथा **स्थानीय विपद् जोखिम न्यूनीकरणका रणनीति** भएका देशहरुको संख्या २०२० सम्ममा उल्लेखनीय रूपमा बढाउने	यो योजना र रणनीति

श्रोत: JICA ERAKV परियोजना

चित्र ४-१ ललितपुर महानगरपालिकाको विपद् तथा जलवायू उत्थानशीलताका रणनीतिहरू

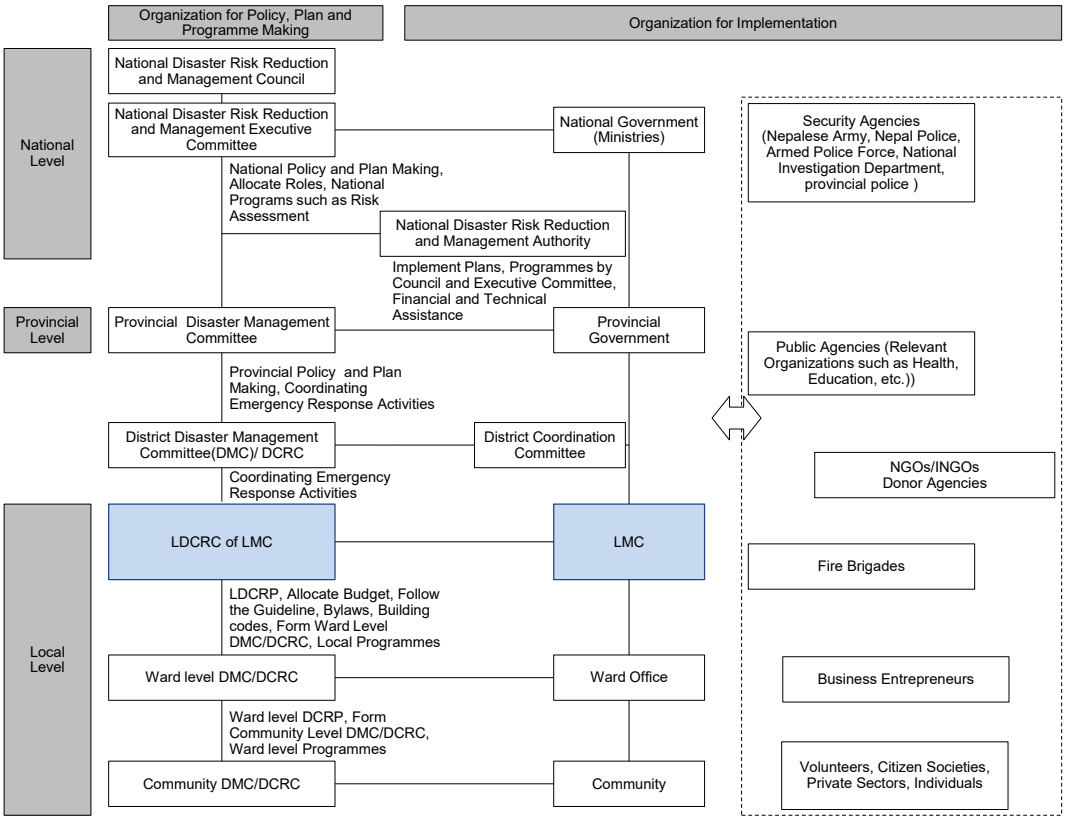


श्रोत: JICA ERAKV परियोजना

चित्र ४-२ विपद् जोखिम तथा जलवायु उत्थानशीलताका लागि रणनीतिक नक्सा

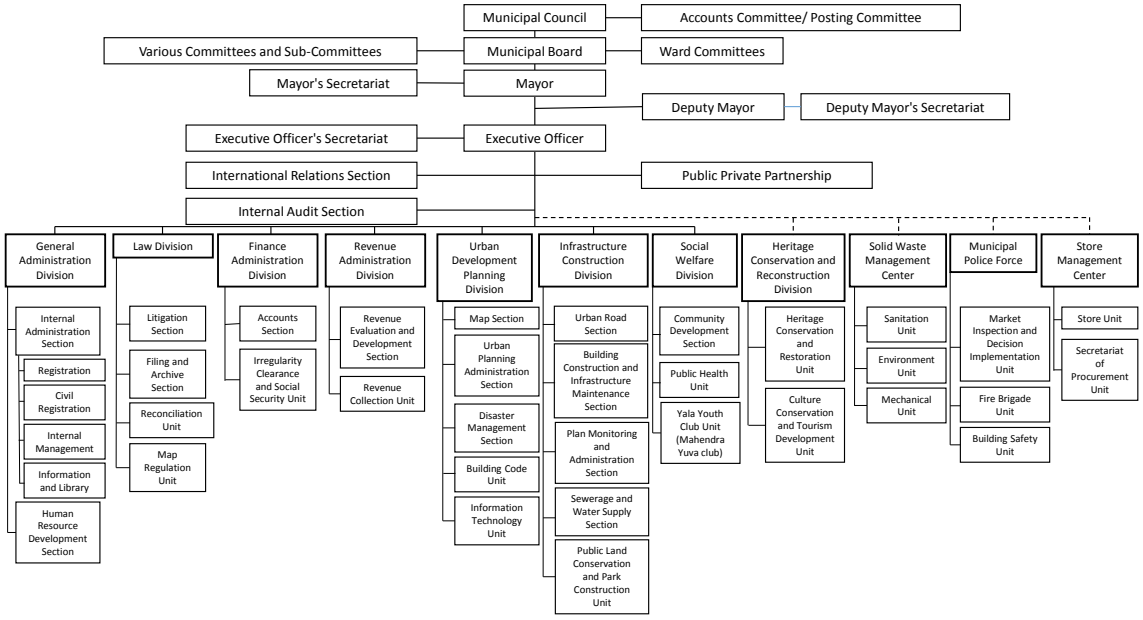
४-३. विपद् तथा जलवायु उत्थानशीलताको लागि संस्थागत संरचना

विपद् तथा जलवायु उत्थानशीलतासँग सम्बन्धित संघसंस्थाहरूको कार्यढाँचा चित्र ४-३ मा देखाइएको छ । विपद् तथा जलवायु उत्थानशीलताका कार्यहरूको कार्यान्वयनका लागि विभिन्न संघसंस्थाहरुको भूमिका जरुरी हुन्छ । साथै विपद् तथा जलवायु उत्थानशीलताका कार्यहरूमा प्रत्येक सरोकारवालाको सहकार्य र समन्वय आवश्यक छ ।



चित्र ४–३ सम्बन्धित संस्थाहरूको कार्यढाँचा

विपद् तथा जलवायु उत्थानशीलता कार्यको कार्यान्वयन हुँदा ललितपुर महानगरपालिकाको स्थानीय विपद् तथा जलवायु उत्थानशील समितिको आफ्नो एक्लो पहलमा मात्र नभई सम्पूर्ण ललितपुर महानगरपालिका, जिल्ला, प्रदेश सरकार, संघीय सरकार, गैर-सरकारी संस्था तथा अन्तर्राष्ट्रिय गैर-सरकारी संस्था, तथा सम्बन्धित संस्थाहरुसँग मिलेर काम गर्दछ। चित्र ४–४ मा ललितपुर महानगरपालिकाको संगठनात्मक संरचना देखाइएको छ।



श्रोत: ललितपुर महानगरपालिका

चित्र ४–४ ललितपुर महानगरपालिकाको संगठनात्मक संरचना

खण्ड ५.
स्थानीय विपद् तथा जलवायु उत्थानशील गतिविधिहरु

ललितपुर नगरपालिकाको विपद् तथा जलवायु उत्थानशीलताको दीर्घकालीन सोच तथा लक्ष्य हासिल गर्नका लागि Sendai Framework for DRR 2015-2030 का आधारमा प्राथमिकतामा रहेका गतिविधिहरु निम्नानुसार रहेका छन् :

(१) विपद् जोखिमको बारे बुझाई

सबै प्रकारको सङ्कटासन्नता, क्षमता, मानवीय तथा सम्पत्तिमा हुने जोखिमको अनावृत्ति, प्रकोप विशेषता तथा वातावरण जस्ता विपद् जोखिमका सम्पूर्ण आयामहरुको जानकारीका आधारमा विपद् जोखिम व्यवस्थापनका कार्य सञ्चालन गर्नुपर्दछ ।

(२) विपद् जोखिम व्यवस्थापनका लागि विपद् जोखिम शासकीय पद्धतिको सूदृढीकरण

सम्पूर्ण क्षेत्रहरूमा विपद् जोखिम न्यूनीकरण कार्यको व्यवस्थापनका लागि राष्ट्रिय, क्षेत्रीय तथा विश्वव्यापी तहमा विपद् जोखिम शासनले अहम भूमिका खेल्छ । विपद् जोखिम शासन सुदृढ़ीकरणसँग सम्बन्धित गतिविधिहरु तथा आवश्यक नीति सम्बन्धित निर्णयहरु लिदा भूमिका र जिम्मेवारीहरू तोकेर, तथा सार्वजनिक र निजी क्षेत्रलाई विपद् जोखिमका लागि कदम चाल्न प्रोत्साहन तथा बढावा दिनुपर्दछ ।

(३) उत्थानशीलताका लागि विपद् जोखिम न्युनीकरणमा लगानी

जनसाधारण, समुदाय, सहर र तिनको सम्पत्ति तथा वातावरणको आर्थिक, सामाजिक, स्वास्थ्य र सांस्कृतिक उत्थानशीलतालाई सुधार गर्न संरचनात्मक तथा गैर-संरचनात्मक उपायहरूद्वारा गरिने विपद् रोकथाम तथा न्यूनीकरणमा सार्वजनिक तथा निजी क्षेत्रले लगानी गर्नु महत्वपुर्ण छ । यस्ता उपायहरू जीवन रक्षा गर्न, हानीलाई रोक्न तथा न्यूनीकरण गर्न र प्रभावकारी पुनर्लाभ र पुनर्स्थापना निश्चित गर्नमा प्रभावकारी तथा सहायक हुन्छन् ।

(४) प्रभावकारी प्रतिकार्य र पूनर्लाभ, पूनर्स्थापना तथा पूननिर्माणमा "अझ राम्रो र बलियो निमाण" का लागि विपद् पुर्वतयारीको सूदृढीकरण

अझ प्रभावकारी प्रतिकार्य र पुनर्लाभ क्षमता निश्चय गर्नको लागि विपद् पूर्वतयारीका गतिविधिहरूलाई प्रबलीकरण गर्न जरूरी छ । विगतका विपद्हरुले विपद् पूर्वको तयारीको रुपमा रहेका पुनर्लाभ, पुनर्स्थापना र पुनर्निर्माणका चरण, विपद् जोखिम न्यूनीकरणका उपायहरूलाई एकीकरण गरी «अझ राम्रो र बलियो निर्माण» (Build Back Better) अवधारणा अवलम्वन गर्ने अवसर हो भनि देखाएको छ । प्रतिकार्य तथा पुनर्निर्माणका चरणहरूमा महिला तथा अपांगता भएका व्यक्तिहरुलाई सामाजिक रुपमा नेतृत्व गर्नका लागि सशक्त गराउनु पर्दछ तथा लैङ्गिक समानता र सार्वमान्य रुपमा सुलभ दृष्टिकोण र तरिकाहरुलाई प्रवर्धन गर्नुपर्दछ ।

५-१. विपद् जोखिमको बारे बुझाइ

खण्ड ४ मा वर्णन गरिएको विपद् तथा जलवायु उत्थानशील नीतिको आधारमा विपद् जोखिम बारे बुझाइका लागि आवश्यक गतिविधिहरु तपसिलको तालिका ५-१ बमोजिम रहेका छन् ।

तालिका ५-१ विपद् जोखिम बारे बुझाइका लागि गतिविधिहरू

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
१. विपद् जोखिम बोध								
१-१ विपद् जोखिम बोध								
विपद् जोखिम बोध	सबै	***	१-१-१	ऐतिहासिक विपद्हरुको विपद् तथ्यांक संकलन	विपद् तथ्यांक संकलन •ऐतिहासिक विपद्हरुको तथ्यांक संकलन तथा अभिलेखीकरण •विगतका विपद् तथा विपद्हरुको प्रवृत्तिहरुको अध्ययन	ललितपुर महानगरपालिका	जिल्ला समन्वय समिति	एक वर्ष
	सबै	***	१-१-२	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका लागि विपद् सूचना अभिलेखको विकास	विपद् सूचना अभिलेखको विकास •विगतका विपद्हरुको सूचना •भौतिक तथा सामाजिक अवस्थाको विवरण (उदाहरण: भूगर्भ , जनसंख्या, भवन आदि) •अभिलेखलाई नियमित रुपमा अद्यावधिक गर्ने	ललितपुर महानगरपालिका	राष्ट्रिय सरकार	दुई वर्ष
	सबै	**	१-१-३	वडा स्तरीय संकटासन्नता तथा क्षमता विश्लेषण अद्यावधिक गर्ने	वडा स्तरीय संकटासन्नता तथा क्षमता विश्लेषण अद्यावधिक गर्ने (विषयवस्तुहरुको उदाहरण) •ऐतिहासिक प्रकोप समयरेखा विश्लेषण, प्रकोप स्तरीकरण •संस्थागत विश्लेषण •लक्षित समूह छलफल	वडा कार्यालय	ललितपुर महानगरपालिका	एक वर्ष
	सबै	**	१-१-४	नगरपलिका/गाउँपालिका स्तरीय संकटासन्नता तथा क्षमता विश्लेषण अद्यावधिक गर्ने	नगरपलिका/गाउँपालिका स्तरीय संकटासन्नता तथा क्षमता विश्लेषण अद्यावधिक गर्ने •वडा स्तरीय संकटासन्नता तथा क्षमता विश्लेषणको नतिजा एकीकृत गर्ने	ललितपुर महानगरपालिका	-	एक वर्ष
	भूकम्प बाहेकका विपद्हरु	***	१-१-५	जोखिम क्षेत्र पहिचान	नगरपालिका/गाउँपालिकाको जोखिम क्षेत्रको बोध तथा पहिचान •संकटासन्नता तथा क्षमता विश्लेषण र प्रकोप तथा जोखिम विश्लेषणका नतिजाहरुको आधारमा जोखिम क्षेत्र पहिचान •जोखिम सम्वेदनशील भू-उपयोग योजनामा आधारित जोखिम क्षेत्र •जोखिम क्षेत्रको जानकारी	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	दुई वर्ष
१-२. विपद् जोखिम सूचनाको प्रभावकारी प्रसार								
विपद् जोखिम सूचनाको प्रभावकारी प्रसार	सबै	**	१-२-१	 जोखिम नक्सा तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नक्साहरुको विकास	 जोखिम नक्सा तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नक्साहरुको विकास •जोखिम मुल्यांकनको आधारमा जोखिम नक्सा तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नक्साहरुको बिकास	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	एक वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	**	१-२-२	स्थानीय बासिन्दाहरु माझ विपद् जोखिम सूचना प्रचार-प्रसार	स्थानीय बासिन्दाहरु माझ विपद् जोखिम सूचना प्रचार-प्रसार ·स्थानीय बासिन्दाहरु माझ विपद् नक्सा तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नक्साहरुको प्रचार-प्रसार/जानकारी ·विपद् जोखिम सूचना तथा जनचेतनाका लागि होर्डिङ बोर्डहरूको व्यवस्था	ललितपुर महानगरपालिका	वडा कार्यालय	एक वर्ष
१-३. विपद् बोधका लागि जनचेतना अभिवृद्धि तथा क्षमता बिकास								
विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन बारे जनचेतनामा अभिवृद्धि	सबै	**	१-३-१	घरपरिवारहरूको लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन सम्बन्धि हस्त - पुस्तिकाको बिकास	घरपरिवारहरूको लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन सम्बन्धि हस्त- पुस्तिका बिकास तथा वितरण (विषयवस्तुहरुको उदाहरण) ·विपद्को वारेमा शिक्षा (विपद् संयन्त्र, आदि) ·विपद्को अवस्थामा के गर्ने सम्बन्धि जानकारी	ललितपुर महानगरपालिका	वडा कार्यालय	एक वर्ष
	सबै	***	१-३-२	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन सम्बन्धि जनचेतना अभिवृद्धि कार्यक्रमहरूको कार्यान्वयन	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन सम्बन्धि जनचेतना अभिवृद्धि कार्यक्रमहरूको कार्यान्वयन (कार्यक्रमहरूको उदाहरण) ·विपद् जोखिम तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका लागि सामुदायमा कार्यशाला गोष्ठी ·शैक्षिक सामग्रीहरुको उपयोग तथा बिकास ·· टिभी / रेडियोमा जनचेतना कार्यक्रम	ललितपुर महानगरपालिका	वडा कार्यालय	नियमित
	सबै	*	१-३-३	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन तालिम केन्द्रको स्थापना तथा व्यवस्थापन	सबै नगरपालिकाहरुमा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन तालिम केन्द्रको स्थापना तथा व्यवस्थापन (समुदाय तथा नगरपालिकाका कर्मचारीहरू) ·विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन तालिम केन्द्रको स्थापनावारे विचार ·भवनको डिजाइन ·तालिम पाठ्यक्रम / सामग्री निर्धारण ·प्रशिक्षण केन्द्र सञ्चालन र व्यवस्थापनका लागि योजना निर्माण	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	तिन वर्ष

नोट: प्राथमिकता तह *** उच्च, ** मध्य, * न्युन

५-२. विपद् जोखिम व्यवस्थापनका लागि विपद् जोखिम शासकीय पद्धतिको सूदृढीकरण

खण्ड ४ मा वर्णन गरिएको विपद् तथा जलवायु उत्थानशील नीतिको आधारमा विपद् जोखिम व्यवस्थापनका लागि विपद् जोखिम शासन पद्धतिको सुदृढ़ीकरणका गतिविधिहरु तपसिलको तालिका ५-२ मा दिइएको छ ।

तालिका ५-२ विपद् जोखिम व्यवस्थापनका लागि विपद् जोखिम शासन पद्धतिको सुदृढ़ीकरणका गतिविधिहरु

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलवायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
२. विपद् जोखिम व्यवस्थापनका लागि विपद् जोखिम शाशनलाइ बलियो बनाउने								
२-१.नियामक ढाँचाको विकास								
विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नीतिमा सुदृढीकारण	सबै	***	२-१-१	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नियमावली तर्जुमा	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नियमावली तर्जुमा •विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नियमावलीको बिकास •भू-उयोग सम्बन्धि स्थानीय नियमसँग एकरुपता	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	एक वर्ष
	सबै	***	२-१-२	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनलाई विकास कार्यसँग मूलधारमा लग्ने	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनलाई विकास कार्यसँग मूलधारमा लग्ने •विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनको बिषयलाई स्थानीय विकास योजना तथा सबै सम्बन्धित योजनाहरुमा एकीकृत गर्ने	ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	***	२-१-३	आपतकालीन विपद् कोषको लागि स्थानीय नियमावली तर्जुमा	आपतकालीन विपद् कोषको लागि स्थानीय नियमावली तर्जुमा	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	दुई वर्ष
२-२.विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन उत्थानशील शासन								
विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन प्रणालीको स्थापना	सबै	***	२-२-१	 स्थानीय विपद् तथा जलवायु उत्थानशील समितिको स्थापना	 स्थानीय विपद् तथा जलवायु उत्थानशील समितिको स्थापना	ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	***	२-२-२	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन संस्थाको अभिवृद्धि	नगरपालिका स्तरमा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन शाखाको अभिवृद्धि •संस्थागत पुनर्संरचना गरि "विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन महाशाखा" को रुपमा स्तरोन्नती तथा विभिन्न शाखामा विभाजन गरि जिम्मेवारी तोक्ने •कर्मचारीहरुको संख्यामा वृद्धि, तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन विशेषज्ञहरुको नियुक्ति	ललितपुर महानगरपालिका	-	एक वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	**	२-२-३	उप-समितिहरु गठन	पुर्व तयारी तथा प्रतिकार, अनुगमन तथा मुल्यांकन उप-समितिहरु गठन	ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	***	२-२-४	वारुणयन्त्र (दमकल)/उपकरणको व्यवस्थापन तथा वृद्धि	वारुणयन्त्र (दमकल)/उपकरणको व्यवस्थापन तथा वृद्धि •दमकल (नगरपालिका तथा वडातह) को स्थापना तथाश्रोतहरुको व्यवस्था •अग्नि नियन्त्रण उपकरणको खरिद (portable आगलागी engines, आगलागी extinguishers, खोज तथा उद्धार उपकरण, आदि) •तालिम तथा जनचेतना अभिवृद्धि गतिविधिहरु	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	एक वर्ष
	सबै	***	२-२-५	वडास्तरमा स्थानीय विपद् तथा जलवायु उत्थानशील समिति तथा सामुदायिक विपद् तथा जलवायु उत्थानशील समितिको स्थापना	वडास्तरमा स्थानीय विपद् तथा जलवायु उत्थानशील समिति तथा सामुदायिक विपद् तथा जलवायु उत्थानशील समितिको स्थापना •वडा नागरिक मंचको आधारमा समितिका सदस्यहरु निर्धारण •समितिको काम,कर्तव्य तथा जिम्मेवारीहरु निर्धारण •विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन क्षमता विकास कार्यक्रमहरू निर्धारण •आवश्यक भएमा समुदाय विपद् तथा जलवायु उत्थानशील समितिको स्थापना	वडा कार्यालय	ललितपुर महानगरपालिका	एक वर्ष
	सबै	**	२-२-६	समुदायको विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन योजनाहरु तर्जुमा	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन योजनाहरु तर्जुमाका लागि समुदायलाई सहयोग •नगरपालिका स्तरको जोखिम विश्लेषणको आधारमा समुदाय स्तरको प्रकोप तथा जोखिम विश्लेषण •योजना तर्जुमा समितिको स्थापना •समुदायको विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन योजना तर्जुमा (विषयवस्तुहरूको उदाहरण: रूपरेखा, समुदायको पार्श्वचित्र, जोखिम मुल्यांकन, विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन नीति, कार्य योजना,आदि)	वडा कार्यालय	ललितपुर महानगरपालिका	दुई वर्ष
	सबै	***	२-२-७	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन कार्यको व्यवस्थापनका लागि मानव संसाधन विकास	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन कार्यको व्यवस्थापनका लागि मानव संसाधन विकासका निमित्त नगरपालिकाका कर्मचारीहरुको लागि तालिम कार्यक्रम कार्यान्वयन •हरेक तहका लागि तालिम कार्यक्रमहरुको निर्धारण •कार्यशाला गोष्ठी तथा तालिम संचालन	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	नियमित
	सबै	***	२-२-८	स्थानीय विपद् तथा जलवायु उत्थानशील योजना कार्यान्वयनको अनुगमन तथा मुल्यांकन	स्थानीय विपद् तथा जलवायु उत्थानशील योजना कार्यान्वयनको अनुगमन तथा मुल्यांकन •हाल कार्यान्वयन भइरहेका गतिविधिहरूको पहिचान •गतिविधिहरूको नियमित रूपमा अनुगमन तथा मुल्यांकन •अनुगमन तथा मुल्यांकन प्रतिवेदन तयार गर्ने	ललितपुर महानगरपालिका	-	नियमित

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	***	२-२-९	स्थानीय विपद् तथा जलवायु उत्थानशील योजना अद्यावधिक गर्ने	स्थानीय विपद् तथा जलवायु उत्थानशील योजना अद्यावधिक गर्ने •स्थानीय विपद् तथा जलवायु उत्थानशील योजनाको पुनरावलोकन •प्रभावकारी विपद् तथा जलवायु उत्थानशीलताका लागि प्रत्येक ५ वर्षमा स्थानीय विपद् तथा जलवायु उत्थानशील योजना अद्यावधिक गर्ने	ललितपुर महानगरपालिका	-	नियमित (हरेक पाँच वर्षमा)
सहकार्यलाई बलियो बनाउने, सहायता तथा स्वीकार्यता प्रणालीको स्थापना	सबै	*	२-२-१०	अन्य नगरपालिकाहरु सँगको सहकार्यलाई बलियो बनाउने, सहायता तथा स्वीकार्यता प्रणालीको स्थापना, तथा सहमतिहरुको निष्कर्ष	अन्य नगरपालिकाहरु सँगको सहकार्यलाई बलियो बनाउने, सहायता तथा स्वीकार्यता प्रणालीको स्थापनाका लागि सहमतिहरुको निष्कर्ष •अन्य नगरपालिकाहरुसँगको सहकार्य प्रणालीको स्थापनाका लागि संघिय मामिला तथा स्थानीय विकास मन्त्रालयसँग समन्वय गर्ने	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	पाँच वर्ष
	सबै	**	२-२-११	अन्य निकायहरू सँगको सहकार्यलाई बलियो बनाउनका लागि विपद् जोखिम न्यूनीकरणको आधार समूहको स्थापना (Red Cross, गैर सरकारी संस्थाहरु/अन्तराष्ट्रिय गैर सरकारी संस्थाहरु), सहायता तथा स्वीकार्यता प्रणालीको स्थापना, तथा सहमतिहरुको निष्कर्ष	आपतकालीन प्रतिकार्यका लागि अन्य सम्बन्धित निकायहरू सँगको सहकार्यलाई बलियो बनाउन सहमतिहरुको निष्कर्ष, तथा सहायता तथा स्वीकार्यता प्रणालीको स्थापना • Red Cross, गैर-सरकारी संस्था, अन्तराष्ट्रिय गैर-सरकारी संस्था, आदि सँग समन्वय	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	दुई वर्ष

नोट: प्राथमिकता तह *** उच्च, ** मध्य, * न्युन

५-३. उत्थानशीलताका लागि विपद् जोखिम न्युनीकरणमा लगानी

खण्ड ४ मा वर्णन गरिएको विपद् तथा जलवायु उत्थानशीलता नीतिको आधारमा उत्थानशीलताका लागि विपद् जोखिम न्यूनीकरणमा लगानीका गतिविधिहरु तपसिलका तालिका ५-३ मा दिइएको छ ।

तालिका ५-३ उत्थानशीलताका लागि विपद् जोखिम न्युनीकरणमा लागनीका गतिविधिहरु

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलवायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
३. उत्थानशीलताका लागि विपद् जोखिम न्यूनीकरणकामा लगानी								
३-१. भवनहरूको जोखिम न्यूनीकरण								
Resilience and safety of houses	भूकम्प	***	३-१-१	राष्ट्रिय भवन निर्माण संहिता (NBC)को प्रयोग,भवन निर्माण अनुमति तथा निरीक्षण प्रणालीको कार्यान्वयन	राष्ट्रिय भवन निर्माण संहिता (NBC) राम्रोसँग प्रयोग गरी भवन निर्माण अनुमति तथा निरीक्षण प्रणालीको कार्यान्वयन •भवन निर्माण अनुमति तथा निरिक्षण शाखाको क्षमता विकास •अग्ला भवनहरु (high rise buildings) को मध्यवर्ती निरिक्षणमा सुदृढीकरण •विधुतीय भवन निर्माण अनुमति प्रणाली (E-PPS) को सुधार, जस्तै TOT (प्रशिक्षकहरूको प्रशिक्षण) तालिम-प्राप्त व्यक्तिहरुको सूचीकरण	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	नियमित
	भूकम्प	***	३-१-२	भवनहरुको भूकम्पीय परीक्षण तथा भूकम्प प्रतिरोधी निर्माणका उपायहरूका लागि आर्थिक तथा प्राबिधिक सहयोग तथा भूकम्पीय परीक्षणका लागि विशेषज्ञहरु खटाउने	 भवनहरुको भूकम्पीय परीक्षण तथा भूकम्प प्रतिरोधी निर्माणका उपायहरूका लागि आर्थिक तथा प्राबिधिक सहयोग •भवनहरुको भूकम्पीय परीक्षण तथा निरीक्षणका लागि विशेषज्ञ तथा प्राबिधिकहरु खटाउने •भवनहरुको भूकम्पीय प्रवलिकरणका लागि प्राविधिक सहयोग	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	नियमित
	भूकम्प	***	३-१-३	 भूकम्प प्रतिरोधी भवन निर्माणका लागि क्षमता विकास तथा जनचेतना	 भूकम्प प्रतिरोधी भवन निर्माणका लागि क्षमता विकास तथा जनचेतना •भवन डिजाइन र निर्माण/प्रबलिकरणका विधिहरू सम्बन्धित पोस्टर, पुस्तिका, पर्चा र किताबहरु वितरण •भूकम्प प्रतिरोधी घरहरू निर्माण तथा प्रवालिकरणका लागि कार्यशालाहरुको आयोजना, डकर्मी तालिम, आदि	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	नियमित
३-२. अत्यावश्यक सुविधा तथा संरचनाहरूको जोखिम न्यूनीकरण								
विपद् प्रतिरोधी तथा सुरक्षित सार्वजनिक भवन	भूकम्प	***	३-२-१	सबै सार्वजनिक भवनहरूको भूकम्प प्रतिरोधी क्षमताको परीक्षण तथा सुदृढीकरण	सार्वजनिक भवनहरूको भूकम्प प्रतिरोधी क्षमताको परीक्षण • सार्वजनिक भवनहरूको भूकम्प प्रतिरोधी क्षमताको विस्तृत परीक्षण •सुदृढीकरणका उपायहरु अवलम्बन •सार्वजनिक भवनहरूको सुदृढीकरण	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	एक देखि पाँच वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	भूकम्प	***	३-२-२	सामुदायिक भवनहरु निर्माण	 विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनको लागि सामुदायिक भवनहरु निर्माण •निर्माणस्थलको पहिचान •सामुदायिक भवनहरुको निर्माण	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	एक देखि पाँच वर्ष
	सबै	***	३-२-३	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका आधार केन्द्रहरुको पहिचान तथा निर्धारण, विकास, सुधार र अभिबृद्धि	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका आधार केन्द्रहरुको पहिचान तथा निर्धारण, विकास, सुधार र अभिबृद्धि •नगरपालिकामा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका आधार केन्द्रहरु पहिचान तथा निर्धारण (नगरपालिका कार्यालय, आदि .) •विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका आधार केन्द्रहरु सुधार तथा अभिवृद्धि (भुकम्प प्रतिरोधक उपायहरु, अत्यावश्यक सामग्री भण्डारण, संचारका सुविधाहरु आदि)	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	दुई वर्ष
चिकित्सा, स्वास्थोपचार तथा सामाजिक कल्याण सेवामा अभिवृद्धि	भूकम्प	***	३-२-४	नगरपालिका स्तरका अस्पताल, स्वास्थ्य केन्द्र तथा हेल्थ पोष्टहरुको भूकम्प प्रतिरोधी क्षमताको जाँच तथा भूकम्प प्रतिरोधी बनाउने उपायहरु	 नगरपालिका स्तरका अस्पताल, स्वास्थ्य केन्द्र तथा हेल्थ पोष्टहरुको भूकम्प प्रतिरोधी क्षमताको जाँच तथा भूकम्प प्रतिरोधी बनाउने उपायहरु •अस्पतालहरुको भूकम्प प्रतिरोधी क्षमताको जाँचका लागि विज्ञ वा प्राविधिक खटाउने •भूकम्प प्रतिरोधका उपायहरु तथा प्रवलीकरण (आवश्यक भएमा) •निजि अस्पतालहरुको भूकम्प प्रतिरोध क्षमता सुनिश्चित गर्नका लागि कानूनी व्यवस्थाको स्थापना	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	एक देखि पाँच वर्ष
	सबै	**	३-२-५	विपद् फोहोर व्यवस्थापन योजना तर्जुमा	 भविष्यमा आउन सक्ने विपद्हरुका लागि विपद् फोहोर व्यवस्थापन योजना तर्जुमा (विषयवस्तुहरुको उदाहरण) •विपद् फोहोर व्यवस्थापन प्रणालीको स्थापना •भग्नावशेषको अनुमान •पुनर्प्रयोगको प्रवर्धन (पुनर्प्रयोग केन्द्रहरुको विकास, आदि) •विपद् फोहोरका लागि अस्थायी व्यवस्थापन क्षेत्रको सुनिश्चितता	ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	**	३-२-६	विपद् फोहर व्यवस्थापनका लागि अस्थायी भण्डारणको सुनिश्चितता	विपद् फोहर व्यवस्थापनका लागि अग्रिम रुपमा अस्थायी भण्डार स्थान सुनिश्चित गर्ने जसका कारण उक्त स्थानलाई प्रभावकारी ढंगले प्रयोग गर्न सकियोस् •खुला क्षेत्रहरुका वारेमा अनुसन्धान तथा विपद् फोहर व्यवस्थापनका लागि अस्थायी भण्डारणका लागि संभावित स्थान निर्धारण • अस्थायी भण्डार स्थानको प्रभावकारी रुपमा उपयोग गर्न मिल्ने स्थानहरुको विकास	ललितपुर महानगरपालिका	-	तिन वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
विद्यालयमा शिक्षामा अभिवृद्धि	भूकम्प	***	३-२-७	विद्यालयहरूको भूकम्प प्रतिरोधी क्षमताको जाँच तथा भूकम्प प्रतिरोध क्षमता वृद्धिका उपायहरु	विद्यालयहरूको भूकम्प प्रतिरोधी क्षमताको जाँच तथा भूकम्प प्रतिरोध क्षमता बृधि गर्ने उपायहरु •विद्यालयहरुको भूकम्प प्रतिरोधी क्षमताको जाँचका लागि विज्ञ वा प्राविधिकहरु खटाउने •(आवश्यक भएमा) भूकम्प प्रतिरोधका उपायहरु, सबलीकरणको कार्यान्वयन •निजि विद्यालयहरूको भूकम्प प्रतिरोधी क्षमता सुनिश्चित गर्नका लागि कानुनी व्यवस्थाको स्थापना	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	एक देखि पाँच वर्ष
	सबै	***	३-२-८	विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका लागि शिक्षा	विद्यालयको पाठ्यक्रममा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन शिक्षा •विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका तथा गोरखा भूकम्पको अनुभव वारेमा विद्यालय पाठ्यक्रम निर्धारण (पाठ्यक्रमको विषयवस्तुहरुको उदाहरण) •विपद्, संयन्त्र, विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन बारेमा शिक्षा •विपद्को समयमा सुरक्षाको सुनिश्चितता बारेमा शिक्षा •गोरखा भूकम्पको अनुभव आदानप्रदान •आकस्मिक स्थानान्तरण अभ्यासको कार्यान्वयन	ललितपुर महानगरपालिका	-	नियमित
	सबै	***	३-२-९	विद्यालयहरुको विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन कार्यहरुमा अभिवृद्धि	विद्यार्थीहरुको सुरक्षा सुनिश्चित गर्नका लागि विद्यालयहरुको विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन कार्यहरुमा अभिवृद्धि तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन आधारको प्रोत्साहन •भूकम्प प्रतिरोधक उपायहरु •भण्डारणको सुनिश्चितता •संचार सुविधाको विकास, आदि	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	पाँच वर्ष
पूर्वाधारहरूमा अभिवृद्धि	सबै	***	३-२-१०	 सहज रुपमा आपतकालीन प्रतिकार्य, यातायात तथा आकस्मिक स्थानान्तरणकालागि भूकम्प प्रतिरोधी क्षमता सहितको सडकहरूको सुधार	भूकम्प प्रतिरोधी सडकहरुको विकास •ट्राफिक नियन्त्रित सडक सञ्जाल तथा आपतकालीन सडकको निर्धारण •पुलहरूको विस्तृत विपद् सर्वेक्षण तथा सर्वेक्षणका आधारमा सुदृढीकरण •विपद् सम्बेदनशील सडक तथा पुलहरूको सुधार •सडक विस्तारमा प्रोत्साहन • सहरी विकास आयोजना तथा विभिन्न प्रशासनिक तहमा सडक तथा पुल निर्माणका लागि सहकार्य	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	पाँच वर्ष
	वाढी	***	३-२-११	खोलाबाट फोहोर हटाउने	खोलाबाट फोहोर हटाउने •पानीको बहाव सुचारु राख्नका लागि खोलाको सरसफाई गतिविधिहरू	ललितपुर महानगरपालिका	-	नियमित
	वाढी	***	३-२-१२	खोलाको संरक्षण र बाढीबाट खोला किनारको भूक्षय नियन्त्रणका लागि निर्माण गतिविधिहरू	 वाढी रोकथामका लागि खोला संरक्षण •उच्च जोखिम क्षेत्रको पहिचान •वृक्षारोपण •बाँध/टेवा पर्खाल (रिटेनिङ वाल) निर्माण, खोला सुधार कार्यहरु	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	पाँच वर्ष

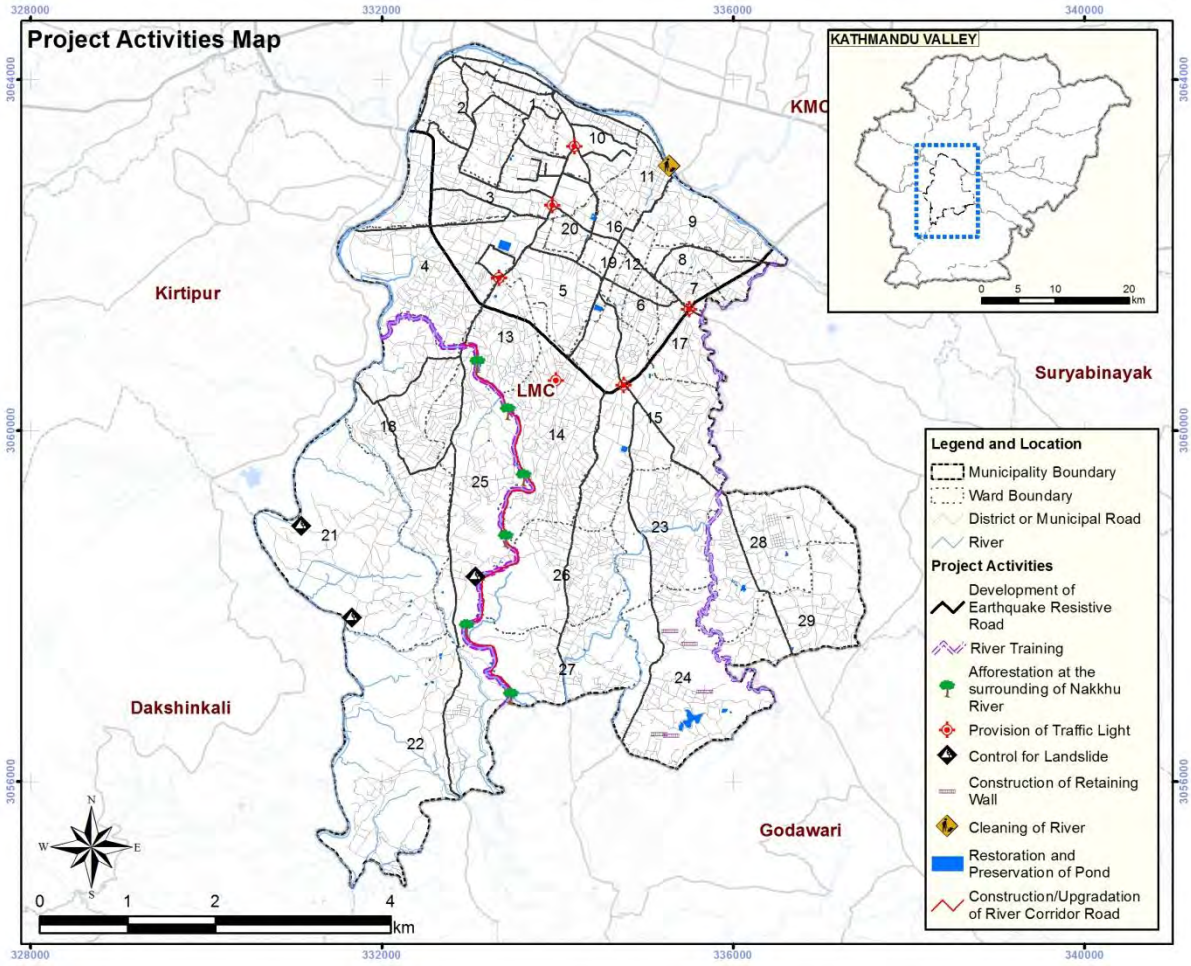
क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	वाढी	**	३-२-१३	वाढीको लागि अनुगमन प्रणालीको विकास तथा व्यवस्थापन	वाढीको लागि अनुगमन प्रणालीको विकास तथा व्यवस्थापन •बर्षा तथा पानीको सतह नाप्ने उपकरणको जडान •बर्षा, पानीको सतह तथा वाढीको अन्य आवश्यक सूचनाको अनुगमन	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	पाँच वर्ष
	पहिरो	***	३-२-१४	भिरालो क्षेत्रको संरक्षण तथा पहिरो रोकथामका लागि निर्माण कार्य	भिरालो क्षेत्रको संरक्षण तथा पहिरोका कारण वालुवा र चट्टानहरु खस्नबाट रोक्नका लागि निर्माण कार्य •उच्च जोखिम क्षेत्रको पहिचान •वृक्षारोपण •टेवा पर्खाल (रिटेनिङ वाल) निर्माण,तार जाली •पहिरो नियन्त्रणका लागि जैविक प्रबिधि जस्तै bio-engineering को प्रयोग	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	पाँच वर्ष
	सडक दुर्घटना	**	३-२-१५	ट्राफिक नियन्त्रण गर्न ट्राफिक संकेत र चिन्हहरूको स्थापना	ट्राफिक नियन्त्रण गर्न ट्राफिक संकेत र चिन्हहरूको स्थापना •ट्राफिक संकेत जडान गर्नका लागि उपयुक्त स्थान निर्धारण •ट्राफिक संकेत र चिन्हहरू जडान •सडक बत्तिहरुको जडान •ट्राफिक नियन्त्रण व्यवस्थापन	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	पाँच वर्ष
	सडक दुर्घटना	**	३-२-१६	पैदल यात्रीहरूको सुरक्षाका लागि संरचना निर्माण	पैदल यात्रीहरूको सुरक्षाका लागि संरचना निर्माण •निर्माणको लागि स्थान निर्धारण •पैदलयात्रीहरूले बाटो काट्ने उपयुक्त स्थानमा निर्माण •पैदलयात्री पुलको निर्माण	ललितपुर महानगरपालिका, राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	-	पाँच वर्ष
	खडेरी	**	३-२-१७	खडेरीको अनुगमन प्रणालीको विकास तथा व्यवस्थापन	खडेरीको अनुगमन प्रणालीको विकास तथा व्यवस्थापन •बर्षा, सापेक्षित आद्रता, दैनिक तापमानको सूचना तथा खडेरी सम्बन्धमा अन्य आवश्यक सूचना	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	नियमित
अत्यावश्यक सुबिधाहरूमा अभिवृद्धि	भूकम्प	***	३-२-१८	आपुर्ति मध्यमहरु तथा अन्य सम्बन्धित सुविधाहरूका लागि भूकम्प प्रतिरोधी उपायहरु अवलम्बन गर्ने, तथा ती आपूर्ति प्रणालीको सुधार	आपुर्ति प्रणालीमा सुधार •पानी तथा बिजुली आपूर्ति प्रणालीको भूकम्प प्रतिरोधी क्षमता र समग्र प्रणालीमा सुधार •वैकल्पिक उर्जाको रूपमा सौर उर्जाको प्रयोगको परीक्षण •पानीको सतही निकास, ढल, र सरसफाई प्रणालीमा सुधार	राष्ट्रिय सरकार	-	पाँच वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	वाढी	**	३-२-१९	ढल तथा पानीको निकास प्रणाली को संरक्षण, निर्माण तथा मर्मत-सम्भार	ढल निकासको संरक्षण, निर्माण तथा मर्मत-सम्भार •नियमित रुपमा ढल तथा पानीको निकास प्रणालीको सरसफाई, मर्मत सम्भार (आवश्यक परेमा) •निर्माणका लागि उपयुक्त स्थान निर्धारण •ढल तथा सतही पानी निकास प्रणालीको निर्माण	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	तिन वर्ष
	आगलागी	**	३-२-२०	अग्नि नियन्त्रणका लागि पानी आपूर्ति लाइनहरुको निर्माण	दमकलहरूका लागि जमिन सतह मुनिका पानीका श्रोतहरुको प्रयोगमा विकास •संजाल योजनाको तर्जुमा •पानीको आपूर्ति लाइनहरुको निर्माण तथा आगो निभाउने यन्त्रको जडान	काठमान्डौ उपत्यका खानेपानी लिमिटेड (KUKL)	ललितपुर महानगरपालिका	दुई वर्ष
	आगलागी	***	३-२-२१	विद्युतीय पोल तथा तारहरूको व्यवस्थापन	विद्युतीय पोल तथा तारहरूको व्यवस्थापन •विद्युतीय पोल तथा तारहरूको अवस्थाको सर्वेक्षण •विद्युतीय तारहरूको व्यवस्थापन (नाङ्गो तारहरुलाई बाहिरी प्लास्टिक कभर हाल्ने तथा पुराना तारहरुको ठाउँमा नयाँ जडान आदि)	नेपाल विद्युत प्राधिकरण (NEA), सम्बन्धित निकायहरू	ललितपुर महानगरपालिका	दुई वर्ष
	आगलागी	***	३-२-२२	आगलागी नियन्त्रणका लागि पानीका श्रोतहरुको पहिचान, निर्माण तथा मर्मत सम्भार	आगो नियन्त्रणका लागि पानीका श्रोतहरुको पहिचान, निर्माण तथा मर्मत सम्भार •पानीका श्रोतहरुको पहिचान •पानीका श्रोतहरुको नियमित रुपमा संरक्षण तथा सम्भार (आवश्यक भएमा) •निर्माणका लागि उपयुक्त स्थान पहिचान •ईनार, पोखरी लगायतका पानीका श्रोतहरुको निर्माण •वृक्षारोपण	ललितपुर महानगरपालिका	-	एक वर्ष
	खडेरी	**	३-२-२३	सिंचाई प्रणालीमा सुधार	सिंचाई प्रणालीमा सुधार •सिचाईको हालको अवस्था पहिचान •सिंचाई संजालको नियमित रुपमा मर्मत सम्भार •सिचाई प्रणालीको सुधार जस्तै पानी पम्प वा अन्य मध्यमको प्रयोग गरी गरिने सिचाईको विस्तार तथा व्यवस्था	प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	पाँच वर्ष
	खडेरी	**	३-२-२४	खडेरी नियन्त्रणका लागि पानीका श्रोतहरुको पहिचान, निर्माण तथा मर्मत सम्भार	खडेरी नियन्त्रणका लागि पानीका श्रोतहरुको पहिचान, निर्माण तथा मर्मत सम्भार •पानीका श्रोतहरुको पहिचान •पानीका श्रोतहरुको नियमित रुपमा संरक्षण तथा सम्भार (आवश्यक भएमा) •निर्माणका लागि उपयुक्त स्थान पहिचान •ईनार, पोखरी लगायतका पानीका श्रोतहरुको निर्माण •वृक्षारोपण	प्रदेश सरकार, जिल्ला समन्वय समिति	ललितपुर महानगरपालिका	पाँच वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
३-३. उत्थानशील विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन प्रणाली								
विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन का लागि प्रभावकारी आकस्मिक स्थानान्तरण प्रणालीको विकास	सबै	***	३-३-१	आकस्मिक स्थानान्तरण योजनाको तर्जुमा तथा प्रचार-प्रसार/जानकारी	आकस्मिक स्थानान्तरण योजनाको तर्जुमा तथा प्रचार-प्रसार/जानकारी •आकस्मिक स्थानान्तरण गर्ने स्थान/त्यहाँ जाने बाटो निर्धारण गर्ने तथा त्यसको प्रचार-प्रसार •आकस्मिक स्थानान्तरण गर्ने स्थान सम्म स्थानीयवासीलाई लग्ने व्यवस्था गर्ने •आकस्मिक स्थानान्तरण स्थान कसरी सञ्चालन गर्ने व्यवस्था मिलाउने (खुला क्षेत्र तथा आकस्मिक स्थानान्तरण गर्ने शिविरहरु)	ललितपुर महानगरपालिका	जिल्ला समन्वय समिति	दुई वर्ष
	सबै	***	३-३-२	खुला क्षेत्रहरुलाई आकस्मिक स्थानान्तरण स्थल र विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन गर्ने आधार केन्द्रका रुपमा निर्धारण गरि विकास गर्ने	खुला क्षेत्रहरुलाई आकस्मिक स्थानान्तरण स्थल र विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन गर्ने आधार केन्द्रका रुपमा विकास •हरेक खुला क्षेत्रको प्रयोगको जाँच तथा विकासका लागि प्राथमिकीकरण • खुला क्षेत्रहरुको विकास (भण्डारण गर्ने ठाउँ, आकस्मिक स्थानान्तरण गर्न प्रयोग गर्ने बाटो आदि समेत) •पार्क तथा खुला क्षेत्रहरु अस्थायी हेलिपोर्टको रुपमा प्रयोग •अस्थायी हेलिपोर्ट निर्धारण तथा विकास •स्थानीयवासीहरू माझ स्थानान्तरण गरिने खुला क्षेत्रको प्रचार-प्रसार/जानकारी	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	पाँच वर्ष
	सबै	***	३-३-३	आकस्मिक स्थानान्तरण शिविर तोकी बिकास गर्ने	आकस्मिक स्थानान्तरण शिविर तोकी विकास गर्ने •आकस्मिक अस्थाई स्थानान्तरण शिविर रुपमा प्रयोग हुन सक्ने भवनहरु निर्धारण गर्ने •आकस्मिक स्थानान्तरण शिविरको विकास (भण्डारण गर्ने ठाउँ, आकस्मिक स्थानान्तरण गर्न प्रयोग हुने मार्ग आदि समेत) •स्थानीयवासीहरू माझ स्थानान्तरण गर्ने खुला क्षेत्र प्रचार-प्रसार गर्ने	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	पाँच वर्ष
	सबै	*	३-३-४	जगेडा गोदामहरुको विकास तथा विपद्को समयका लागि जगेडा समानहरुको सुनिश्चितता	जगेडा गोदामहरुको विकास तथा विपद्को समयका लागि जगेडा समानहरुको सुनिश्चितता •जगेडा गोदामहरुको विकास तथा स्थापना •अत्यावश्यक सामानहरुको सूची बनाउने (खानेकुरा, चिकित्सा उपकरण, दैनिक आवश्यक सामानहरु, उद्धार उपकरण, इन्धन, आदि) •जगेडा सरसमानहरुको खरिद	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	तिन वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
भू-उपयोगमा सिमितता वारे प्रोत्साहन	सबै	***	३-३-५	प्रकोप तथा जोखिम विश्लेषणका आधारमा भू-उपयोग क्षेत्र तथा भवन निर्माण नियमहरुमा परिमार्जन	भू-उपयोग क्षेत्र तथा भवन निर्माण नियमहरुको परिमार्जन •हालको भू-उपयोग तथा प्रकोप, जोखिम विश्लेषण तथा जोखिम संवेदनशील भू-उपयोग योजना लगायतको विश्लेषण तथा तुलना •भू-उपयोग तथा भवन निर्माण नियमहरुको संशोधन तथा कार्यान्वयन	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	दुई वर्ष
	वाढी	**	३-३-६	बस्ती बिकास योजना नबनाई बनेका तथा उच्च-जोखिम क्षेत्रमा रहेका बस्तीको स्थानान्तरणमा प्रोत्साहन	बस्ती बिकास योजना नबनाई बनेका तथा उच्च-जोखिम क्षेत्रमा रहेका बस्तीको स्थानान्तरणमा प्रोत्साहन •बस्ती बिकास योजना नबनाई बनेका तथा उच्च-जोखिम क्षेत्रमा रहेका बस्तीको व्यवस्थापन तथा स्थानान्तरणमा प्रोत्साहन	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	पाँच वर्ष
विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन सहकार्य प्रणालीको विकास	सबै	*	३-३-७	निजी क्षेत्रसँगको सहकार्यलाई अझ सुदृढ गर्ने, तथा सहमतिहरूको निष्कर्ष	निजी क्षेत्रसँगको सहकार्यलाई अझ बलियो बनाउनका लागि सहमतिहरूको निष्कर्ष (सहमतिहरुको उदाहरण) •खाद्य सामाग्री , औषधि, आवस्यक सामाग्री तथा उपकरण, आदि खरिद नियमहरु को विकास	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	दुई वर्ष
	सबै	*	३-३-८	निजि क्षेत्रको व्यवसाय निरन्तरता योजना तर्जुमामा सहयोग	निजी व्यवसाय तथा उद्योगको सुरक्षाको सुनिश्चितताका लागि व्यवसाय निरन्तरता योजना तर्जुमामा सहयोग (विषय वस्तुहरुको उदाहरण: जोखिम विश्लेषण, नीति निर्माण (महत्वपुर्ण व्यवसायको चयन), शीघ्र पुनर्लाभ प्राप्तिका उपाय तथा विपद्को समयमा संचालन, रोकथाम तथा पूर्वतयारी, आदि)	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	दुई वर्ष
	सबै	**	३-३-९	स्वयंसेवकहरूको संलग्नता प्रणालीको विकास	स्वयंसेवकहरूको व्यवस्थापनका लागि निम्न रुपमा स्वयंसेवक संलग्नता प्रणालीको स्थापना: •स्वयंसेवाका गतिविधिहरुका लागि छुट्टै शाखाको स्थापना गरि जिम्मेवारी तोक्ने •स्वयंसेवकहरूको लागि सम्पर्क केन्द्रको स्थापना	ललितपुर महानगरपालिका	-	दुई वर्ष

नोट: प्राथमिकता तह *** उच्च, ** मध्य, * न्युन



नोट :यस विषयमा जानकारी स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति ललितपुर महानगरपालिकामा सञ्चालन गरिएको कार्यशालामा आधारित छ
श्रोत: JICA ERAKV परियोजना

चित्र ५-१ पूर्वाधारहरूको निम्ति कार्यन्वयन हुनुपर्ने प्रथमिकतामा रहेका गतिविधिहरूको नक्सा

तालिका ५-४ पूर्वाधारहरूको निम्ति कार्यन्वयन हुनुपर्ने प्रथमिकतामा रहेका गतिविधिहरू

S/N	Project	Category	Location	Spatial Information in above figure
1	Afforestation at the surrounding of Nakkhu River	Afforestation	Nakkhu River	Located
2	Upgradation of Road	Road	Nakkhu River Corridor	Located
3	Control of Landslide	Landslide		Located
4	Maintenance of Raj Kulo for Irrigation	Irrigation	Ward-21,Khokana Fant	NA
5	Upgradation of Road	Road	Ward-21, Shree Rudrayeni School Khokana to Ward-18, Magar Gaun	NA
6	Control of Landslide	Landslide	Ward-21	Located
7	Control of Landslide	Landslide	Ward-21	Located
8	Construction of Retaining Wall	Retaining wall	Ward-24	Located
9	Upgradation of Pond	Pond	All over the municipality	Located
10	Widening of Road	Road		NA
11	Management of Electric Wires	Electric Lines	All over the municipality	Located

S/N	Project	Category	Location	Spatial Information in above figure
12	Provision of Traffic Light	Traffic Light		Located
13	River Training Work	River Training	South east of Hattiban in karmanasha River	Located
14	Provision of Traffic Light	Traffic Light	Gwarko	Located
15	Provision of Traffic Light	Traffic Light	Satdobato	Located
16	Provision of Traffic Light	Traffic Light	Pulchowk,Infornt of Labim Mall	Located
17	Provision of Traffic Light	Traffic Light	Kupandole	Located
18	Provision of Traffic Light	Traffic Light	Infront of Alka Hospital	Located
19	Cleaning of River	Sanitation	Bagmati River	Located
20	Control of Landslide	Landslide	Ward-24	NA
21	Widening of Road	Road	James school to south of ward 24	NA
22	River Training Work	River Training	Near James School	Located

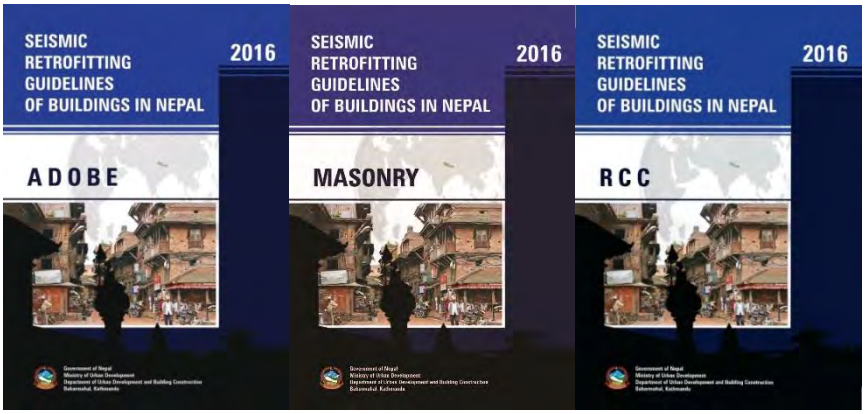
नोट :यस विषयमा जानकारी स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति ललितपुर महानगरपालिकामा सञ्चालन गरिएको कार्यशालामा आधारित छ

श्रोत: JICA ERAKV परियोजना

[गतिविधिहरूको विवरण]

■३-१-२: भूकम्प प्रतिरोधी क्षमताको जाँच, भवनहरूको भूकम्प प्रतिरोधी निर्माण, तथा भूकम्प प्रतिरोधी क्षमताको जाँचका लागि विज्ञहरु परिचालनका लागि आर्थिक तथा प्राविधिक सहायता

- भवनहरूको भूकम्प प्रतिरोधी अवस्थाको जाँचका लागि विज्ञहरू तथा प्राविधिकहरू परिचालन
- नेपला सरकारको निर्देशिका अनुसार भवनहरूको भूकम्पीय प्रवालिकरणका लागि प्राविधिक सहयोग



श्रोत: सहरी विकास तथा भवन निर्माण विभाग, सहरी विकास मन्त्रालय

चित्र ५-२ भवनहरूको भूकम्पीय प्रवालिकरणका लागि निर्देशिका

■३-२-४: नगरतहका अस्पतालहरु, स्वास्थ्य संस्था तथा स्वास्थ्य चौकीहरूको भूकम्प प्रतिरोधी क्षमताको जाँच तथा भूकम्प प्रतिरोधी प्रतिरिधि उपायहरू

स्वास्थ्य संस्थाहरूको भूकम्पीय प्रतिरोधी क्षमताको जाँच प्राथमिकताका आधारमा तालिका ५-५ अनुसार भूकम्पीय जोखिम विश्लेषणका आधारमा कार्यान्वयन गर्ने ।

तालिका ५-५ CNS-2 भूकम्पको अवस्थामा स्वास्थ्य संस्थाहरूमा हुन सक्ने सम्भावित भारि क्षति
(Probability of heavy damage for health facilities in case of CNS-2) (Probability ≧ 0.3)

S/N	Ward No.	Name	Classification	Operator	Capacity of bed	Building	Building Structure	Probability of Heavy Damage [CNS-2]
1	4	Alka Hospital	Hospital	private	100	Main	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
						Associate	Load Bearing Brick Wall in Cement Mortar	0.39
2	23	Sumeru Hospital	Hospital	private	100	Associate	Engineered Reinforced Concrete	0.34
						Associate	Engineered Reinforced Concrete	0.34
						Associate	Engineered Reinforced Concrete	0.34
						Associate	Engineered Reinforced Concrete	0.34
3	10	Sarvanga Hospital	Hospital	private	35	Main	Load Bearing Brick Wall in Cement Mortar	0.31
4	3	Kundalini Hospital	Hospital	private	15	Main	Load Bearing Brick Wall in Mud Mortar	0.81
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
						Associate	Load Bearing Brick Wall in Cement Mortar	0.42
5	3	Sumeru City Hospital	Hospital	private	15	Associate	Load Bearing Brick Wall in Cement Mortar	0.39
6	29	Harisiddhi Health Post	Health post	government	0	Main	Load Bearing Brick Wall in Cement Mortar	0.42
7	28	Kathmandu Hospital	Hospital	private	50	Main	Non Engineered Reinforced Concrete	0.45
8	4	National Hospital and Cancer Research Center	Hospital	private	25	Main	Load Bearing Brick Wall in Cement Mortar	0.36
						Associate	Load Bearing Brick Wall in Mud Mortar	0.78
9	25	Sainbu Health Post	Health post	government	2	Main	Non Engineered Reinforced Concrete	0.31
10	28	Nepal Plastic Surgery Hospital	Hospital	private	15	Main	Non Engineered Reinforced Concrete	0.43
11	15	Comrehebsive Swasha Sanstha	Clinic	private	2	Main	Non Engineered Reinforced Concrete	0.42
12	21	Khokana Sub Health Post	Health post	government	1	Main	Load Bearing Brick Wall in Cement Mortar	0.52
13	25	Diyas Hospital	Hospital	private	25	Main	Non Engineered Reinforced Concrete	0.33
14	12	Lagankhel Poly Clinic	Clinic	private	0	Main Building	Load Bearing Brick Wall in Mud Mortar	0.76
15	22	Bungmati Health Post	Health post	government	1	Main Building	Load Bearing Brick with Cement Mortar	0.54
						Associate	RC Frame Non Engineering	0.41
						Associate	Load Bearing Brick with Cement Mortar	0.54
16	27	Sunakothi	Health post	govern	0	Main	Load Bearing (Brick)	0.55

S/N	Ward No.	Name	Classification	Operator	Capacity of bed	Building	Building Structure	Probability of Heavy Damage [CNS-2]
		SHP		ment		Building		
17	24	Dhapakhel HP	Health post	government	0	Main Building		0.57
18	3	Pashupati Homeopathy Hospital	Hospital	government	0	Main Building	Brick in Cement	0.44
						Associate	Brick in Cement	0.44

नोट :जोखिम विश्लेषण हालको अवस्थामा उपलब्ध जानकारीहरूको आधारमा कार्यान्वयन गरिएको हो, तथा यी भूकम्पहरू भविष्यमा जाने भूकम्पको भविष्यवाणी होइन

■३-२-७: विद्यालयहरूको भूकम्पीय प्रतिरोधी क्षमताको जाँच तथा भूकम्प प्रतिरिधि उपायहरू

विद्यालयहरूको भूकम्पीय प्रतिरोधी क्षमताको जाँच प्राथमिकीकरण गरी तालिका ५-६ अनुसार जोखिम विश्लेषणलाई आधार मानी कार्यान्वयन गर्ने ।

तालिका ५-६ CNS-2 भूकम्पको अवस्थामा विद्यालयहरूमा हुन सक्ने सम्भावित भारि क्षति
(Probability of heavy damage for schools in case of CNS-2) (Probability ≧ 0.3)

S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
1	4	DAV Sushil Kedia Vishwa Bharati School	Secondary	private	Main	Load Bearing Brick Wall in Limesurkhi Mortar	0.80
2	4	Shree Sanchetana Primary School	Primary	government	Main	Load Bearing Brick Wall in Cement Mortar	0.51
3	5	Welhams College	College	private	Main	Load Bearing Brick Wall in Limesurkhi Mortar	0.78
4	18	Shahid Dharma Bhakta School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar; Load Bearing Concrete Block Wall in Cement Mortar	0.60
					Associate	Load Bearing Brick Wall in Mud Mortar	0.90
					Associate	Load Bearing Brick Wall in Cement Mortar	0.60
5	11	Kumbeshwor Lower Secondary School	Lower Secondary	government	Main	1st floor Load Bearing Brick Wall in Mud Mortar; above Load Bearing Brick Wall in Cement Mortar	0.56
6	2	GEMS Primary Wing	Primary	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.76
7	2	Shining Stars Secondary Boarding School	Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.50
8	10	Pragati Sikshya Sadan Secondary School	Higher Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.74
9	1	Rupak Memorial International Higher Secondary School	Secondary	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.73
10	4	Kistland School	Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.58
11	16	Shree Adarsha Saral Secondary School	Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.77
					Associate	Load Bearing Brick Wall in Mud Mortar	0.77
12	3	Nile Stream School	Secondary	private	Main	Load Bearing Concrete Block Wall in Cement Mortar	0.54
					Associate	Load Bearing Brick Wall in Cement Mortar	0.54
					Associate	Load Bearing Concrete Block Wall in Cement Mortar	0.54
					Associate	Load Bearing Concrete Block Wall in Cement Mortar	0.54
13	20	Tri-Padma Higher Secondary School	Higher Secondary	government	Associate	Load Bearing Brick Wall in Mud Mortar	0.59

S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
14	2	Gyanodaya Bal Batika Secondary Boarding School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.61
15	3	Lalitpur Nursing Campus	College	government	Associate	Load Bearing Brick Wall in Cement Mortar	0.54
					Associate	Load Bearing Brick Wall in Mud Mortar	0.72
16	3	Avens English Boarding School	Primary	private	Main	Load Bearing Brick Wall in Cement Mortar	0.63
					Associate	Load Bearing Brick Wall in Cement Mortar	0.63
					Associate	Non Engineered Reinforced Concrete	0.51
17	4	Himalayan International Ideal School	Secondary	private	Main	Load Bearing Concrete Block Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
18	3	National Open College	College	private	Main	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Concrete Block Wall in Cement Mortar	0.51
19	4	Nepal College of Management	College	private	Main	Non Engineered Reinforced Concrete	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.63
					Associate	Non Engineered Reinforced Concrete	0.51
					Associate	Engineered Reinforced Concrete	0.51
20	12	Adarsha Kanya Niketan Higher Secondary School	Higher Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.75
21	14	Choina Binayak Guru Ganesh School	Lower Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.77
22	14	Jupiter English school	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.51
23	14	Shree Mahalaxmi Lower Secondary school	Lower Secondary	government	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.78
24	4	Annapurna English Boarding High School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.53
25	4	Living Stone Academy	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.56
					Associate	Load Bearing Brick Wall in Cement Mortar	0.56
					Associate	Load Bearing Brick Wall in Cement Mortar	0.56
26	4	Sudesha High School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.53
27	5	Lalitpur Secondary School	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.76
28	5	Caribbean College	College	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.77
29	12	Children Talent Hunt Pre-Primary School	Primary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.72
30	26	Anal Jyoti Boarding School	Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.60
					Associate	Load Bearing Brick Wall in Mud Mortar	0.81
31	26	Lalitpur Academy	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.80
32	26	Shree Moti Binayak School	Lower Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.59
					Associate	Load Bearing Brick Wall in Mud Mortar	0.80
33	27	Siddhartha Secondary School	Lower Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.81
					Associate	Load Bearing Brick Wall in Mud Mortar	0.81
34	27	Shree Bal Kumari School	Higher Secondary	government	Associate	Load Bearing Brick Wall in Mud Mortar	0.62

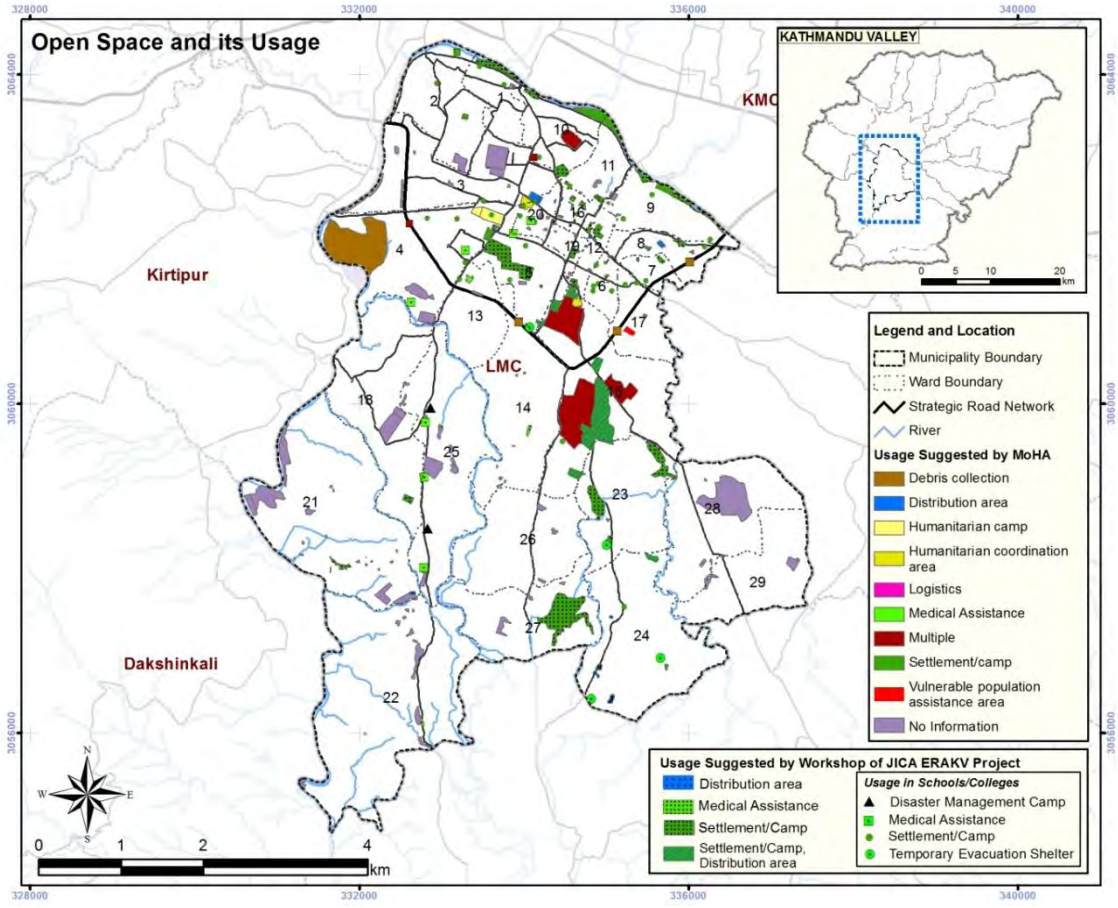
S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
35	4	Alpha's High School	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.62
36	23	I J Pioneer School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.56
37	3	Rato Bangala School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Limesurkhi Mortar	0.85
38	21	Shree Yuwa Pratibha Vidhya Mandir Secondary School	Secondary	government	Associate	Load Bearing Brick Wall in Mud Mortar	0.61
39	21	Simran Academy	Primary	private	Main	Non Engineered Reinforced Concrete	0.59
40	21	Zing Secondary School	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.81
41	25	Trilochan Academy	Primary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.83
42	18	High Land Secondary Boarding School	Secondary	private	Main	Load Bearing Brick Wall in Cement Mortar	0.57
					Associate	Load Bearing Brick Wall in Cement Mortar	0.57
43	18	Shree Bal Kumari Lower Secondary School	Lower Secondary	government	Associate	Non Engineered Reinforced Concrete	0.53
					Associate	Load Bearing Brick Wall in Cement Mortar	0.64
44	27	Goma Academy	Primary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.81
45	24	New Modern English Academy	Lower Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.85
46	24	Shree Jalpa Secondary School	Secondary	government	Associate	1st floor Load Bearing Brick Wall in Mud Mortar; above Load Bearing Brick Wall in Cement Mortar	0.64
47	29	People's Centroid Academy	Secondary	private	Main	Load Bearing Brick Wall in Cement Mortar	0.52
					Associate	Load Bearing Brick Wall in Cement Mortar	0.52
48	22	Divya Jyoti Secondary School	Secondary	private	Main	1st floor Load Bearing Brick Wall in Mud Mortar; above Load Bearing Brick Wall in Cement Mortar	0.72
					Associate	Load Bearing Brick Wall in Mud Mortar	0.88
49	22	Tri Ratna Cooperative Secondary School	Secondary	government	Main	Load Bearing Brick Wall in Cement Mortar	0.54
					Associate	Load Bearing Brick Wall in Mud Mortar	0.88
50	28	Pabitra Prabha Secondary School	Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.54
51	13	Mahendra Bhrikuti Ma Vi	Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.80
52	15	Namuna Macchindra Higher Secondary School and College	Secondary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate	Load Bearing Brick Wall in Mud Mortar	0.52
53	4	Birendra Smriti Sikshya Sadan (BEBS)	Secondary	private	Main	Load Bearing Brick Wall in Mud Mortar	0.59
54	3	Paribodh Boarding School	Secondary	private	Main	Non Engineered Reinforced Concrete	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.63
55	5	AVM High School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Mud Mortar	0.77
					Associate	Load Bearing Brick Wall in Mud Mortar	0.77
56	15	Little Angel's School	Higher Secondary	private	Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate	Load Bearing Brick Wall in Cement Mortar	0.51
					Associate		0.51
57	19	Bal Vidhyashram Primary School	Primary	government	Main	Load Bearing Brick Wall in Mud Mortar	0.55

S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
58	28	Bright Star Workers Higher Secondary School	Secondary	private	Main	Brick with Cement Mortar	0.58
59	2	Shree Tika Vidyashram Higher Secondary School	Higher Secondary	government	Associate	Bricks with mud mortar	0.76
					Associate	Bricks with mud mortar	0.76
60	10	Pulchowk Campus-Dean's Office	College	government	Main	Load Bearing Brick Wall in Limesurkhi Mortar	0.88
					Associate	Load Bearing Brick Wall in Cement Mortar	0.55
61	3	St. Mary's School	Secondary	Private	Main	Load Bearing Brick Wall in Mud Mortar	0.62
62	11	Shree Patan H.S.School	Higher Secondary	government	Main	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.54
					Associate	Load Bearing	0.68
					Associate	Load Bearing	0.68
					Associate	Load Bearing	0.68
					Associate	Load Bearing	0.68
63	2	Shree Panchakumari Primary School	Primary	government	Main	Load Bearing	0.56
64	24	Jassya Secondary School	Secondary	government	Associate	Load Bearing	0.57
65	26	Moti binayak LowerSecondary School	Lower Secondary	government	Associate	Load Bearing	0.60
					Associate	Load Bearing	0.60

नोट :जोखिम विश्लेषण हालको अवस्थामा उपलब्ध जानकारीहरूको आधारमा कार्यन्वयनकार्यान्वयन गरिएको हो, तथा यी भूकम्पहरू भविष्यमा जाने भूकम्पको भविष्यवाणी होइन

■३-२-२: आकष्मिक स्थानान्तण गर्ने स्थान तथा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन केन्द्रका रुपमा खुला क्षेत्रहरू निर्धारण तथा विकास गर्ने

- हरेक खुला क्षेत्रको निर्धारण तथा प्रयोगको जाँच गर्ने तथा चित्र ५-३ को आधारमा विकासको लागि प्राथमिकीकरण गर्ने
- खुला क्षेत्रहरूको विकास (भण्डारण गर्ने ठाउँ, आकष्मिक स्थानान्तरण गर्ने मार्ग, आदि समेत)
- स्थानीयवासीहरूलाई आकष्मिक स्थानान्तरण गर्ने ठाउँको बारेमा जानकारी दिने



नोट :यस विषयमा जानकारी स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति ललितपुर महानगरपालिकामा सञ्चालन गरिएको कार्यशालामा आधारित छ, यसको विवरणहरू अनुसूचीमा देखाइएको छ
श्रोत: गृह मन्त्रालय, काठमाडौं उपत्यका विकास प्राधिकरण, JICA ERAKV परियोजना

चित्र ५-३ खुला क्षेत्रको नक्सा

५-४. प्रभावकारी प्रतिकार्य र पूनर्लाभ, पूनर्स्थापना तथा पूननिर्माणमा "अझ राम्रो र बलियो निमाण" का लागि विपद् पुर्वतयारीको सूदृढीकरण

खण्ड ४ मा वर्णन गरिएको विपद् तथा जलवायु उत्थानशील नीतिका आधारमा, हरेक विपद्का लागि प्रभावकारी प्रतिकार्य र पुनर्स्थापना, पुनर्निर्माण तथा पुनर्लाभमा «अझ राम्रो र बलियो» (Build Back Better) अवधारणाको अवलम्वन गरी तयार पारिएका विपद् पूर्व-तयारीका गतिविधिहरु तपसिलको तालिका ५-७ मा दिइएको छ ।

तालिका ५–७ प्रभावकारी प्रतिकार्य र पूनर्स्थापना, पूनर्निर्माण तथा पूनर्लाभमा «अझ राम्रो र बलियो» (Build Back Better) अवधारणाको अवलम्वन गरि तयार पारिएका विपद् पुर्वतयारीका गतिविधिहरु

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
४. प्रभावकारी प्रतिकार्यका लागि विपद् पूर्वतयारीमा अभिवृद्धि, तथा पुनर्लाभ, पुनर्स्थापना तथा पुनर्निर्माणमा " अझ राम्रो तथा बलियो निर्माण" (BBB) को अवधारणा अवलम्बन गर्ने								
४-१. आपतकालीन पूर्वतयारी								
आपतकालीन प्रतिकार्यका लागि क्षमता अभिवृद्धि	सबै	***	४-१-१	सूचना संकलन तथा प्रचार-प्रसार प्रणालीको स्थापना	सूचना संकलन तथा प्रचार-प्रसार प्रणालीको स्थापना •वडा स्तरबाट सूचना संकलन प्रणालीको स्थापना •उद्धार र स्वास्थ्य/चिकित्सा संस्थाहरू, सडक र पुल, अत्यावश्यक सुविधाहरु, आदि सहितको क्षति तथा पुनर्स्थापना सूचना सम्प्रेषण प्रणालीको विकास •सूचना प्रचार-प्रसार प्रणालीको स्थापना (सूचना प्रवाहको विकास (नगरपालिका देखि स्थानीयवासी सम्म), सञ्चार साधनको प्रयोग) •विपद्को समयमा सञ्चार सञ्जाल विच्छेद हुने तथा अत्यधिक प्रयोगका कारण सञ्चारमा अवरोध आउने लगायतका समस्या समाधानका लागि संचारका मध्यमहरूको विविधिकरण (multiplexing) को विकास (उदाहरणका लागि उपग्रह (satellite) सञ्जालको जडान) •विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन प्रशासनिक रेडियोको विकास	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	पाँच वर्ष
	सबै	*	४-१-२	संकटासन्न, पिछडिएका तथा सिमान्तकृतका लागि सूचना सम्प्रेषण प्रणालीको विकास	संकटासन्न, पिछडिएका तथा सिमान्तकृतका लागि सूचना सम्प्रेषण प्रणालीको विकास •संकटासन्न मानिसहरुको लागि सूचना संकलन तथा सम्प्रेषण (नाम, ठेगाना, अवस्था, आदि) •सहायता प्रणालीको स्थापना (सहायता समूहको स्थापना, आदि)	ललितपुर महानगरपालिका	-	दुई वर्ष
	सबै	**	४-१-३	पूर्वसूचना प्रणालीको स्थापना	पूर्वसूचना प्रणालीको स्थापना •राष्ट्रिय तथा प्रदेश सरकारसँग समन्वय	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	दुई वर्ष
	सबै	**	४-१-४	आपतकालीन कार्य संचालन केन्द्र (EOC) को स्थापना	आपतकालीन कार्य संचालन केन्द्र (EOC) को स्थापना •आपतकालीन कार्य संचालन केन्द्र (EOC) को स्थान तथा मानव श्रोत सुनिश्चित गर्ने •कम्प्युटर, संचार मध्यम, सहितको आपतकालीन कार्य संचालन केन्द्र (EOC) को विकास	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	दुई वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	*	४-१-५	आकस्मिक प्रतिकार्यको लागि प्रारम्भिक तथा परिचालन प्रणालीको स्थापना	प्रारम्भिक आकस्मिक प्रतिकार्यलाई सजिलोसँग संचालन गर्नका लागि निम्न व्यवस्था सहितको कार्यविधि तर्जुमा •विपद् प्रतिकार्य समितिको स्थापना (कसरी सुचित गर्ने, भेला गर्ने, आदि) •कर्मचारीहरूको परिचालन लगायतका प्रारम्भिक प्रणाली को स्थापना (कसरी सूचना दिने, संकलन गर्ने, आदि)	ललितपुर महानगरपालिका	-	दुई वर्ष
	भूकम्प वाहेकका विपद्हरु	***	४-१-६	विपद्का लागि आपतकालीन प्रतिकार्य निर्देशिका (SOP) तर्जुमा	 विपद्का लागि आपतकालीन प्रतिकार्य निर्देशिका (SOP) तर्जुमा (विषयवस्तुहरुको उदाहरण) •प्रत्येक शाखाको प्रवाह चित्र र जांच सूची(check list), तथा खोज तथा उद्धार, औषधोपचार, खाद्यान्न प्रबन्ध लगायतका हरेक प्रतिकार्य गतिविधिहरू •सूचना संकलनका लागि विभिन्न ढाँचाहरु, आदि	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	दुई वर्ष
	सबै	*	४-१-७	आपतकालीन प्रतिकार्यका लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन अभ्यासहरुको कार्यान्वयन	आपतकालीन प्रतिकार्यका लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन अभ्यासहरुको कार्यान्वयन •क्षमता विकासका लागि क्रम बद्ध रुपमा अभ्यास कार्यक्रमहरूको तर्जुमा (गोष्ठी, table-top-अभ्यासहरु, command post अभ्यासहरू) •अन्य संस्थाहरूसँगको सहकार्यमा अभ्यास •अभ्यासहरुको प्रमाणीकरण तथा SOP संसोधन (विषयवस्तुहरुको उदाहरण) •सूचना संकलन ,सम्प्रेषण तथा प्रचार-प्रसार, •परिचालन •अन्य संस्थाहरूसँग समन्वय	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	नियमित
उद्धार, प्राथमिक उपचार, आकस्मिक स्वास्थ्य गतिविधिहरुको क्षमता अभिवृद्धि	सबै	*	४-१-८	विपद् आधार अस्पतालहरु तथा स्वास्थ्य शिविर/ केन्द्रहरुको निर्धारण	विपद् आधार अस्पतालहरु तथा स्वास्थ्य शिविर/ केन्द्रहरुको निर्धारण •विपद् आधार अस्पतालको सुविधाहरुको सुधार तथा अभिवृद्धि (भूकम्प प्रतिरोधी उपायहरु, भण्डारण, संचार सुविधाहरु, आदि)	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	**	४-१-९	आपातकालीन चिकित्सा परिवहन प्रणालीको स्थापना	 शीघ्र आपतकालीन यातायातका लागि आपातकालीन चिकित्सा परिवहन प्रणालीको स्थापना •स्वास्थ्य सूचना प्रणालीको व्यवस्थापन •एम्बुलेन्स तथा अन्य परिवहन प्रणालीमा सुधार तथा अभिवृद्धि •राष्ट्रिय तथा प्रदेशस्तरसँग सहकार्य	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	दुई वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
ट्राफिक /यातायात तथा अत्यावश्यक संरचना व्यवस्थापन	सबै	**	४-१-१०	सडक अवरोधहरु हटाउने योजना/निर्देशिकाको विकास, सडक अवरोध उन्मूलन प्रणालीको सुदृढीकरण तथा प्रहरी सँगको सहकार्यमा सुधार	सडक अवरोधहरु उन्मूलनका लागि योजना/निर्देशिकाको विकास •सडक अवरोधहरु हटाउनका लागि सडकहरुको प्राथमिकता तोक्ने •प्रहरीसँगको सहकार्यमा सडक अवरोध हटाउने प्रणाली स्थापना	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	*	४-१-११	निर्माण कम्पनीहरुसँग सडकहरुको आकस्मिक पुनर्स्थापना सम्बन्धि सम्झौता	निर्माण कम्पनीहरुसँग सडकहरुको आकस्मिक पुनर्स्थापना सम्बन्धि सम्झौता •निर्माण कम्पनी चयन •सम्झौताको विषयवस्तु निर्धारण (जिम्मेवार क्षेत्र, खर्च, आदि) •सम्झौताको अन्त्य	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	*	४-१-१२	अत्यावश्यक सेवा सुविधा प्रदायकहरु सँग सहकार्य प्रणालीको सबलीकरण	अत्यावश्यक सेवा सुविधा प्रदायकहरु सँग सहकार्य प्रणालीको सबलीकरण •विपद् प्रतिकार्य क्षमता सबल बनाउनका लागि अत्यावश्यक सेवा सुविधा प्रदायकहरुसँगको सहकार्यमा तालिम कार्यान्वयन	ललितपुर महानगरपालिका	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, सम्बन्धित निकाय	नियमित
समुदायमा आधारित विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनमा अभिवृद्धि	सबै	*	४-१-१३	परिवारद्वारा आपातकालीन भण्डारणको तयारीमा प्रोत्साहन	परिवारद्वारा आपातकालीन भण्डारणको तयारीमा प्रोत्साहन •आकस्मिक भण्डारण सामग्रीको सूची तयार गर्ने •परिवारद्वारा आपातकालीन भण्डारणको तयारीमा प्रोत्साहन (भण्डारणको बारेमा सूचना पुस्तिकाको विकास)	ललितपुर महानगरपालिका	वडा कार्यालय	एक वर्ष
	सबै	***	४-१-१४	समुदाय तहमा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनको हालको अवस्थाको संक्षिप्त जानकारीका लागि "सामुदाय सारांश नक्सा" (community carte) को तयारी	"सामुदाय सारांश नक्सा" (community carte) को तयारी (विषयसूचीको उदाहरण) •समुदायको पाश्र्वचित्र (जनसंख्या, भौगोलिक अवस्था, अवस्थिति) •विपद् जोखिम न्यूनीकरण सम्बन्धित सूचना (पूर्वतयारीको अवस्था, संकटासन्न व्यक्तिहरु, स्थानान्तरण गर्ने स्थान/मार्ग, आदि.)	वडा कार्यालय	ललितपुर महानगरपालिका	एक वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	***	४-१-१५	सामुदायका अगुवाहरुका लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन क्षमता विकास कार्यक्रमहरुको कार्यान्वयन	सामुदायका अगुवाहरुका लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन क्षमता विकास कार्यक्रमहरुको कार्यान्वयन •कार्य समूहहरु (Task forces)को स्थापना • विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन क्षमता विकास कार्यक्रमहरुको निर्धारण तथा कार्यान्वयन (कार्यक्रमहरुको उदाहरण) •समुदायको विपद् पूर्वतयारीमा ध्यान (विपद् व्यवस्थापन योजना, कार्य योजनाहरु बनाउने, आदि)	वडा कार्यालय	ललितपुर महानगरपालिका	नियमित
	सबै	**	४-१-१६	सामुदायिक विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन अभ्यासहरु संचालन	सामुदायिक विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन अभ्यासहरु संचालन •विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन अभ्यासका लागि वार्षिक योजना तर्जुमा •सामुदायिक विपद् जोखिम न्यूनीकरण तथा व्यवस्थापन अभ्यास कार्यान्वयन (अभ्यासका उदाहरण) •आकस्मिक स्थानान्तरण (evacuation) अभ्यास •आगलागी नियन्त्रण अभ्यास •खोज तथा उद्धार, प्राथमिक उपचार अभ्यास	वडा कार्यालय	ललितपुर महानगरपालिका	नियमित
पर्यटकीय स्थलका लागि विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनका उपायहरु	सबै	**	४-१-१७	पर्यटकीय स्थलहरू नजिकै आकस्मिक स्थानान्तरण स्थान निर्धारण तथा विकास	पर्यटकहरुको सुरक्षा सुनिश्चित गर्नका लागि आकस्मिक स्थानान्तरण गर्ने स्थान निर्धारण तथा विकास •पर्यटकीय स्थलनजिकै आकस्मिक स्थानान्तरण गर्ने स्थानका रुपमा प्रयोग गर्न सकिने खुला क्षेत्रहरु तथा सेवा-सुविधाहरुको अनुसन्धान • आकस्मिक स्थानान्तरण गर्ने स्थान तोकी भण्डारण गोदाम जस्ता अवयवहरुको विकास	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	एक वर्ष
	सबै	***	४-१-१८	विपद्को समयमा पर्यटकहरुको लागि निर्देशन प्रणालीको स्थापना	विपद्को समयमा पर्यटकहरुको लागि निर्देशन प्रणालीको स्थापना •पर्यटकहरूलाई सुरक्षित सँग आकस्मिक स्थानान्तरणका स्थलमा लग्नका लागि निर्देशन प्रणालीको (शाखा इन्चार्ज) स्थापना •निर्देशन नक्साहरूको वितरण तथा संकेत पाटीहरूको निर्माण •पर्यटकहरुको सुरक्षा निश्चितता निर्धारण (पर्यटक सूचना संकलन गर्ने ढाँचाको तयार गर्ने) •पर्यटकहरूको आकस्मिक स्थानान्तरणका लागि आवधिक रुपमा अभ्यासहरु कार्यान्वयन	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	दुई वर्ष

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	*	४-१-१९	पर्यटकहरूको लागि आवश्यक सामान भण्डारणमा वृद्धि	स्थानीयवासीको लागि मात्र नभएर पर्यटकहरूको लागि आवश्यक सामान भण्डारण गर्ने •पर्यटकहरूको संख्या र आवश्यक भण्डारणको परिमाण अनुमान •पर्यटकहरूको लागि भण्डारण गोदामको विकास •पर्यटकहरूको लागि भण्डारण सामाग्रीहरुको खरीद	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	दुई वर्ष
४-२. विपद्को समयमा आपतकालीन प्रतिकार्य गतिविधिहरु	सबै	-	४-२-१	आपातकालीन प्रतिकार्य मुख्यालय (ERHQ)को स्थापना तथा ब्यवस्थापन	-	ललितपुर महानगरपालिका	-	तत्काल
	सबै	-	४-२-२	विपद् सूचना संकलन	-	ललितपुर महानगरपालिका, वडा कार्यालय	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति	तत्काल
	सबै	-	४-२-३	विपद् प्रभावितहरुका लागि आकस्मिक उद्धार गतिविधिहरु (खोज तथा उद्धार (SAR), तथा प्राथमिक उपचार)	-	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	तत्काल
	सबै	-	४-२-४	अग्नि नियन्त्रण गतिविधिहरु	-	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	तत्काल
	सबै	-	४-२-५	आकस्मिक स्थानान्तरण शिविरहरुको व्यवस्थापन (आपतकालीन सामग्री वितरण, जस्तै खाद्यान्न, लुगा, औषधि, पिउने पानी तथा सरसफाई)	-	ललितपुर महानगरपालिका	वडा कार्यालय	विपद्को एक घण्टा पश्चात देखि

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	-	४-२-६	वातावारण व्यवस्थापन (अस्थाई शौचालय, शव व्यवस्थापन, सरसफाई तथा महामारी रोकथामका उपायहरु, फोहोर तथा भग्नावषेशको व्यवस्थापन)	-	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	विपद्को एक घण्टा पश्चात देखि
	सबै	-	४-२-७	सर्वसाधारणलाई सूचना दिने	-	ललितपुर महानगरपालिका	वडा कार्यालय	विपद्को एक घण्टा पश्चात देखि
	सबै	-	४-२-८	संकटासन्न समूहहरूलाई सुरक्षा तथा सहायता	-	ललितपुर महानगरपालिका	वडा कार्यालय	विपद्को एक घण्टा पश्चात देखि
	सबै	-	४-२-९	यातायात संजाल सुरक्षित राख्नका लागि संवेदनशील सेवा-सुविधाहरु, संरचनाहरु तथा अत्यावश्यक सेवाहरु सुचारु राख्न आकस्मिक पुनर्स्थापना	-	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	तत्काल
	सबै	-	४-२-१०	स्वयंसेवकहरुको सहयोग स्वीकार	-	ललितपुर महानगरपालिका	वडा कार्यालय	विपद्को एक घण्टा पश्चात देखि तिन सम्म र निरन्तर
	सबै	-	४-२-११	सुरक्षा नियन्त्रण तथा त्रास रोकथामका उपायहरु	-	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	विपद्को एक घण्टा पश्चात देखि तिन सम्म र निरन्तर

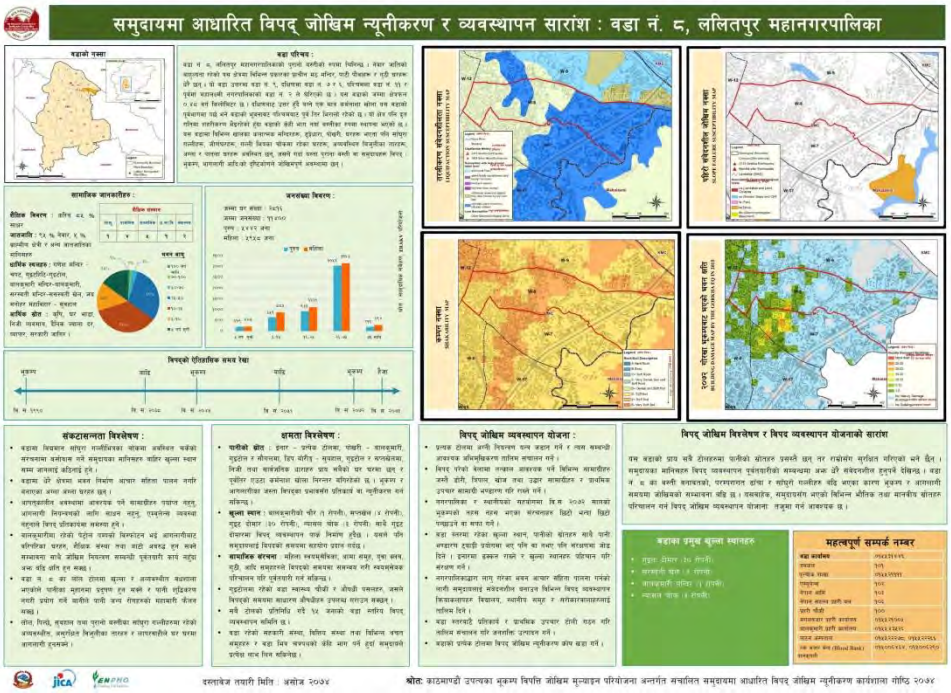
क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	-	४-२-१२	आपतकालीन कोषको व्यवस्थापन		राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	विपद्को एक घण्टा पश्चात देखि तिन सम्म र निरन्तर
	सबै	-	४-२-१३	अन्य संस्थाहरुसँग सहकार्य तथा सहायता र संलग्नताका लागि अनुरोध	-	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	विपद्को एक घण्टा पश्चात देखि तिन सम्म र निरन्तर
४-३. " अझ राम्रो तथा बलियो निर्माण" (BBB) को अवधारणा अनुरुप विपद् पश्चातका गतिविधिहरु	सबै	-	४-३-१	विपद्का कारण भएको क्षति तथा नोक्सानीको मुल्यांकन गर्ने	-	राष्ट्रिय तथा प्रदेश सरकार, जिल्ला समन्वय समिति, ललितपुर महानगरपालिका	-	-
	सबै	-	४-३-२	" अझ राम्रो तथा बलियो निर्माण" (BBB) को अवधारणा अनुरुप पुनर्स्थापना तथा पुनर्निर्माणका लागि कार्ययोजनाको तर्जुमा	-	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	-
	सबै	-	४-३-३	सार्वजनिक महत्वका सेवा-सुविधा तथा पूर्वाधारको पुनर्स्थापना , तथा विपद् प्रभावितहरुको घर पुनर्निर्माण	-	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	-

क्षेत्र	विपद्को प्रकार	प्राथमिकता	क्र.सं.	विपद् तथा जलावायु उत्थानशील उपायहरू		जिम्मेवारी		समयावधि
				गतिविधिहरूको सुची	विषयवस्तुहरू	प्रमुख जिम्मेवार निकाय	सहायक निकाय	
	सबै	-	४-३-४	विपद्का कारण पिडित भएकाहरूको जीवन पुनर्स्थापना /सामान्यीकरण	-	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	-
	सबै	-	४-३-५	विपद् पिडितहरूको सामाजिक, आर्थिक, तथा संस्कृतिक पुनर्स्थापना	-	ललितपुर महानगरपालिका	प्रदेश सरकार, जिल्ला समन्वय समिति	-

नोट: प्राथमिकता तह *** उच्च, ** मध्य, * न्युन

■४-१-१४: समुदायतहमा विपद् जोखिम न्यूनीकरण तथा व्यवस्थापनको हालको अवस्थाको संक्षिप्त जानकारीका लागि "community carte"को तर्जुमा
(विषयवस्तुहरूको उदाहरण)

- समुदायहरूको पर्श्वचित्र (जनसंख्या, भूगर्भ, अवस्थिति)
- विपद् जोखिम न्यूनीकरण तथा व्यवस्थान सम्बन्धित जानकारी (पूर्वतयारी, सङ्कटउन्मुख व्यक्तिहरू, आकष्मिक स्थानान्तरण गर्ने ठाउँ/मार्ग, आदि)



चित्र ५-६ समुदायमा आधारित विपद् जोखिम न्यूनीकरण सारंश (माथि) तथा विपद् जोखिम न्यूनीकरण नक्सा (तल) (ललितपुर महानगरपालिका वडा ८ को उदाहरण)

खण्ड ६.

योजना अनुगमन, मूल्याङ्कन तथा अद्यावधिक

६-१. अनुगमन तथा मूल्याङ्कन

(१) अनुगमन

ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजना कार्यान्वयनको प्रगति निरीक्षण गर्ने तथा आइपर्न सक्ने समस्याको रोकथाम तथा शीघ्र समाधान गर्नका लागि त्यसको पहिचान तथा आंकलन गर्ने गतिविधि नै अनुगमन हो ।

कोषको वितरण, नतिजाको उपलब्धि तथा नयाँ अवरोधहरुको प्रगतिको निरीक्षणका लागि अनुगमन गरिन्छ । गतिविधिहरुको कार्यान्वयन, कार्यक्रमको सञ्चालन तथा हासिल गरिएको परिणामको यथार्थ विवरण प्राप्त गर्नका लागि नियमित रुपमा अनुगमन गर्न आवश्यक छ ।

निम्न सिद्धान्तहरु अनुरुप अनुगमन तथा मूल्याङ्कन कार्य गरिन्छ :

क. कार्यकुशलता, अर्थात एउटा कार्यक्रम वा गतिविधिद्वारा उत्पादित मालसामान/सेवा तथा त्यो मालसामान/सेवा उत्पादन गर्न चाहिने श्रोत-साधन बीचको तालमेल/परस्पर सम्बन्धको स्तर

ख. प्रभावकारिता, अर्थात् एउटा कार्यक्रम/गतिविधिले कति सम्म आफ्नो लक्षित परिणाम तथा लाभ हासिल गरेको स्तर

ग. लाभ, अर्थात् समयावधि भित्र, उचित स्थान र लक्ष्य, तथा सर्वोत्कृष्ट कार्य सञ्चालन गर्न सक्ने नतिजा हासिल गरेको अवस्थामा अपेक्षित अवस्था

घ. प्रभाव, अर्थात् परिणामको मद्दतले कार्य सञ्चालन गर्दाको नतिजाद्वारा हासिल गरिएको दीर्घकालीन परिवर्तन

ङ. दगोपन, अर्थात् लगातार रुपमा नतिजा उत्पादन गर्नका लागि कुनै गतिविधि कार्यान्वयन प्रक्रिया

ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशीलता सम्बन्धी कार्यक्रमको अनुगमन गर्न गठन गरिएको स्थानीय विपद् तथा जलवायु उत्थानशील समितिले सम्बन्धित कार्यक्रमको प्रभावकारिता अनुगमन गरी महानगरपालिकालाई आवश्यक सल्लाह-सुझाव दिनेछ ।

(२) मुल्याङ्कन

ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको कार्यान्वयनको मद्दतले मालसामान वा सेवासुविधाको रुपमा प्रतिफल हासिल गरी समुदाय र सरकारलाई प्रभाव वा लाभ पुऱ्याउनका लागि त्यसको मूल्याङ्कन गरिने छ । सैद्धांतिक रूपमा हेर्दा कार्यक्रमको

लगानी (input), नतिजा, तथा योजना र न्युनतम आधारमा आधारित परिणाम बोधको तुलना गर्ने गतिविधिहरुको श्रृंखलानै मूल्याङ्कन हो । श्रोतहरूको प्रयोग तथा गतिविधि वा कार्यक्रमहरुको कार्य-सञ्चालनका सूचकाङ्क र लक्ष्यहरुको आधारमा मूल्याङ्कन गरिन्छ ।

तालिका ६-१ अनूगमन तथा मूल्याङ्कन

कार्य	बजेट		सूचक		उपलब्धिको स्तर	द्रष्टव्य
	अनुमानित	यथार्थ	अनुमानित	यथार्थ		

ललितपुर महानगरपालिकामा विपद् तथा जलवायु उत्थानशील योजनाको कार्यान्वयन मूल्याङ्कन गर्दा अनुगमनमा जस्तै सबै सरोकारवालाहरुले आ-आफ्नो कर्तव्य र जिम्मेवारी अनुसार मूल्याङ्कन गर्नेछन् ।

(३) जानकारी गराउन/प्रतिवेदन तयार गर्ने

वर्षको एक पटक सम्बन्धित निकाय, स्थानीय तह तथा मन्त्रालयलाई अनुगमन तथा मूल्याङ्कन प्रतिवेदन बुझाउनु पर्नेछ ।

६-२. योजनाको पूनरावलोकन तथा अद्यावधिक

(१) पूनरावलोकन

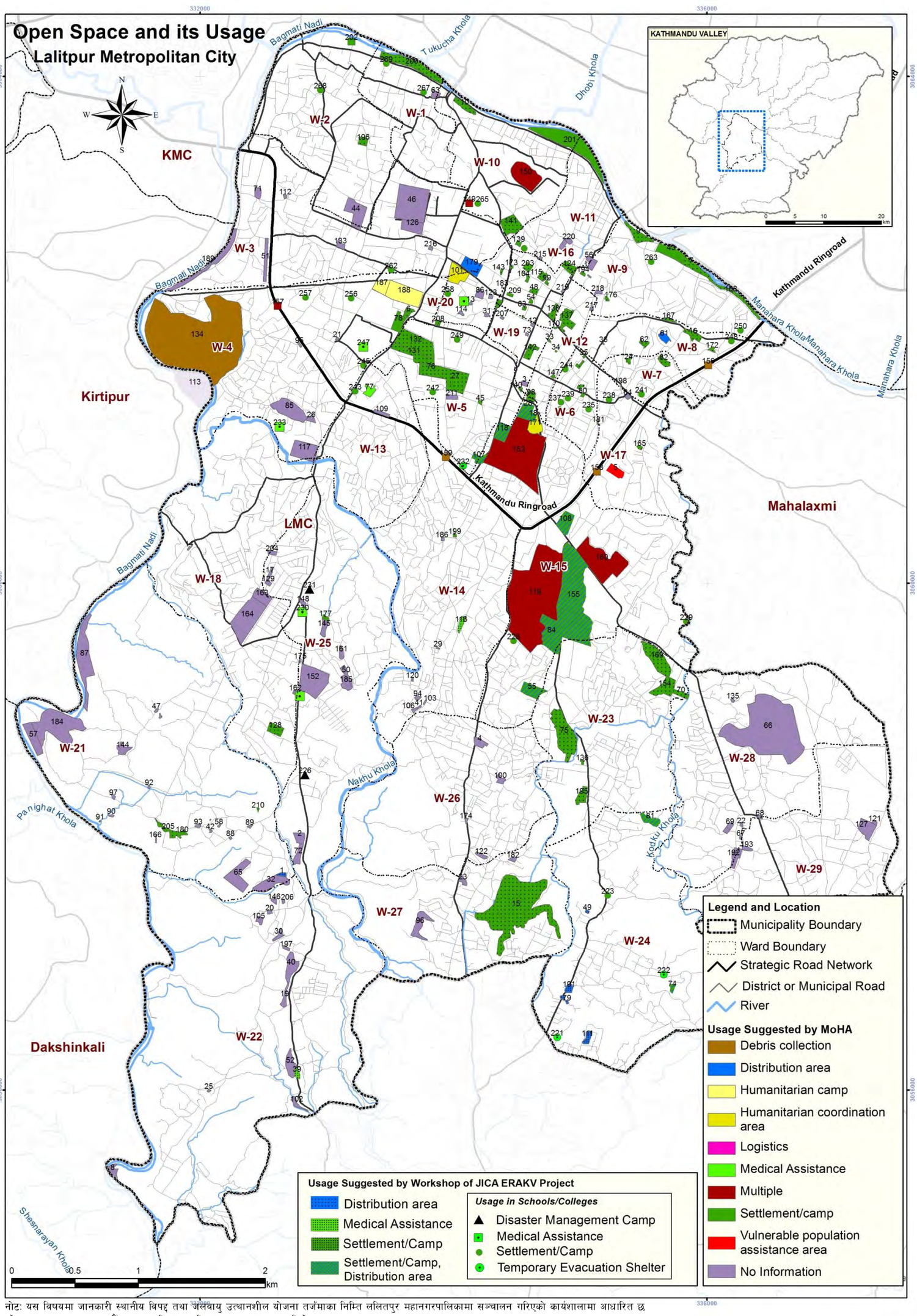
नगरपालिकाको कुनै पनि क्षेत्रमा भएका सङ्कटासन्नता, क्षमता तथा विपद्को जोखिममा आएका सान्दर्भिक परिवर्तनहरुलाई सम्बोधन गर्नका लागि विपद् तथा जलवायु उत्थानशील योजनाको पुनरावलोकन प्रत्येक वर्ष गरिनेछ र नगरपालिकाको वार्षिक कार्यक्रमहरुमा समावेश गरिनेछ । यस आवधिक पुनरावलोकनको उद्देश्य विपद् तथा जलवायु उत्थानशील गतिविधिहरु/कार्यक्रमहरु कार्यान्वयनको माध्यमबाट हासिल गरिएको नतिजा, प्रभावकारिता र कार्यकुशलताको मूल्याङ्कन गर्नु हो ।

(२) अद्यावधिक

विपद् तथा जलवायु उत्थानशील गतिविधिहरुलाई अझ प्रभावकारी बनाउनका लागि स्थानीय विपद् तथा जलवायु उत्थानशील योजनालाई हरेक ५ वर्ष वा विपद् आइपरेको अवस्थामा नियमित रुपमा पुनरावलोकन गरी अद्यावधिक गरिनेछ ।

अनुसूची

परियोजनाले स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति संचालन गरेको कार्यशालाको आधारमा खुला क्षेत्रहरु तथा तिनको प्रयोग



नोटः यस विषयमा जानकारी स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति ललितपुर महानगरपालिकामा सञ्चालन गरिएको कार्यशालामा आधारित छ
श्रोतः गृह मन्त्रालय, काठमाडौं उपत्यका विकास प्राधिकरण, JICA ERAKV परियोजना

चित्रः खुला क्षेत्र तथा तिनको उपयोग सहितको नक्सा

तालिकाः विद्यालय तथा तिनको प्रयोगको सूची

वडा नं.	क्र.स.	खुला क्षेत्रको नाम	अक्षांश	देशान्तर	क्षेत्रफल (वर्ग मी)	स्वामित्व	उपयोग	खुला क्षेत्र वारे सूचनाको श्रोत	उपयोग वारे सूचनाको श्रोत
1	63	Gurudwara Guru Nanak Satsang	27.688718	85.315167	3,003	Religious institutions	No Information	KVDA	No Information
1	200	UN Park	27.690768	85.313247	31,521	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
2	44	CNC Headquater	27.680228	85.308948	23,993	Office	No Information	KVDA	No Information
2	196	Tika Bidhyashram Higher Secondary School	27.685311	85.309446	4,158	School	Settlement/Camp	KVDA	JICA ERAKV Workshop
2	202	UN Park Gusingal	27.6924	85.3084	81,380	No Information	Settlement/camp	MoHA	MoHA
3	46	Department of Civil Personnel Records	27.680926	85.313403	63,628	No Information	No Information	KVDA	No Information
3	51	Dhobighat Environmental Garden	27.676757	85.301784	7,852	Nepal Government	No Information	KVDA	No Information
3	71	Indreni Utthan Sanepa	27.681538	85.301084	3,952	Nepal Government	No Information	KVDA	No Information
3	112	Metropolitan Police	27.681333	85.30327	899	Office	No Information	KVDA	No Information
3	126	Nepal Bhupu sainik Association	27.679291	85.313479	14,146	Office	No Information	KVDA	No Information
3	133	Opposite of Mata Temple	27.677906	85.30775	2,989	No Information	No Information	KVDA	No Information
3	179	Shree Madan Smrak Higher Secondary School	27.676523	85.318267	14,942	School	Distribution area	KVDA	MoHA
3	189	Sundarighat	27.676501	85.297193	23,353	Nepal Government	No Information	KVDA	No Information
3	216	-	27.677783	85.314954	985	No Information	No Information	KVDA	No Information
4	6	At the Side of Jawalakhel Football Ground	27.673129	85.31326	3,290	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
4	21	Bhanimandal Basket Court	27.67122	85.307593	447	Lease	No Information	KVDA	No Information
4	26	Bishnu Devi Temple	27.665484	85.305601	2,771	Nepal Government	No Information	KVDA	No Information
4	37	Children park, Jawalakhel	27.673339	85.313108	1,513	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
4	78	Jawalakhel Youth Club football Ground	27.672455	85.312455	10,405	Office	Settlement/camp	KVDA	MoHA
4	85	Khadhye Sansthan,Nakkhu	27.666115	85.303855	28,078	Nepal Government	No Information	KVDA	No Information
4	95	Krishna Mohan Nudup Smriti Park	27.670768	85.304583	756	Nepal Government	No Information	KVDA	No Information
4	113	Modern Indian School	27.667711	85.29625	60,064	Nepal Government	No Information	KVDA	No Information
4	117	Nakkhu Jail	27.663194	85.305094	24,762	Nepal Government	No Information	KVDA	No Information
4	134	Oxidation Pond/Oxygenation Park	27.671108	85.296399	362,728	Office	Debris collection	KVDA	MoHA
4	157	Ringroad Ekantakuna Balkhu	27.6735	85.3028	166,805	No Information	Multiple	MoHA	MoHA
4	187	ST. mary's school	27.674972	85.31108	11,137	School	Humanitarian camp	KVDA	MoHA
4	188	St. Xavier School	27.674466	85.312879	36,491	No Information	Humanitarian camp	KVDA	MoHA
5	27	British Gorkha headquater	27.668397	85.317071	29,470	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
5	45	Dakshinkali temple	27.666839	85.319089	798	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
5	76	Japanese embassy resident	27.669039	85.315142	16,766	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
5	131	Opposite of Jawalakhel Football Ground-1	27.67015	85.313753	20,011	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
5	132	Opposite of Jawalakhel Football Ground-2	27.67098	85.313852	38,159	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
5	140	Patan Mental Hospital	27.667812	85.322298	1,026	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
5	208	Welhams College	27.672449	85.315637	2,291	Lease	Settlement/camp	KVDA	JICA ERAKV Workshop

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5	211	-	27.667183	85.316812	3,348	No Information	No Information	KVDA	No Information
6	35	Chalanse	27.670189	85.32733	338	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
6	60	Gajubahal	27.669613	85.327004	1,640	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
6	80	Kanibahal	27.66745	85.327276	1,000	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
6	130	Okubahal	27.668049	85.327078	1,790	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
6	181	Sichahiti	27.665427	85.328554	362	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
7	24	Bhinche Bahal	27.66993	85.330906	1,644	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
7	82	Kathmandu University	27.669915	85.333732	4,895	College	Settlement/camp	KVDA	JICA ERAKV Workshop
7	198	Tyagal	27.668198	85.330297	190	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
8	16	Balkumari Temple	27.671814	85.336036	6,681	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
8	36	Chapata tole	27.671125	85.328881	205	Religious institutions	No Information	KVDA	No Information
8	61	Gokulchaur	27.671633	85.333736	5,058	Religious institutions	Distribution area	KVDA	MoHA
8	62	Guin Tole	27.671177	85.332141	3,049	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
8	156	Ringroad Balkumari Gwarko	27.6697	85.3373	78,169	No Information	Debris collection	MoHA	MoHA
8	167	Sankhamul Bagmati Chetra	27.672895	85.334067	2,022	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
8	172	Saraswati sthan	27.670828	85.337583	1,223	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
9	7	Bagmati Kinar-2	27.676837	85.33581	8,470	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
9	9	Bagmati Nadi Kinar-1	27.678895	85.331558	11,771	Office	Settlement/camp	KVDA	JICA ERAKV Workshop
9	43	Chyasal Football Ground/ANFA Football Ground	27.677744	85.334203	19,838	Office	Settlement/camp	KVDA	MoHA
9	168	Sankhamul Bagmati Kinar	27.674865	85.339017	13,236	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
9	176	Shramik Shanti School	27.674321	85.329108	1,045	School	Settlement/camp	KVDA	JICA ERAKV Workshop
9	194	Taranani	27.676084	85.327171	1,082	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
9	212	-	27.675921	85.327673	370	No Information	No Information	KVDA	No Information
9	213	-	27.676763	85.327898	3,853	No Information	No Information	KVDA	No Information
9	218	-	27.674771	85.328385	1,558	No Information	No Information	KVDA	No Information
10	10	Bagmati River Kinar, Near Thapathali Bridge	27.687921	85.317525	7,933	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
10	141	Patan Multiple Campus	27.679492	85.321359	18,322	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
10	149	Pulchowk Engg. College	27.681	85.318	20,516	No Information	Multiple	MoHA	MoHA
10	150	Pulchowk Engg. College 2	27.683014	85.32247	35,129	No Information	Multiple	KVDA	MoHA
10	201	UN Park	27.685337	85.325976	54,587	No Information	Settlement/camp	KVDA	MoHA
11	38	Chowo Nani	27.67689	85.327387	222	Nepal Government	No Information	KVDA	No Information
11	56	Ewa Hitar	27.677144	85.327629	1,420	Nepal Government	No Information	KVDA	No Information
11	124	Near Banglamukhi Temple	27.676515	85.32608	6,862	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
11	139	Patan Higher Secondary School	27.678187	85.321984	1,562	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
11	214	-	27.678094	85.325552	3,192	No Information	No Information	KVDA	No Information
11	215	-	27.677146	85.323733	797	No Information	No Information	KVDA	No Information
11	220	-	27.678425	85.325998	1,862	No Information	No Information	KVDA	No Information
12	33	Chakra Bahil	27.671283	85.324561	447	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	34	Chakra Bahil	27.670544	85.325095	159	Religious	Settlement/camp,	KVDA	JICA ERAKV Workshop

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						institutions	Distribution		
12	98	Lagankhel Buspark	27.667313	85.323154	5,133	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	110	Mangalbazar chowk	27.67223	85.325004	423	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	137	Patan Durbar area	27.672811	85.32591	10,800	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	147	prayag pokhari	27.66874	85.324908	711	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
12	217	-	27.673568	85.327892	562	No Information	No Information	KVDA	No Information
13	77	Jawalakhel Hastakala Kendra/Tibetan Refugee Camp	27.667538	85.310217	6,156	Office	Medical assistance	KVDA	MoHA
13	109	Majuwachaur	27.665974	85.311234	3,035	Nepal Government	No Information	KVDA	No Information
14	29	Budha Marga Youth club	27.649291	85.315974	629	Nepal Government	No Information	KVDA	No Information
14	41	Chuniya Binan Ganesh Lower Secondary School	27.645073	85.314542	599	School	No Information	KVDA	No Information
14	94	Kirateshwar Ashram	27.645723	85.314426	1,553	Religious institutions	No Information	KVDA	No Information
14	103	Lokeshwar Mahadev Temple	27.645409	85.31498	559	Nepal Government	No Information	KVDA	No Information
14	106	Mahalaxmi Lower Secondary School	27.644864	85.314173	1,074	School	No Information	KVDA	No Information
14	116	Nakhipot Sport	27.651067	85.317817	3,748	Nepal Government	Medical Camp	KVDA	JICA ERAKV Workshop
14	120	Nark, Panitanki	27.647027	85.313976	391	Nepal Government	No Information	KVDA	No Information
14	159	Ringroad Satdobato Ekantakuna	27.6629	85.3164	117,111	No Information	Debris collection	MoHA	MoHA
14	186	Soma Hiti	27.657053	85.316243	514	Nepal Government	No Information	KVDA	No Information
14	199	Umamaheshwar Park	27.657317	85.317208	552	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
15	18	Batuk Bhairab Temple	27.665815	85.323339	1,266	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	28	Buddhi Bikash Mandal	27.666515	85.322911	2,466	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	53	District Livestock service center	27.666007	85.322674	7,334	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	55	ECIMOD	27.646356	85.323556	14,389	Office	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	84	Kendriye Tarkari Biu Utpadan Kendra	27.65039	85.325059	35,184	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	107	Mahalaxmi temple	27.662822	85.31905	5,799	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	108	Mahendra Adarsha Bidhyashram	27.658354	85.326034	15,235	School	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	118	Namuna Machhindra Boarding School	27.664736	85.320887	12,482	School	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	119	NARC	27.653077	85.323678	247,622	Office	Multiple	KVDA	MoHA
15	153	Rajdal Gan/Lagankhel Football Ground	27.66323	85.322212	149,353	Nepal Government	Multiple	KVDA	MoHA
15	155	Rastriye Prakriti Samrakshen Kosh	27.652942	85.326758	142,462	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
15	160	RONAST	27.655623	85.328977	69,306	Office	Multiple	KVDA	MoHA
15	171	Saptapatal Pokhari/Lagankhel Stupa	27.665149	85.3235	7,771	Nepal Government	Humanitarian coordination area	KVDA	MoHA
16	11	Bajukha Chowk	27.672978	85.322401	621	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	48	Dhapagal Vegetable Market	27.674797	85.323275	3,137	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	54	Dobahal	27.674082	85.323034	1,256	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	83	Kayaguni	27.673578	85.32252	922	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	99	Lalanani	27.675455	85.324286	1,600	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop

वडा नं.	क्र.स.	खुला क्षेत्रको नाम	अक्षांश	देशान्तर	क्षेत्रफल (वर्ग मी)	स्वामित्व	उपयोग	खुला क्षेत्र बारे सूचनाको श्रोत	उपयोग बारे सूचनाको श्रोत
16	104	Lokkriti Mahabhir	27.675755	85.322674	2,494	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	115	Nagbahal	27.675886	85.32393	3,922	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	138	Patan Durbar Square	27.673314	85.324843	4,761	No Information	Settlement/camp	KVDA	JICA ERAKV Workshop
16	151	Purna chandi	27.673906	85.320413	2,275	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	173	Sawanimha	27.676509	85.321443	677	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
16	203	Vaskarbarna Mahabir	27.676503	85.322753	3,611	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	209	Yasodhara Mahabir	27.674529	85.321358	1,021	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
16	219	-	27.674832	85.32556	486	No Information	No Information	KVDA	No Information
17	5	ANFA Football Ground	27.662047	85.32999	9,310	Office	Vulnerable population assistance area	KVDA	MoHA
17	64	Gwarko Tyagal	27.667388	85.330888	1,314	School	No Information	KVDA	No Information
17	158	Ringroad Gwarko Satdobato	27.662	85.3285	71,129	No Information	Debris collection	MoHA	MoHA
17	165	Samata Sikshya Niketan	27.663774	85.331885	1,104	School	Settlement/camp	KVDA	JICA ERAKV Workshop
18	14	Balkumari Lower Secondary School	27.656167	85.295975	535	Nepal Government	No Information	KVDA	No Information
18	128	Nepal Khanepani Sanstha	27.643336	85.303073	7,659	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
18	162	Sainbu Prahari Chauki Mahilaghar	27.646016	85.304624	1,259	Nepal Government	No Information	KVDA	No Information
18	163	Sainbu Prastabit Bidhyalaya	27.652764	85.301865	10,948	Office	No Information	KVDA	No Information
18	164	Sainbu Samsad Awas Sachibalaya	27.651228	85.300702	49,771	Nepal Government	No Information	KVDA	No Information
19	3	Advance International Higher Secondary School	27.668217	85.322625	1,941	Lease	No Information	KVDA	No Information
19	12	Bal Bidhyashram Primary School	27.672404	85.32319	675	No Information	No Information	KVDA	No Information
19	73	ita Pokhari	27.671724	85.322759	618	Nepal Government	No Information	KVDA	No Information
19	142	Patan Rato Machhindra Bahal	27.670509	85.323036	6,854	Religious institutions	Settlement/camp	KVDA	JICA ERAKV Workshop
19	207	Walima Aaganisal	27.67288	85.320748	515	Nepal Government	No Information	KVDA	No Information
20	13	Bal Binod SS	27.673854	85.31822	795	Nepal Government	No Information	KVDA	No Information
20	31	Caspian Valley College	27.673058	85.319548	951	Office	No Information	KVDA	No Information
20	86	Khayabadi kamukanam Mahabir	27.67454	85.318949	3,860	Nepal Government	No Information	KVDA	No Information
20	101	Lalitpur Municipality Office	27.675933	85.317112	17,572	No Information	Humanitarian coordination area	KVDA	MoHA
20	114	Na. Tole, Pulchowk	27.673166	85.31747	1,006	Nepal Government	No Information	KVDA	No Information
20	123	Nawahal	27.67437	85.319803	957	Religious institutions	No Information	KVDA	No Information
20	143	Pim Bahal	27.676183	85.320664	1,451	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Workshop
20	183	Sija Bahal	27.675044	85.320705	121	Nepal Government	No Information	KVDA	No Information
21	1	Adarsha saul Primary School	27.633013	85.303768	2,207	School	Distribution Area	KVDA	JICA ERAKV Workshop
21	32	Chabahil-Nani	27.632365	85.302898	19,255	Nepal Government	No Information	KVDA	No Information
21	42	Chyaa Laachi	27.63605	85.298015	641	Nepal Government	No Information	KVDA	No Information
21	47	De-Tuna	27.644568	85.293539	681	Nepal Government	No Information	KVDA	No Information
21	57	Fagapokhari	27.642469	85.283745	17,380	Nepal Government	No Information	KVDA	No Information
21	58	Gabhu Lachhi	27.63641	85.298672	265	Nepal Government	No Information	KVDA	No Information
21	65	Gyanodaya Awasiye	27.632837	85.300264	21,627	School	No Information	KVDA	No Information

वडा नं.	क्र.स.	खुला क्षेत्रको नाम	अक्षांश	देशान्तर	क्षेत्रफल (वर्ग मी)	स्वामित्व	उपयोग	खुला क्षेत्र वारे सूचनाको श्रोत	उपयोग वारे सूचनाको श्रोत
		School							
21	87	Khdawa, Bagmati Nadi Kinar	27.648296	85.287736	46,455	Nepal Government	No Information	KVDA	No Information
21	88	Khokana-11	27.635569	85.299608	425	Nepal Government	No Information	KVDA	No Information
21	89	Khokana-14	27.636401	85.301143	709	Nepal Government	No Information	KVDA	No Information
21	90	Khokana-15	27.637038	85.290048	562	Nepal Government	No Information	KVDA	No Information
21	91	Khokana-4	27.63663	85.289155	146	Nepal Government	No Information	KVDA	No Information
21	92	Khokana-7	27.63912	85.293048	343	Nepal Government	No Information	KVDA	No Information
21	93	Khuma Laachi	27.636392	85.297016	1,021	Nepal Government	No Information	KVDA	No Information
21	97	Kudeshako Chaitye	27.63838	85.290206	764	Nepal Government	No Information	KVDA	No Information
21	125	Nehu Lachhi	27.63684	85.297974	35	Nepal Government	No Information	KVDA	No Information
21	144	Pina-Cha	27.641797	85.290908	6,819	Nepal Government	No Information	KVDA	No Information
21	166	Sana- Laa	27.635429	85.29366	282	Nepal Government	No Information	KVDA	No Information
21	170	Sano Khokana	27.644165	85.293867	462	Nepal Government	No Information	KVDA	No Information
21	180	Shree Rudrayeni School	27.635815	85.295744	2,468	School	Settlement/Camp	KVDA	JICA ERAKV Workshop
21	184	Sikaliko Chaur	27.643366	85.285618	66,606	Nepal Government	No Information	KVDA	No Information
21	205	Waa-Kha	27.636026	85.294629	6,278	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
21	210	Yuwa Prativa Bidhya Mandir	27.637637	85.301778	354	School	Settlement/camp, Distribution	KVDA	JICA ERAKV Workshop
22	8	Bagmati Nadi Kinar	27.611673	85.290551	8,937	Nepal Government	No Information	KVDA	No Information
22	19	Bhandari Ban	27.62423	85.304119	4,183	Nepal Government	No Information	KVDA	No Information
22	20	Bhandari Chaur	27.630324	85.302807	1,116	Nepal Government	No Information	KVDA	No Information
22	25	Bhunna Tole	27.617536	85.298151	369	Nepal Government	No Information	KVDA	No Information
22	30	Bungmati Buspark	27.628667	85.303579	2,368	Nepal Government	No Information	KVDA	No Information
22	39	Chunidevi Lower Secondary School	27.61885	85.305184	2,750	School	Medical Camp	KVDA	JICA ERAKV Workshop
22	40	Chunidevi Temple	27.626476	85.304598	15,620	Nepal Government	No Information	KVDA	No Information
22	52	District Health Center	27.619489	85.304638	11,318	Nepal Government	No Information	KVDA	No Information
22	102	Laptan Gaunko Chaur	27.616722	85.305192	3,597	Nepal Government	No Information	KVDA	No Information
22	105	Machhindra Bahal	27.629745	85.30203	2,755	Nepal Government	No Information	KVDA	No Information
22	146	Prathampur Bihar	27.63113	85.303168	1,262	Nepal Government	No Information	KVDA	No Information
22	197	Triratna Sahakari School	27.627769	85.304179	1,044	School	No Information	KVDA	No Information
22	206	Wakhel Kumari Primary School	27.631098	85.303896	638	School	No Information	KVDA	No Information
23	70	IJ Payaniyer School	27.646247	85.335457	4,990	Office	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	75	James School	27.64326	85.326174	45,333	Lease	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	136	Padam Prakash Secondary School	27.641324	85.327645	918	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	154	Rastriye Aalu Anusandhan Karyekram	27.64669	85.33417	16,869	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	169	Sano Hattiban	27.64872	85.333505	28,778	Lease	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	178	Shree Krishna Higher Secondary School	27.638547	85.327789	1,288	Nepal Government	Settlement/Camp	KVDA	JICA ERAKV Workshop
23	195	Tewa	27.638932	85.327634	7,201	Office	Settlement/Camp	KVDA	JICA ERAKV Workshop
24	49	Dhapakhel Boardding SS	27.630666	85.328201	513	Lease	Distribution	KVDA	JICA ERAKV Workshop
24	74	Jalapa SS	27.62531	85.335081	1,882	Nepal Government	Settlement/Camp, Distribution	KVDA	JICA ERAKV Workshop
24	79	Kalyan SS	27.624203	85.326685	378	School	Distribution	KVDA	JICA ERAKV Workshop
24	81	Kantipur Engineering College	27.637242	85.333147	9,033	College	Settlement/Camp, Distribution	KVDA	JICA ERAKV Workshop
24	111	Mastisk Pakshyeghat	27.621683	85.328368	3,626	Lease	Distribution	KVDA	JICA ERAKV Workshop

वडा नं.	क्र.स.	खुला क्षेत्रको नाम	अक्षांश	देशान्तर	क्षेत्रफल (वर्ग मी)	स्वामित्व	उपयोग	खुला क्षेत्र बारे सूचनाको श्रोत	उपयोग बारे सूचनाको श्रोत
		Swabalamban Samuha							
24	190	Sunhawa Antararaa Academy School	27.624528	85.326333	788	School	Distribution	KVDA	JICA ERAKV Workshop
24	191	Suryodaya English School	27.625165	85.326825	3,394	Lease	Distribution	KVDA	JICA ERAKV Workshop
25	2	Adarsha Saula Yuwak Higher Secondary School	27.635653	85.305144	6,076	School	No Information	KVDA	No Information
25	17	Basketball Court	27.654395	85.302464	2,026	Office	No Information	KVDA	No Information
25	50	Dharako Pakho	27.647354	85.308671	3,472	Nepal Government	No Information	KVDA	No Information
25	72	Infront of Adarsha Soul School	27.634414	85.305054	6,283	Nepal Government	No Information	KVDA	No Information
25	129	Nepal Telecom	27.653765	85.302341	1,519	Office	No Information	KVDA	No Information
25	145	Play Ground	27.650641	85.306866	5,297	Nepal Government	No Information	KVDA	No Information
25	148	Proposed Police Office	27.652353	85.305129	1,855	Nepal Government	No Information	KVDA	No Information
25	152	Radio Nepal Broadcasting Station	27.646843	85.306016	42,302	Nepal Government	No Information	KVDA	No Information
25	161	Sainbu Football Ground	27.648847	85.308256	3,035	Nepal Government	No Information	KVDA	No Information
25	175	Shiva Temple	27.648281	85.304986	467	Nepal Government	No Information	KVDA	No Information
25	177	Shree Janaudaya Secondary School	27.651333	85.306957	1,564	School	Settlement/Camp	KVDA	JICA ERAKV Workshop
25	185	Sip Bikash Talim Kendra	27.646679	85.308671	7,069	Nepal Government	No Information	KVDA	No Information
25	204	VDC Office	27.655927	85.302618	1,702	Nepal Government	No Information	KVDA	No Information
26	4	Amar jyoti School	27.642592	85.319427	5,605	School	No Information	KVDA	No Information
26	100	Lalitpur Academy	27.639988	85.32111	3,626	Lease	No Information	KVDA	No Information
26	122	Nawa Suryodaya English School	27.634554	85.319684	2,416	Lease	No Information	KVDA	No Information
26	174	Shankhadhar Park	27.637069	85.318416	728	Nepal Government	No Information	KVDA	No Information
27	15	Balkumari School	27.630872	85.322491	168,476	Religious institutions	Settlement/Camp	KVDA	JICA ERAKV Workshop
27	23	Bhimeshwar Temple	27.632727	85.318233	3,000	Religious institutions	No Information	KVDA	No Information
27	96	Krishna Pranami Temple	27.629569	85.314858	14,805	Nepal Government	No Information	KVDA	No Information
27	182	Siddhartha Boarding School	27.634317	85.32221	1,853	Lease	No Information	KVDA	No Information
28	22	Bhawani Temple	27.636991	85.340429	280	Religious institutions	No Information	KVDA	No Information
28	59	Gahala	27.636588	85.339243	2,693	Nepal Government	No Information	KVDA	No Information
28	66	Harisiddhi Bricks-Tile Industry	27.6438	85.342465	200,986	Lease	No Information	KVDA	No Information
28	67	Harisiddhi Guthi Niwa	27.636095	85.340394	496	Religious institutions	No Information	KVDA	No Information
28	68	Harisiddhi Higher Secondary School	27.637552	85.341888	1,155	Nepal Government	No Information	KVDA	No Information
28	69	Harisiddhi-2	27.636919	85.339526	365	Nepal Government	No Information	KVDA	No Information
28	135	Pabitra Prathana SS	27.645856	85.339595	691	School	No Information	KVDA	No Information
29	121	Nawa jiwan Gospel Church	27.637277	85.351077	986	Religious institutions	No Information	KVDA	No Information
29	127	Nepal Electricity Authority	27.636863	85.350441	14,100	Nepal Government	No Information	KVDA	No Information
29	192	Tahapakhal	27.634709	85.340003	8,415	Nepal Government	No Information	KVDA	No Information
29	193	Tahapakhal	27.635318	85.34087	2,289	Nepal Government	No Information	KVDA	No Information

नोट :यस विषयमा जानकारी स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति ललितपुर महानगरपालिकामा सञ्चालन गरिएको कार्यशालामा आधारित छ

श्रोत: गृह मन्त्रालय, काठमाडौं उपत्यका विकास प्राधिकरण, JICA ERAKV परियोजना

तालिका: विद्यालय तथा तिनको प्रयोगको सूची

Ward No.	S/N	Name of Schools/Colleges	Latitude	Longitude	Classification	Ownership	Usage
1	267	Rupak Memorial International Higher Secondary School	27.688866	85.314227	Secondary	Private	Settlement/Camp
1	269	Nightingale Nursing College	27.690879	85.311217	Higher Secondary	Private	Settlement/Camp
2	266	Shree Tika Vidyashram Higher Secondary School	27.68535	85.309445	Higher Secondary	Government	Settlement/Camp
2	268	Radiant Readers Academy	27.688927	85.305957	Secondary	Private	Settlement/Camp
3	262	St. Mary's School	27.676173	85.311836	Secondary	Private	Settlement/Camp
4	233	Grace Academy	27.664898	85.303101	Secondary	Private	Medical Camp
4	245	Little Angels (Junior Wing)	27.669336	85.309728	Primary	Private	Settlement/Camp
4	247	Asian College	27.670675	85.309706	College	Private	Medical Camp
4	256	DAV Sushil Kedia Vishwa Bharati School	27.67413	85.308665	Secondary	Private	Settlement/Camp
4	257	Himalayan International Ideal School	27.674141	85.305005	Secondary	Private	Settlement/Camp
4	259	St. Xavier's School	27.674583	85.31289	Secondary	Private	Settlement/Camp
5	232	Delight School	27.66229	85.317789	Secondary	Private	Temporary Evacuation Shelter
5	242	AVM High School	27.667515	85.315289	Higher Secondary	Private	Settlement/Camp
5	249	Prasadi Academy	27.671293	85.317188	College	Private	Settlement/Camp
5	251	Welhams College	27.672545	85.315642	College	Private	Medical Camp
6	234	Emerald Academy and NIMS	27.666397	85.325453	Secondary	Private	Settlement/Camp
6	235	Vidya Sadan School	27.666455	85.32777	Secondary	Private	Settlement/Camp
6	237	Milestone School	27.666918	85.325552	Secondary	Private	Settlement/Camp
6	239	National Children School	27.667209	85.326107	Secondary	Private	Settlement/Camp
6	244	Yasodhara Baudha Secondary School	27.669267	85.325865	Secondary	Government	Settlement/Camp
7	241	Lok Smriti Secondary School	27.667576	85.331987	Secondary	Private	Settlement/Camp
7	246	Kathmandu University School of Management/ Education	27.669914	85.333738	College	Private	Settlement/Camp
8	248	Nepal College of Information Technology(NCIT)	27.671441	85.339121	College	Private	Settlement/Camp
9	250	Milestone International College	27.672216	85.33983	College	Private	Settlement/Camp
9	255	Shramik Shanti Higher Secondary School	27.674347	85.329105	Higher Secondary	Government	Settlement/Camp
9	263	Himalaya College of Engineering	27.677016	85.332603	College	Private	Settlement/Camp
10	265	Pulchowk Campus-Dean's Office	27.68099	85.318693	College	Government	Settlement/Camp
11	264	Shree Patan H.S.School	27.677842	85.322453	Higher Secondary	Government	Settlement/Camp
12	252	Adarsha Kanya Niketan Higher Secondary School	27.673487	85.326076	Higher Secondary	Government	Settlement/Camp
13	243	Mahendra Bhrikuti Ma Vi	27.667492	85.309083	Secondary	Government	Settlement/Camp
15	228	Ullens School	27.649864	85.322021	Secondary	Private	Settlement/Camp
15	229	Little Angel's School	27.651411	85.335801	Higher Secondary	Private	Settlement/Camp
15	236	Namuna Macchindra Higher Secondary School and College	27.666526	85.322877	Secondary	Government	Settlement/Camp
17	238	Shramjit Kishor School	27.667148	85.329401	Secondary	Government	Settlement/Camp
17	240	Prabhat Higher Secondary School	27.667357	85.330845	Higher Secondary	Government	Settlement/Camp
20	253	Bal Binod Secondary School	27.673845	85.318241	Secondary	Government	Settlement/Camp
20	254	Danphe English Boarding School	27.674018	85.317707	Secondary	Private	Medical Camp
20	258	Sagarmatha Higher Secondary School	27.674542	85.31639	Higher Secondary	Private	Settlement/Camp
20	260	Tri-Padma Higher Secondary School	27.675633	85.316814	Higher Secondary	Government	Settlement/Camp
20	261	Madan Smarak Secondary School	27.676141	85.318192	Higher Secondary	Private	Settlement/Camp
23	225	Shree Krishna Higher Secondary School	27.638561	85.327537	Higher Secondary	Government	Temporary Evacuation Shelter
24	221	Balodaya Primary School	27.621691	85.325936	Primary	Government	Temporary Evacuation Shelter
24	222	Shree Jalpa Secondary School	27.626263	85.334378	Secondary	Government	Temporary Evacuation Shelter
24	223	New Modern English Academy	27.63183	85.329826	Lower Secondary	Private	Settlement/Camp
25	224	Adarsha Shila Yubak Higher Secondary School	27.635828	85.3051	Higher Secondary	Government	Medical Camp

Ward No.	S/N	Name of Schools/Colleges	Latitude	Longitude	Classification	Ownership	Usage
25	226	Bright Baby Boarding School	27.64014	85.305502	Primary	Private	Disaster Management Camp
25	227	Green Tara College of Health Science	27.645721	85.305002	College	Private	Medical Camp
25	230	Deep Kunj Higher Secondary English School	27.651725	85.305115	Higher Secondary	Private	Medical Camp
25	231	Asmita English Secondary School	27.653353	85.30566	Secondary	Private	Disaster Management Camp

नोट :यस विषयमा जानकारी स्थानीय विपद् तथा जलवायु उत्थानशील योजना तर्जुमाका निम्ति ललितपुर महानगरपालिकामा सञ्चालन
श्रोत: JICA ERAKV परियोजना

BHAKTAPUR MUNICIPALITY DISASTER AND CLIMATE RESILIENCE PLAN

FEBRUARY 2018

श्री नगरपालिका
भक्तपुर नगरपालिका
BHAKTAPUR MUNICIPALITY
नगर कार्यपालिकाको कार्यालय
OFFICE OF THE MUNICIPAL EXECUTIVE
दरबारस्क्वायर, भक्तपुर
DURBAR SQUARE, BHAKTAPUR
३ नं. प्रदेश, नेपाल

पत्र संख्या: ८६२

चलानी नं. ९६८५

मितिः २०७१।२।१५

वि.सं. २०७२ साल बैशाख १२ गते नेपालमा गएको भूकम्पबाट भक्तपुरलगायत १४ वटा जिल्लाहरु अति प्रभावित भए । भक्तपुर नगरपालिका क्षेत्र भित्र पनि धेरै धनजनको क्षति भयो । २५२ जना नगरवासीहरुले ज्यान गुमाए भने ३९० जनाभन्दा बढी घाइते भए । त्यसैगरी पूर्ण र आंशिक गरी ८ हजार भन्दा बढी घरहरु क्षति ग्रस्त भए भने १३० भन्दा बढी सम्पदाहरुमा क्षति पुग्यो । ती भत्केका घरहरु र सम्पदाहरुको पुन:निर्माण भक्तपुर नगरपालिकाको अहिलेको चुनौति हो । जनप्रतिनिधिहरुको पद वहाली पछि नगरपालिकाले भूकम्पबाट क्षतिग्रस्त सम्पदाहरु र घरहरु पुन:निर्माणमा जोड दिइरहेको छ ।

भूकम्पबाट क्षतिग्रस्त सम्पदाहरु पुन:निर्माण गर्दा पहिलेको भन्दा बलियो बनाउने मात्रै होइन के कति कारणले ती संरचनाहरु क्षति भयो ती समेतको प्राविधिक विश्लेषण सहितको प्रतिवेदन लिई नगरपालिका अघि बढिरहेको छ । सम्भव भएसम्म सम्पदाहरु पुन:निर्माणमा परम्परागत, मौलिक प्रविधि र स्थानीय निर्माण सामग्रीहरुको प्रयोगमा नगरपालिकाले जोड दिइरहेको छ । यसले मौलिक प्रविधिको संरक्षण हुने पनि हाम्रो विश्वास छ ।

भूकम्पले भन्दा पनि मानव निर्मित संरचनाहरुबाट बढी क्षति हुने गरेकोबारे हामी सबै अवगत छौं । पुन:निर्माण वा नव निर्माण गर्दा अलिकतिमात्रै ध्यान दिन सकेको खण्डमा पनि भविष्यमा आउन सक्ने भूकम्पलगायत दैवी प्रकोपबाट हुने सम्भावित क्षतिलाई न्युनीकरण गर्न सकिन्छ ।

भूकम्पलगायत विपद् न्युनीकरण गर्ने कार्यमा जापानी सहयोग संस्था (जाइका) अन्तर्गत काठमाडौ उपत्यका भूकम्प विपद् जोखिम मूल्याकंन परियोजनाले यस नगरपालिकालाई सहयोग गर्दै आएको छ । यसको लागि भक्तपुर नगरपालिकाको तर्फबाट हार्दिक धन्यवाद ज्ञापन गर्दछौं ।

२०७१।२।१५

सुनिल प्रजापति

प्रमुख

BHAKTAPUR MUNICIPALITY
DISASTER AND CLIMATE RESILIENCE PLAN

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Objectives

To implement the Disaster and Climate Resilience activities to reduce the disaster risks, damages and save resident's lives and their assets.

Hazard, Vulnerability, Capacity and Risk Assessment (Chapter-3)

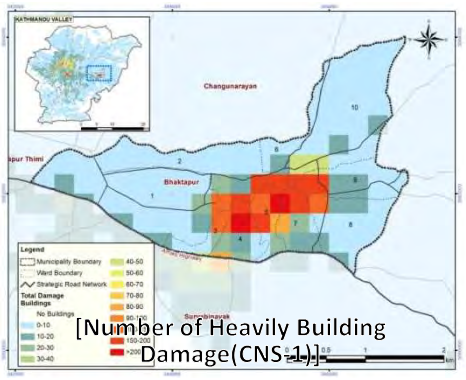
[Result of Seismic Risk Assessment]

Number of Building Damage (Ratio) [CNS-1]	
Heavy Damage	2,980 (21.6%)
Moderate Damage	1,608 (11.6%)
Slight	2,340 (16.9%)

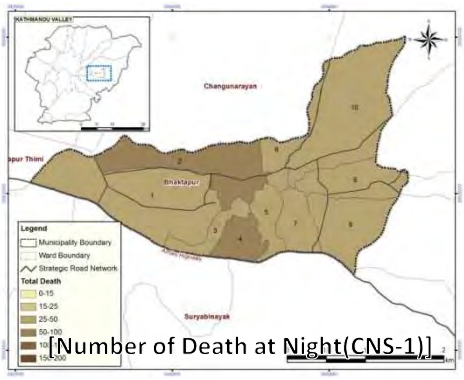
Number of Human Casualty (Ratio) [CNS-1]	
Death	429 (0.46%)
Injured	1,681 (1.80%)
Evacuee	29,710 (31.83%)

School (Heavy Damage) [CNS-2]	68 (31.6%)
Health facility(Heavy Damage) [CNS-2]	5 (20.0%)
Economic Loss (related to Damage of Building) [CNS-1]	11,570 mil NPR

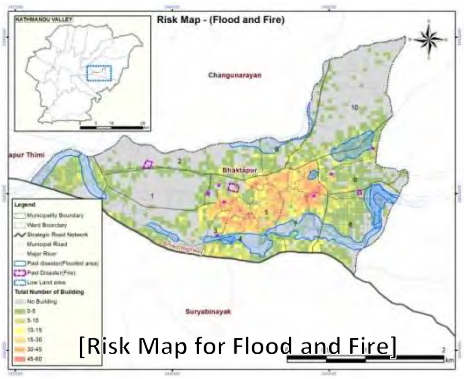
*CNS-1,2: Scenario Earthquake (Details are shown in main document)



[Number of Heavily Building Damage(CNS-1)]



[Number of Death at Night(CNS-1)]



[Risk Map for Flood and Fire]

Local Disaster and Climate Resilience Policy (Chapter-4)

VISION — ***Develop Bhaktapur Municipality as a Resilient City towards Zero Casualties from Disasters***

MISSION
1. To develop policies for disaster risk reduction and management to be safe from the disaster
2. To encourage everyone to build seismic resistant buildings with incorporation of building codes, bylaws to protect people' lives
3. To Increase the capacity and enhance awareness to implement efforts for various disasters in planned, integrated, coordinated and comprehensive manner

STRATEGY

ACTIVITY

Heavy damage of Building [CNS-1]

2016 (Current): 2,980(21.6%)

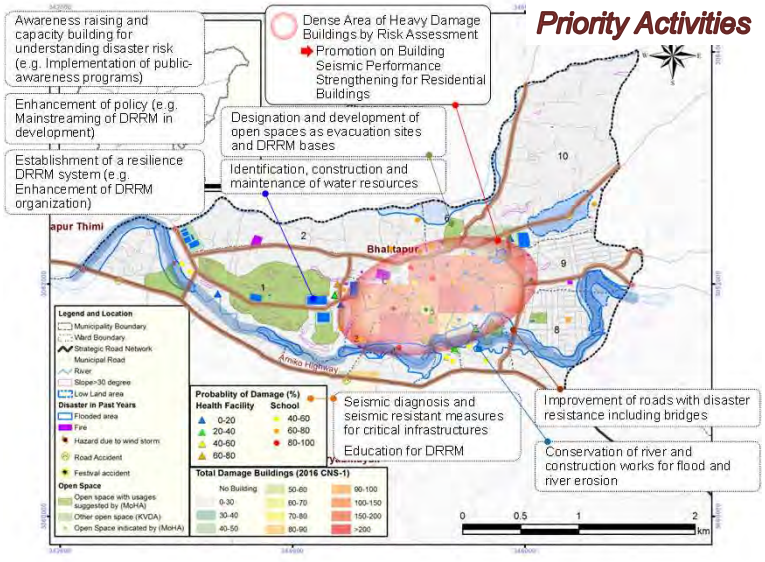
2030(Future): 3,730 (21.3%) [Extrapolation]

DRR Target 40 %: 2,238 (12.8%)

Targets of Sendai Framework for DRR 2015-2030	Strategies (Target value by 2030)
(a) Substantially reduce global disaster **mortality** by 2030	Approx. 40% Reduce 546 ⇒ 330 (persons)
(b) Substantially reduce the **number of affected people** globally by 2030	Approx. 40% Reduce (Evacuees) 37,843 ⇒ 22,700 (persons)
(c) Reduce direct disaster **economic loss** in relation to global gross domestic product (GDP) by 2030	Approx. 20% Reduce related to Heavy damage of Building 8,433 ⇒ 7,000 (mil. NPR)
(d) Substantially reduce disaster damage to **critical infrastructure** and disruption of basic services, among them **health and educational facilities**, including through developing their resilience by 2030	Reduce
(e) Substantially increase the number of countries with national and **local disaster risk reduction strategies** by 2020	This Plan and Strategy

Local Disaster and Climate Resilience Activities (Chapter-5)

Priority Activities



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CHAPTER 1.

INTRODUCTION

1-1. Background

Bhaktapur is known as Khwopa in local Newari tongue. Bhaktapur is the one of the oldest city and used to be the capital city of whole Nepal till the 12th to the 15th century. Recognizing the significance of well-preserved heritages, Bhaktapur Durbar Square was enlisted in World Heritage Sites in 1979 AD. With its urban history, Bhaktapur Municipality is one of the three major cities located inside the Kathmandu Valley, besides Kathmandu Metropolitan City and Lalitpur Metropolitan City. Bhaktapur Municipality is located in east side of Kathmandu Valley.

According to the population census of 2011, the total population of Bhaktapur Municipality is 81,748. Geographic condition of Bhaktapur Municipality: on its north and east lies Changunarayan Municipality, Madhyapur Thimi Municipality in the west, and in the south lies Suryabinayek Municipality. With restructuring of administrative organization in 2017, the Municipality consists of 10 wards.

From the view of disaster risk, Bhaktapur Municipality has suffered from various disasters in the past. Especially in the Gorkha earthquake that occurred in 2015, the serious damage was caused such that 252 people lost their lives, 397 people were injured and around 6,000 private houses were completely collapsed, etc. According to the hazard, vulnerability, capacity and risk assessment, Bhaktapur Municipality is at a very high risk for earthquake disaster, and along with it are other disasters such as flood, fire, windstorm etc. Disaster and Climate Resilience Committees of the Municipality (LDCRC) shall be formed to face such disasters. It is essential to make efforts for Disaster Risk Reduction (DRR) and Climate Resilience by coordination of the LDCRC with Ward level and Community Disaster and Climate Resilience Committee (CDCRC), District, Province, National government and non-government organizations.

1-2. Objective of Plan

By institutionalizing the Disaster Risk Reduction and Management (DRRM) and Climate Resilience activities to form a safer community against the possible disasters and by mainstreaming the periodic and annual development programs at the local level as well as for the sustainable development, this plan, Local Disaster and Climate Resilience Plan (LDCRP) of Bhaktapur Municipality has been formulated in accordance with the LDCRP guidelines (2074) and the mandate of Municipality which is stipulated in Disaster Risk Reduction and

Management Act, 2017 and Local Government Operation Act, 2017. The main objectives of this plan are to implement the Disaster and Climate Resilience activities in chronological order, consist of measures in each phase, prevention and mitigation, preparedness, emergency response, and recovery and reconstruction to reduce the disaster risks, damages and save resident's lives and their assets.

The supplementary objectives of the plan are as follows:

a. To identify and analyse the hazard, vulnerability, and capacity in the municipality.
b. To understand the disaster risk
c. To prioritize DCR activities to be invested in disaster risk reduction for resilience.
d. To strengthen disaster risk governance to manage disaster risk for institutionalizing the DCR by ensuring the equal participation of all stakeholders.
e. To determine the minimum basis and common criteria.
f. To contribute for formation of disaster and climate resilient community.
g. To prepare skilled human resource capable of facing the disaster.
h. To enhance disaster preparedness for effective response and provide support to the disaster affected communities and families for safe and respectable livelihood.

1-3. Rationale and Significance of Plan

To manage the various phases under DCR, this plan shall be implemented and continued as a major part of development plan formulated in local level. Every development activities should be merged with DCR activities and there must be an active participation of the community in sustainable development activities. The following are the rationale and significance of LDCRP:

a. Institutional structure shall be prepared in the municipal level.
b. Municipal level disaster risk reduction information shall be reachable.
c. DCR measures in the municipal level shall be adapted to development plans by mainstreaming DRR.
d. Disaster and climate resilience fund in municipal level shall be established.
e. Participation and motivation of community and capacity in multi-hazard risk to provide suitable environment shall be enhanced.
f. Resource management by the communities shall be reached equally.
g. Social order, public welfare, cultural and harmony shall be enhanced.
h. Humanitarian assistance management during disaster shall be ensured.

1-4. Limitation of Plan

Plans and programs of every level prepared by government, non-government, and local agencies, have their own importance and area of responsibilities. This plan has the following adopted methods, limitations, effectiveness way forward for implementation, monitoring and evaluation:

a. As this plan has to be implemented by the Municipality as an important part of development plan, it shall be continuously implemented being related with development and construction processes.
b. This plan has been formulated in accordance with LDCRP guidelines 2074.
c. For the implementation, monitoring and evaluation of this plan, the necessary financial resources and skilled human resources might not be sufficient in the Municipality, and need to be coordinated with provincial, national government and stakeholders.

1-5. Methodology

The following procedures have been carried out in order to make the plan practical based on local conditions and ensure direct and inclusive participation of communities, wards, affected and vulnerable groups in Bhaktapur Municipality:

(1) Orientation workshop (1st workshop) for plan making:

Orientation workshop was carried out, organized by the Municipality and facilitated by JICA ERAKV Project. In this workshop, the participants discussed basic topics such as the objectives of LDCRP, formulation processes, and vision and mission for DCR of the Municipality.

(2) Collection of information of the Municipality:

During the process of preparing LDCRP, information was collected. Specially, relevant laws and plans of district and national level, social and financial information along with information on what type of activities have been carried out, and in which location, were collected.

(3) Risk assessment for earthquake:

JICA ERAKV Project conducted the risk assessment for earthquake for understanding the risk for earthquake and to consider countermeasures to reduce the risks.

(4) Hazard, Vulnerability and Capacity Assessment (VCA) (2nd workshop), and Risk Assessment:

In order to collect the community and ward level disaster and climate resilience related information and data, the 2nd workshop was held by the Municipality and JICA ERAKV Project. In this workshop, different methods were used to carry out VCA of the Municipality, under which are the acceptable VCA methods such as historical disaster record, hazard, vulnerability mapping and assessment of social and natural resources of the Municipality. On the basis of the VCA results, disaster risks were identified and assessed.

(5) Draft formulation of the plan:

In accordance with the risk identification and assessment, the plan was drafted.

(6) Holding workshop (3rd workshop) for collecting suggestions:

The plan prepared in the form of framework was again discussed by organizing a

workshop between the Municipality and JICA ERAKV Project. The participants of the workshop discussed the DCR activities with priority and provided necessary suggestions and points to be added.

(7) Finalization of the plan:

LDCRP of the Municipality was finalized by including the suggestions from the Municipality, and participants of the workshop.

1-6. Plan Implementation Strategy

(1) Approval of the Plan:

a. The municipal LDCRP prepared by LDCRC shall be approved by the Municipal Assembly according to the required process.

(2) Mainstreaming of the Plan:

a. The DCR activities in the Plan shall be gradually mainstreamed to periodic, annual and other development process on a priority basis.
b. Other sectoral organizations, while making sectoral plans, shall gradually allocate the budget for the DCR activities in the Plan on a priority basis.

(3) Allocation of Budget:

a. The budget is allocated by the Bhaktapur Municipality for organizing the prioritized activities which are determined by approved plans.
b. For the implementation of plan, the budget is managed by the coordination and support of District, District Coordination Committee (DCC), sectorial office, Nepal red-cross society, Province, National governmental and International non-governmental organizations and donor agencies.

(4) Implementation of the plan:

a. Implementation of Bhaktapur Municipality's approved LDCRP is prioritized through LDCRC.
b. The plan approved by LDCRC shall be implemented by Bhaktapur Municipality with support from communities, CDCRC, above organizations and private sectors.

CHAPTER 2.

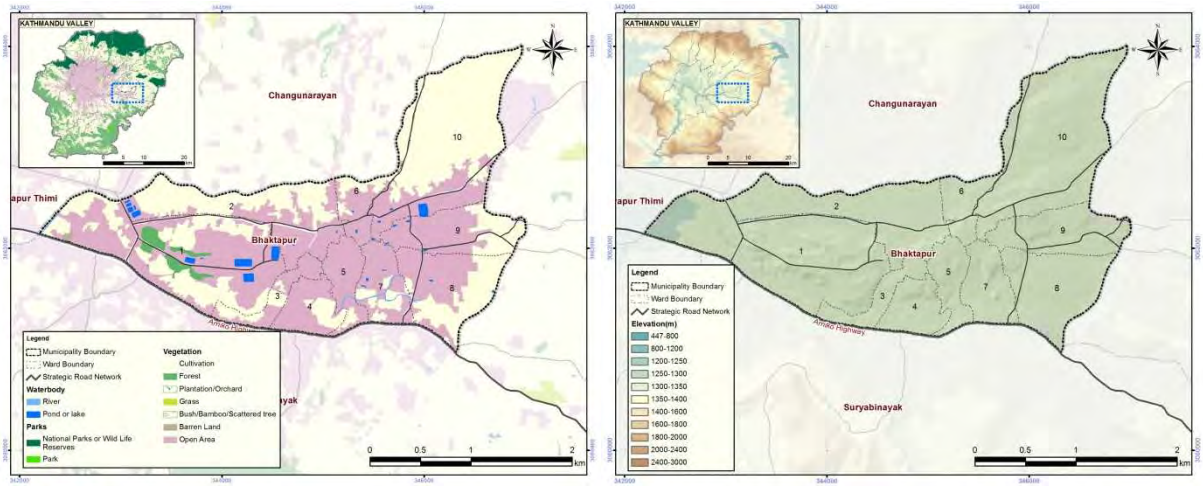
GENERAL DESCRIPTION OF MUNICIPALITY

2-1. Physical Condition

(1) Topographic and Geographic conditions

1) Topographic condition

In general, the topographical conditions of Bhaktapur Municipality are formed by natural characteristics. Topographic Conditions of Bhaktapur Municipality are shown in Figure 2-1 and Table 2-1.



Data Source: (Left) JICA RRNE Project, (Right) UNDP

Figure 2-1 Topographic map (Left) and Altitude distribution map (Right) of Bhaktapur Municipality

Table 2-1 Topographic Conditions of Bhaktapur Municipality

Topography		Area(Ha)	%
Waterbody	River	4.60	0.7%
	Pond or Lake	6.84	1.0%
Vegetation	Cultivation	294.19	44.9%
	Forest	9.88	1.5%
	Barren Land	1.30	0.2%
	Open Area	331.17	50.5%
Others		7.36	1.1%
Total		655.34	100.0%

Data Source: JICA RRNE Project

The built-up area is spreading throughout the municipal area centred on Bhaktapur Durbar Square. And the fringe area of Municipality is mainly cultivation area, especially ward 2 and 10. Bhaktapur Municipality lies at a flat altitude of around 1,300 m. The geomorphological

map of Bhaktapur Municipality is shown in Figure 2-2 and geomorphological classification of Kathmandu valley is shown in Table 2-2, and the age and altitude of the deltaic-lacustrine terraces are shown in Table 2-3.

The central area of Bhaktapur Municipality is located on the terrace called T_2 (Thimi) terrace. T_2 (Thimi) terrace is located long and narrow in an east-west direction. The both of the north and south side of T_2 (Thimi) terrace are valley plains. The north side slope of mountain in south area of Bhaktapur Municipality is alluvial fan and landslide morphology as shown in Figure 2-2. The T_2 terrace is the deltaic-lacustrine terraces which were formed under the environment of the Paleo-Kathmandu Lake. The T_2 terrace is flat surface which is 1,330 m to 1,350 m altitude. The Paleo-Kathmandu Lake had appeared by upheaval of Mahabharat Mountain around a million years ago. However, the Paleo-Kathmandu Lake had disappeared around ten thousand years ago. According to the radiocarbon dating of the carbide in the terrace deposits, the T_2 terrace wad formed around 29,000 years to 35,000 years ago. The both of the north and south side of the terraces are eroded slope and cliff. The alluvial lowland was formed along the modern rivers in the valley plain. The south eastern part of Bhaktapur Municipality is residential area which was developed by artificially transformation of land as shown in Figure 2-2.

Built-up area of Bhaktapur Municipality was formed on the deltaic-lacustrine terraces by tradition and residential areas are spread out to the valley plain due to rapid population increase in recent years.

Table 2-2 Geomorphological Classification of Kathmandu Valley

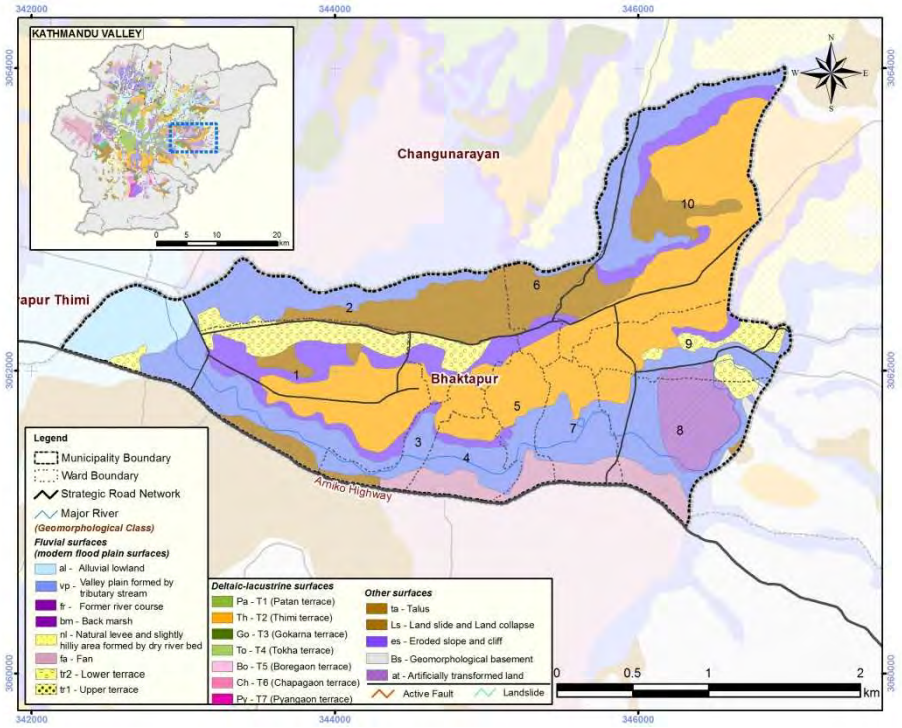
Classification	Detailed classification	Abbrev.	Characteristics
Fluvial surfaces (modern flood plain)	Alluvial lowland	al	Lowland along modern rivers
	Valley plain	vp	Lowland in the narrow valleys
	Former river course	fr	Long and narrow depression
	Back marsh	bm	Marshes between natural levees
	Natural levee	nl	Long-narrow and slightly hilly area
	Alluvial fan	fa	Gentle slope with concentric contours at the exit of valley
	Lower terrace	tr2	Slightly hilly area
	Higher terrace	tr1	Fluvial terraces on the hillside
Deltaic-lacustrine terraces	T1(Patan) terrace	T1	Terrace formed under environment of the Paleo-Kathmandu Lake. The terraces are sub-divided into T1 to T7 depending on the altitudes
	T2(Thimi) terrace	T2	
	T3(Gokarna) terrace	T3	
	T4(Tokha) terrace	T4	
	T5(Boregaon) terrace	T5	
	T6(Chapagaon) terrace	T6	
	T7(Pyangaon) terrace	T7	
Other surfaces	Talus	ta	Relatively steep slope formed by collapse of cliff
	Landslide and slope failure	Ls	Relatively gentle slope formed by sliding of mountainous slope
	Eroded slope and cliff	es	Cliff at the side of terraces
	Geomorphological basement	Bs	Hill and mountainous slope where hard rocks and Kalimati formation expose
	Artificially transformed land	at	Developed land by back on the lowland Flat surface by cutting of terraces

Source: JICA ERAKV Project

Table 2-3 Age and altitude of Lacustrine Delta Terraces

Terrace	Age of terraces (cal ka years BP)	Altitude of terraces(m above sea level)	
		Northern region	Southern region
T1(Patan)	17-10	1,300 – 1,330	1,310 – 1,330
T2(Thimi)	35-29	1,330 – 1,350	1,330 – 1,360
T3(Gokarna)	>50-38	1,350 – 1,390	1,380 – 1,410
T4(Tokha)	23-17	1,360 – 1,390	-
T5(Boregaon)	>50	-	1,420 – 1,440
T6(Chapagaon)	>50	-	1,440 – 1,460
T7(Pyangaon)	>50	-	1,470 – 1,510

Source: JICA ERAKV Project



Source: JICA ERAKV Project

Figure 2-2 Geomorphological map of Bhaktapur Municipality

2) Geological condition

The geological stratigraphy which is distributed in Bhaktapur Municipality is shown in Table 2-4. Figure 2-3 shows the geological map in Bhaktapur Municipality. The geology of Bhaktapur Municipality is categolized into two types which are Kalimati formation of Kathmandu basin group and alluvial deposits as shown in Table 2-4.

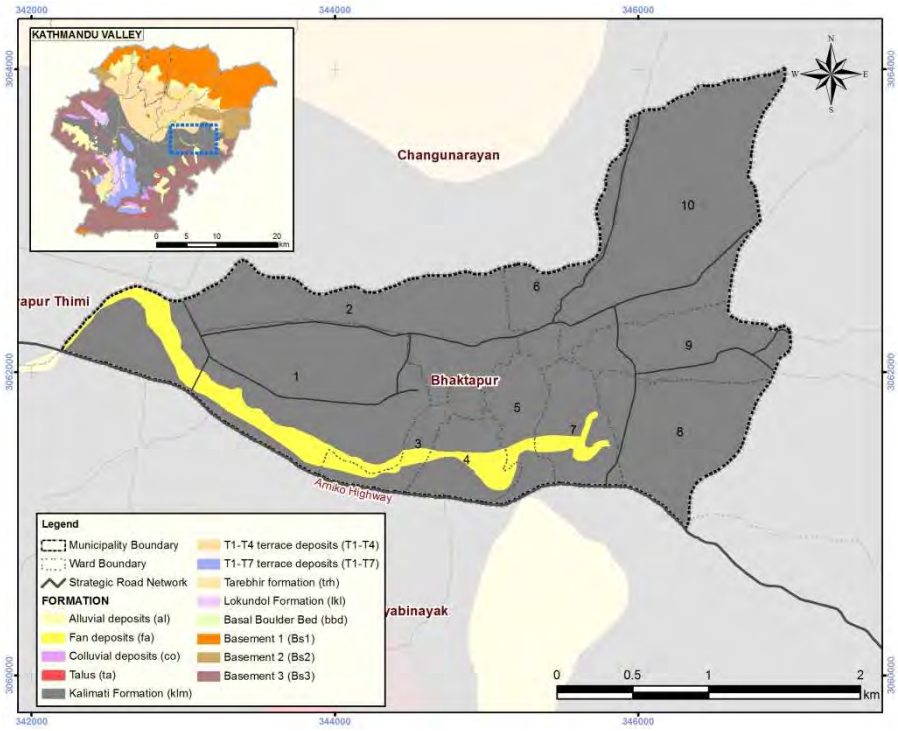
The Kalimati formation is the layer with sediment deposits of the Paleo-Kathmandu Lake when the depth of water of the Lake was deepening. The facies of Kalimati formation consist of slightly soft clay from dark gray to black, organic clay and fine sand. The Kalimati formation is unconsolidated layer and soft. In accordance with the classification of geomorphological map, the centre of Bhaktapur Municipality is T_2 terrace, however terrace deposits are not shown in the geological map. It is presumed that the terrace is to be erosional terrace or thin deposition.

The facies of alluvial deposits consist of unconsolidated clay, sand and gravel.

Table 2-4 Geological stratigraphy of Bhaktapur Municipality

Geological age			Stratigraphy		Abbrev.	Facies
Cenozoic	Quaternary	Holocene	Alluvium	Alluvial deposits	al	Clay, sand, gravel
		Pleistocene	Kathmandu basin group	Kalimati formation	klm	Clay, organic clay, fine sand

Source: JICA ERAKV Project

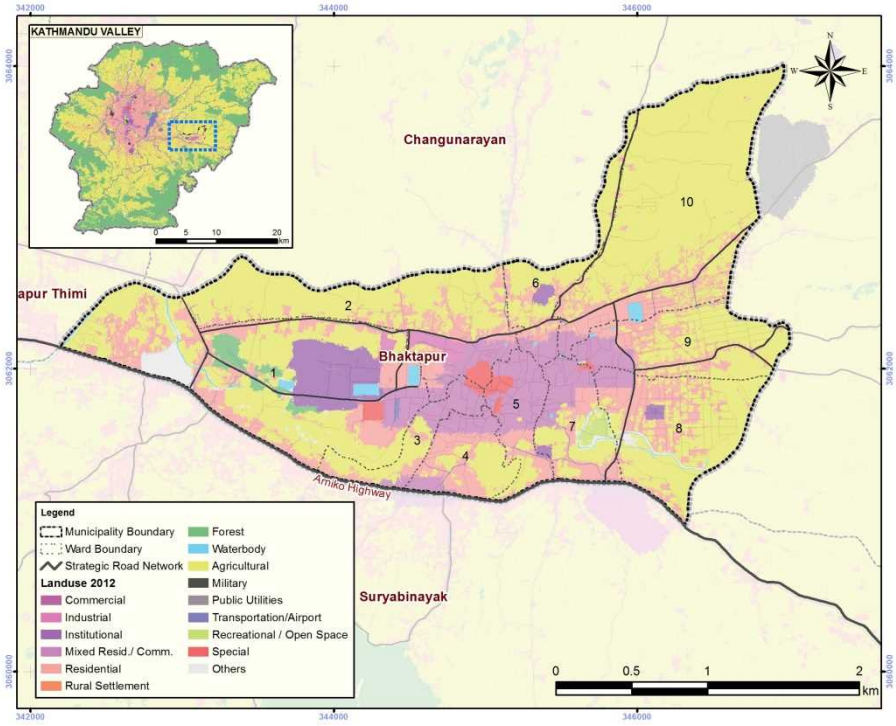


Source: Department of Mines and Geology, edited by JICA ERAKV Project
Note: The legend is shown in Table 2-3.

Figure 2-3 Geological map of Bhaktapur Municipality

(2) Land Use

Bhaktapur Municipality has occupied 6.6 sq. km. area. Land use data obtained from 2012(Comprehensive Study of Urban Growth Trend and Forecasting of Land use in the Kathmandu Valley, UNDP, 2012) estimates that around 55.9% of the Municipality area is covered with agricultural land, whereas 33.3% is residential and mix-residential/commercial area. The built-up area is mostly concentrated in the city core, whereas the new development is taking place in eastern part of the city due to land pooling projects. Southern part of the Municipality, there is ribbon development along the highway which is mostly commercial. (Risk Sensitive Land Use Plan of Bhaktapur Municipality)

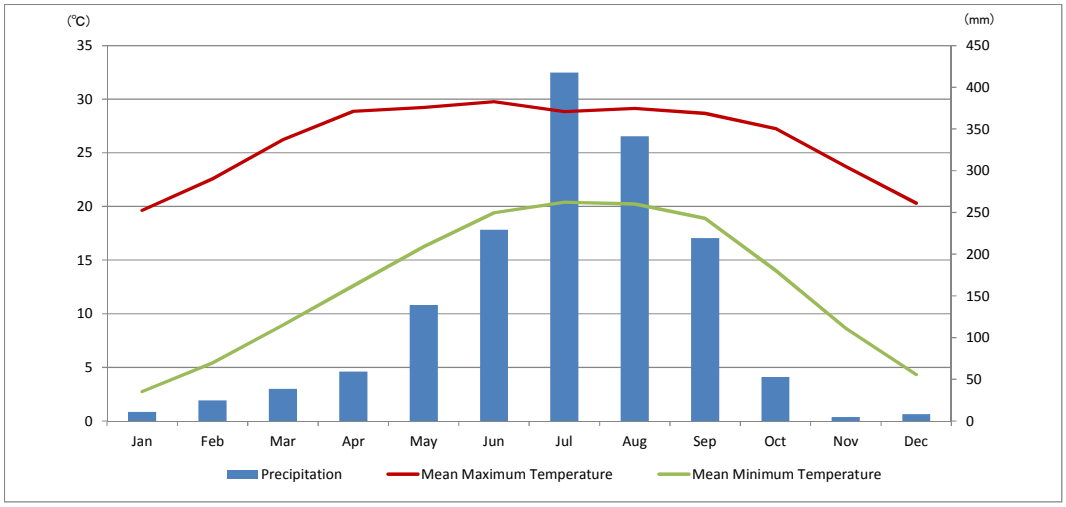


Source: Comprehensive Study of Urban Growth Trend and Forecasting of Land use in the Kathmandu Valley, UNDP, 2012, edited by JICA ERAKV Project

Figure 2-4 Land Use map

(3) Climate conditions

Meteorology in Bhaktapur Municipality shows as follows. Total amount of rainfall from June to August is around 1,100mm. In these rainy season, the risks of flood and other storm and rain related disasters increase. On the other hand, in the dry season, the risk of fire increases. For the all Nepal climate trend, according to the “Observed Climate Trend Analysis of Nepal” (Department of Hydrology and Meteorology, 2017), All Nepal minimum temperature shows significantly positive trend only in monsoon season. No significant trend is observed in precipitation in any season. All Nepal annual maximum temperature trend is significantly positive (0.056 ^{o}C/yr). All Nepal annual minimum temperature trend is also positive (0.002 ^{o}C /yr) but it is insignificant. Climate trend of Bhaktapur district is shown in Table 2-5.



Data Source: Department of Hydrology and Meteorology

Figure 2-5 Rainfall and Temperature 1997 - 2016 (Ktm Airport Station)

Table 2-5 Climate Trend of Bhaktapur district

	Winter		Pre-monsoon		Monsoon		Post-monsoon		Annual	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
Precipitation	0	0.02	0	0.56125	0	-0.20	0	-0.31	0	-0.09457
Maximum temperature	***	0.043	***	0.042	***	0.043	***	0.046	***	0.044
Minimum temperature	*	0.018	*	0.016	***	0.021	**	0.016	***	0.020

Extreme climate	Rainy days		Consecutive dry days		Consecutive wet days		Very wet days		Extremely wet days	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
	0	0.1	0	0.1	0	0.1	0	0.0	0	0.0
	Warm days		Cool days		Warm spell duration		Warm nights		Cool nights	
	α	Trend	α	Trend	α	Trend	α	Trend	α	Trend
	***	1.0	***	-0.9	**	0.3	***	0.9	*	-0.3
	Cold spell duration									
	α	Trend								
	0	-0.1								

Note: Significance (α): * 95% Confidence Level (CL), ** 99% CL and *** 99.9% CL; insignificant at 95% CL: +, 0
Data Source: Observed Climate Trend Analysis of Nepal, Department of Hydrology and Meteorology, 2017

2-2. Social Condition

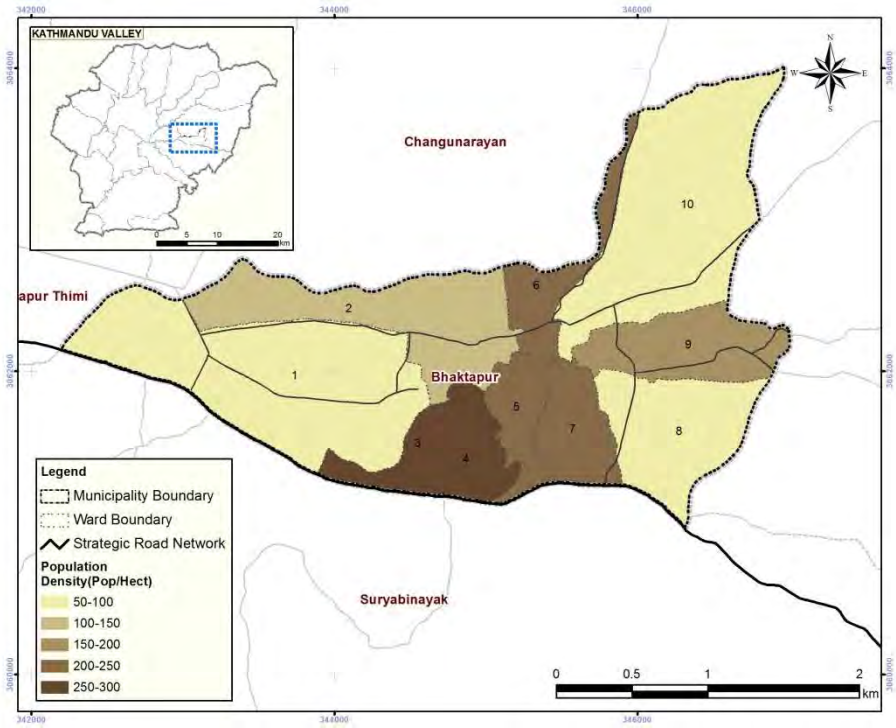
(1) Population

Information about population is an important consideration in DCR. The main source of population data for Bhaktapur Municipality is Census summarized by Central Bureau of Statistics (CBS). The following are population data at ward level of Bhaktapur Municipality. The central part of the Municipality is high dense area.

Table 2-6 Population and households at ward level in 2011

Ward	HH	Total Population		
			Male	Female
1	2,342	9,901	5,051	4,850
2	2,273	10,553	5,271	5,282
3	1,210	5,909	2,918	2,991
4	1,715	8,248	4,114	4,134
5	1,249	6,425	3,161	3,264
6	1,529	7,212	3,634	3,578
7	1,564	7,563	3,790	3,773
8	1,456	6,694	3,440	3,254
9	1,669	8,232	4,077	4,155
10	2,632	11,011	5,625	5,386
Total	17,639	81,748	41,081	40,667

Source: Census 2011, CBS



Data Source: Census 2011, CBS

Figure 2-6 Population Density Map in 2011

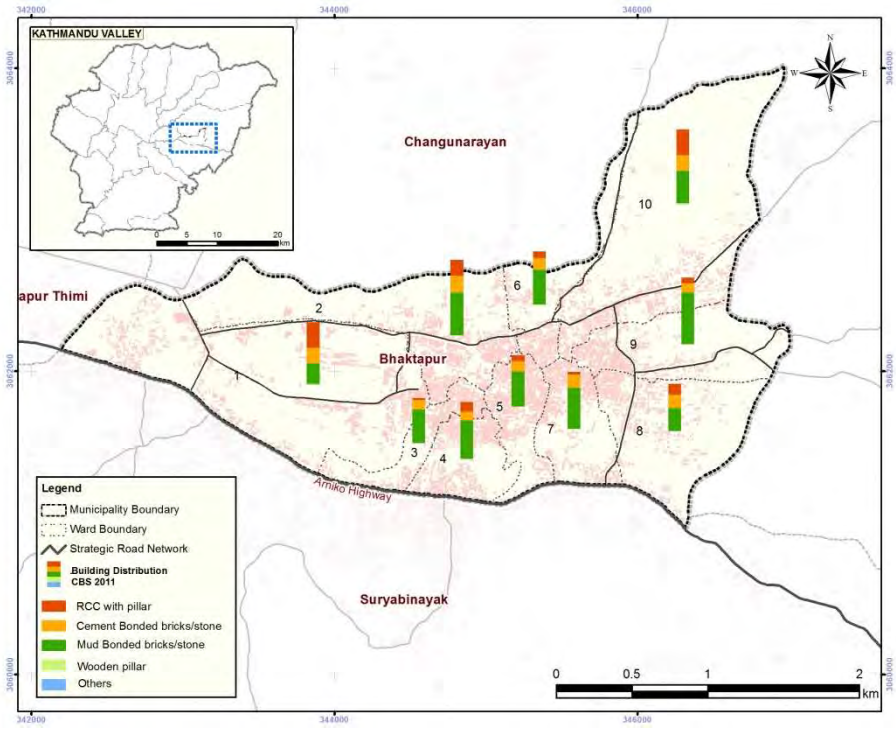
(2) Building

Information on building structure is another significant consideration in DCR. The following are building data at ward level of Bhaktapur Municipality. The ratio of buildings with mud bonded bricks/stone is relatively high in the central area of the Municipality than the fringe area.

Table 2-7 Household by type of foundation of house at ward level in 2011

Ward	MBBS	CBBS	RCCP	WP	Oth
1	378	292	466	4	5
2	784	315	292	3	0
3	615	179	34	0	1
4	706	163	177	0	0
5	647	188	111	2	0
6	643	221	121	14	1
7	754	244	52	1	0
8	421	245	196	3	3
9	946	170	109	2	1
10	600	287	476	13	2
Total	6,494	2,304	2,034	42	13

Source: [Damage data] Bhaktapur Municipality, [Census 2011] CBS
MBBS: Mud bonded bricks/stone, CBBS: Cement bonded bricks/stone, RCCP: RCC with pillar, WP: Wooden pillar
Oth: Not stated



Data Source: Census 2011, CBS

Figure 2-7 Household by type of foundation of house at ward level in 2011

CHAPTER 3.

HAZARD, VULNERABILITY, CAPACITY AND RISK ASSESSMENT

3-1. Historical Disaster Events

Historical disaster events have been prepared for the disasters to get information on the type of severe results due to disasters in Bhaktapur Municipality in the past. From this, information about the condition of trend and frequency of disaster can be obtained. Historical disaster events in Bhaktapur Municipality are shown in Table 3-1.

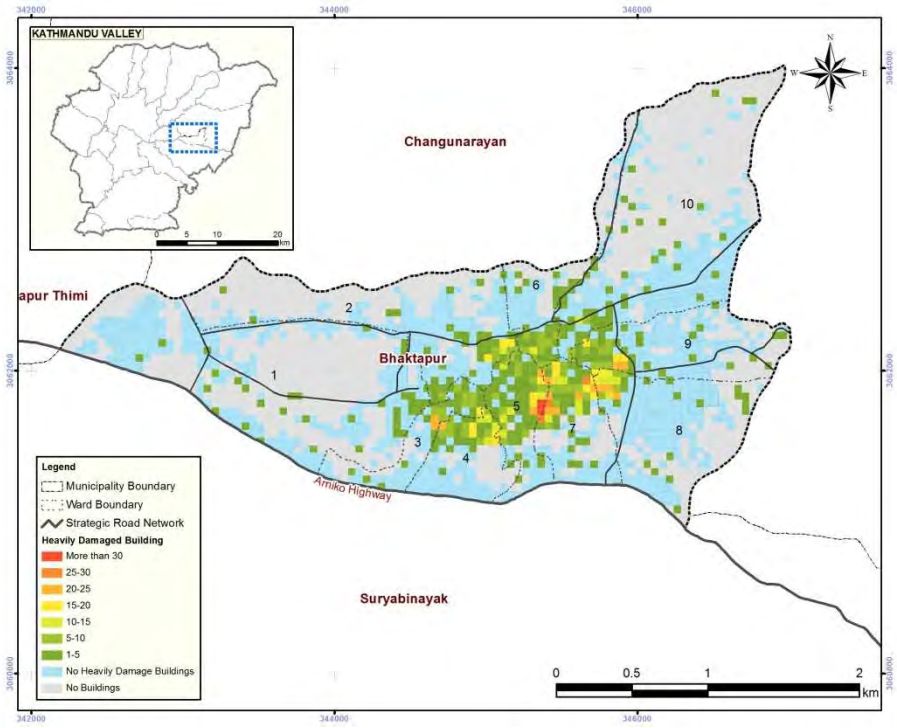
Table 3-1 Historical Disaster Events in the past around 30 years

S/N	Disaster Type	Year (Approximately)	Cause, Causal Factor	Damage Descriotion
1	Flood	2054 (1997/98 AD), 2065 (2008/09 AD), 2072 (2015/16 AD)	Rainfall	-
2	Windstorm	-	Windstorm	Damage in Indrayani pith and Patidum Pukhu, CGI roofs blown away, heritage damage, trees fallen
3	Hail storm	2060 (2003/04 AD)	Hail storm	Damage in whole municipal area
4	Festival accident	-	Chariot procession during festival	Human damage
5	Fire	2070-73 (2013/14 - 2016/17 AD)	Unplanned dense settlement	
6	Earthquake	2072 (2015 AD)	Huge 7.8 magnitude (USGS) earthquake	Around 6,000 private houses collapsed completely, around 2,100 buildings damaged partially 252 dead, 397 injured and, social, economic loss
7	Flood	2072 (2015/16 AD)	Rainfall	Settlement dispalced
8	Flood	2072 (2015/16 AD)	Rainfall	Damage in Mangal tirtha
9	Road accident	2074 (2017 AD)	-	2 dead
10	Fire	2074 (2017 AD)	Gas cylinder blast	-

Note: Information is based on the workshop for formulation of LDCRP in Bhaktapur Municipality
Source: JICA ERAKV Project

In addition to above Table 3-1, other flood, fire and road accident disasters have occurred.

The disaster which was most seriously damaged in recent years in Bhaktapur Municipality is the Gorkha earthquake in 2015, 252 people lost their lives and 397 people were injured. For the building damage, around 6,000 private houses collapsed completely, and around 2,100 buildings were damaged partially. In addition, several public buildings such as schools and hospitals have collapsed or have been affected. Moreover, several cultural heritages which were designated World Heritage Sites were severely damaged. Figure 3-1 shows the heavily damaged buildings by Gorkha earthquake in Bhaktapur Municipality.



Source: JICA ERAKV Project

Figure 3-1 Heavily Damaged Buildings by 2015 Gorkha Earthquake

3-2. Hazard Identification and Ranking

Bhaktapur Municipality has many types of potential disasters that could be a threat and lead to the risk posed to the victim life, property damage, or damage to the environment according to the past disasters. Based on the discussion on workshop for formulation of LDCRP, disaster identification and ranking is summarized shown in Table 3-2 as top six prioritized disaster on the basis of standardization done on the wards. And earthquake disaster is prioritized as the most hazardous disaster.

Table 3-2 Disaster Potential in Bhaktapur Municipality

*First Priority Disaster: Earthquake

Hazards	Flood	Fire	Windstorm	Road Accident
Flood				
Fire				
Windstorm				
Road Accident				
Rank	2nd	3rd	4th	5th

Note: Information is based on the workshop for formulation of LDCRP in Bhaktapur Municipality, Other potential disasters according to the past disasters: Festival accident, Hail storm
Source: JICA ERAKV Project

3-3. Hazard Analysis

Hazard assessment is a way to understand the elements of hazard which may create risk

to the Municipality and its community. Characteristics of hazards in one area with its community are different from other areas with its communities. Assessment of the characteristic of hazard will be conducted in accordance with necessary level by identifying the risky elements of various hazards in a specific location.

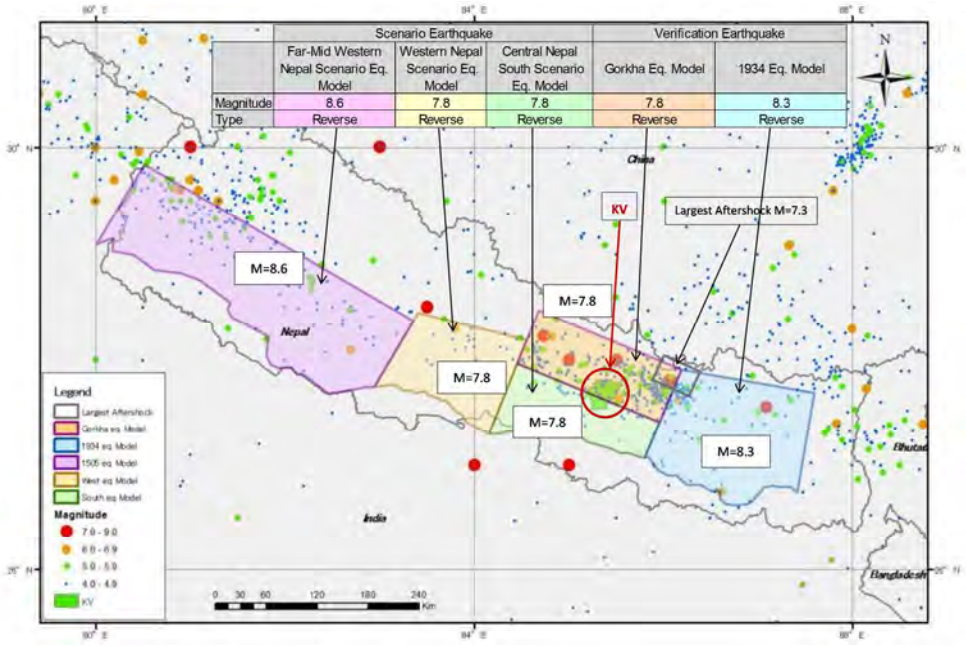
Hazard is a situation or a condition of biological characteristics, climatology, geography, geology, society, economy, politic, culture or technology which have potency to cause victims or damages. These potentials will be risky if they happen in such an area which does not have any capacity to face disaster. Therefore, it is needed to make analyses regarding hazard levels that might happen in those areas.

(1) Earthquake

JICA ERAKV Project implemented the hazard and risk assessment for earthquake in Kathmandu Valley including Bhaktapur Municipality. Hazard analysis for earthquake is as follows according to the JICA ERAKV Project.

1) Set-up of Scenario Earthquake

The basis of scenario earthquakes and the relation with historical earthquakes are shown in Figure 3-2. Scenario earthquakes are not the prediction of next earthquake and set based on the information and data of the past earthquakes, recent earthquake activity, tectonics and active faults and consultation with the national and international experts.



Source: JICA ERAKV Project

Figure 3-2 Scenario Earthquake Fault Model

For ground motion estimation, attenuation formula was directly used for Far-Mid Western Nepal Scenario Earthquake and Western Nepal Scenario Earthquake, while four modification factors: 1/3, 1/2, 2/3 and 1/1, were applied to estimate peak ground acceleration (PGA) from attenuation formula for Central Nepal South Scenario Earthquake because recorded PGA

from Gorkha earthquake was much smaller than that calculated from the attenuation. Since considering the reality of risk assessment results, ground motion from Western Nepal Scenario Earthquake shall be directly used for risk assessment and, ground motions with modification factor of 1/3, 1/2 and 2/3 from Central Nepal South Scenario Earthquake shall be used for risk assessment as shown in Table 3-3.

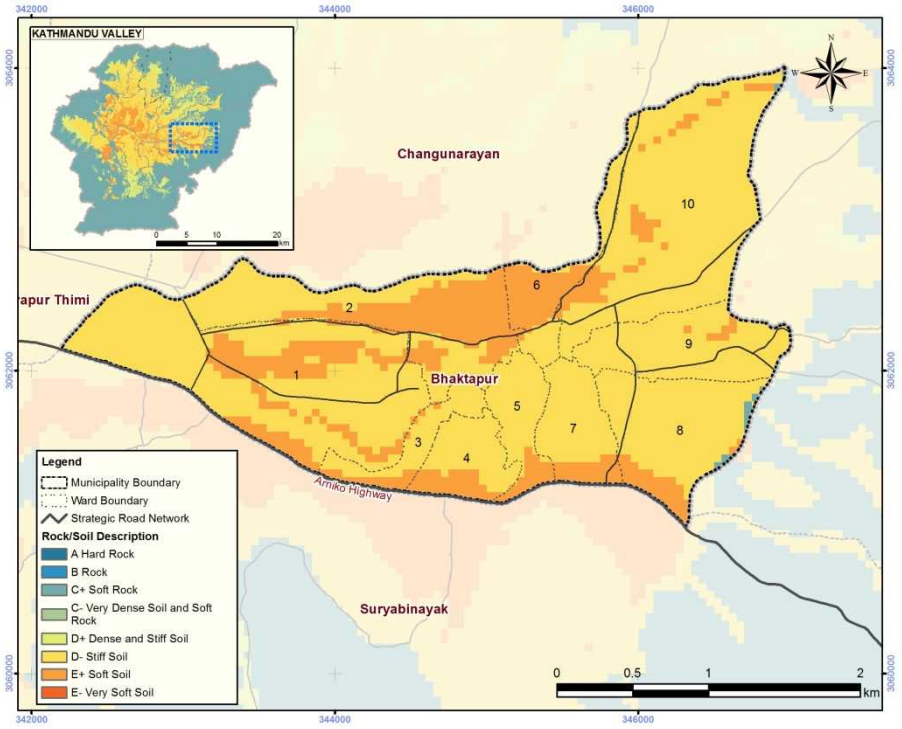
Table 3-3 Scenario ground motion for risk assessment

Scenario Earthquake	Modification Factor for PGA	Remarks
Far-Mid Western Nepal Scenario Earthquake	1/1 (Normal)	Not for risk assessment
Western Nepal Scenario Earthquake	1/1 (Normal)	For risk assessment (WN)
Central Nepal South Scenario Earthquake	1/1 (Normal)	Not for risk assessment
	1/3 (cover max. main shock)	For risk assessment (CNS-1)
	1/2 (average of aftershock)	For risk assessment (CNS-2)
	2/3 (cover max. aftershocks)	For risk assessment (CNS-3)

Source: JICA ERAKV Project

2) Hazard Analysis

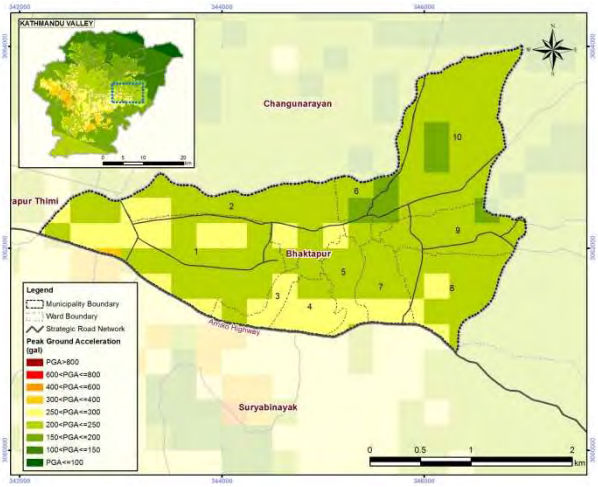
As the hazard analysis of earthquake, AVS30, the average value of the Shear-wave velocity to a depth of 30m from the surface, which shows the softness of ground in each location, is as follows based on the geomorphological unit (Figure 2-2) and a variety of survey results.



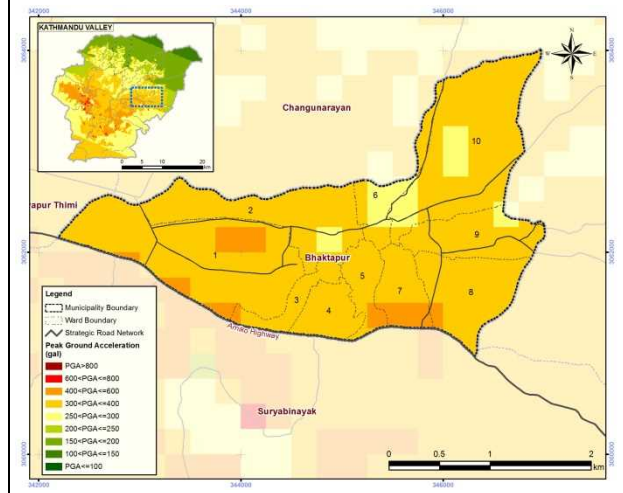
Source: JICA ERAKV Project

Figure 3-3 AVS30 Map based on Geomorphological Unit

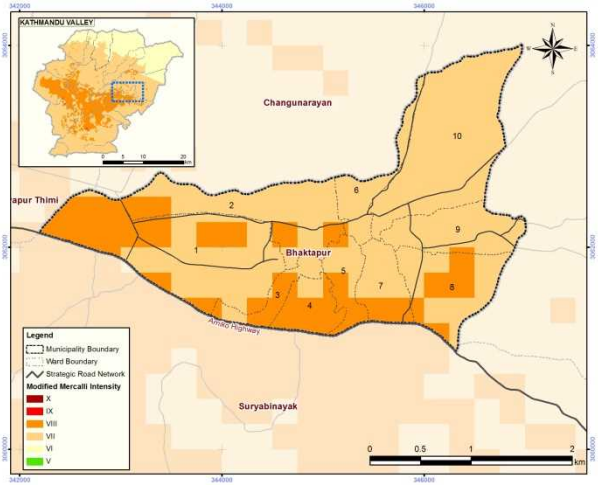
Based on the Figure 3-3, PGA (Peak Ground Acceleration) and MMI (Modified Mercalli Intensity) has been calculated. The results for CNS-1 and 2 are shown as follows.



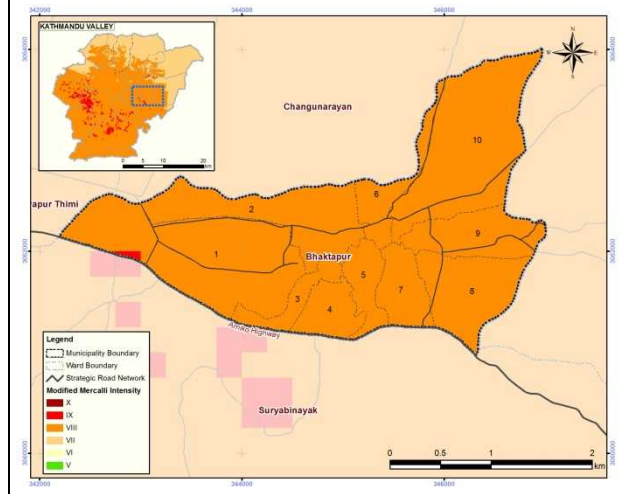
PGA(CNS-1)



PGA(CNS-2)



MMI(CNS-1)

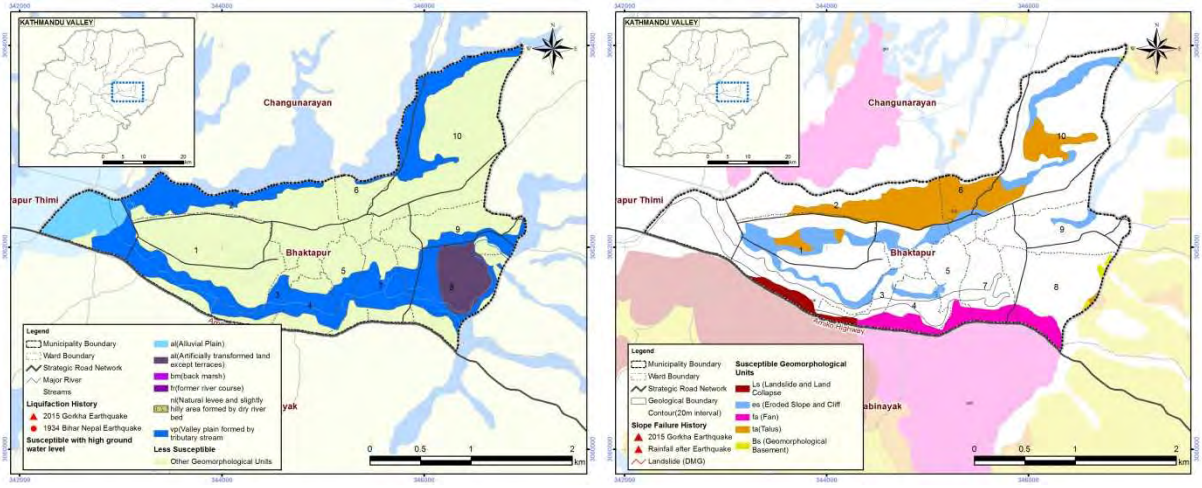


MMI(CNS-2)

Source: JICA ERAKV Project

Figure 3-4 PGA (Above) and MMI (Below) of Scenario Earthquakes

In addition, there are the possibilities of liquefaction and slope failure induced by the earthquake after the occurrence of the earthquake. Therefore, susceptibility of liquefaction and slope failure were analysed by JICA ERAKV Project based on the several survey results. The maps are shown as follows.

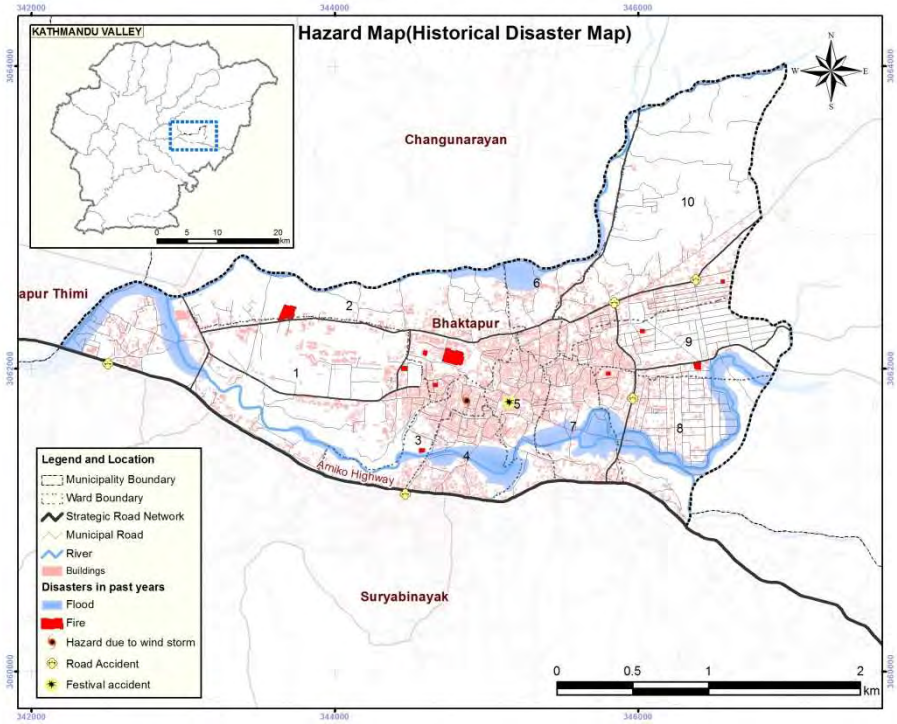


Source: JICA ERAKV Project

Figure 3-5 Liquefaction Susceptibility Map (Left) and Earthquake Induced Slope Failure Susceptibility Map (Right)

(2) Other Disasters

The hazards of other disasters except earthquake are summarized from the results of the workshop for formulation of LDCRP in Bhaktapur Municipality based on the historical disasters as follows. Road accident and fire have occurred mainly in the city centre with high dense buildings and population in Bhaktapur Municipality.



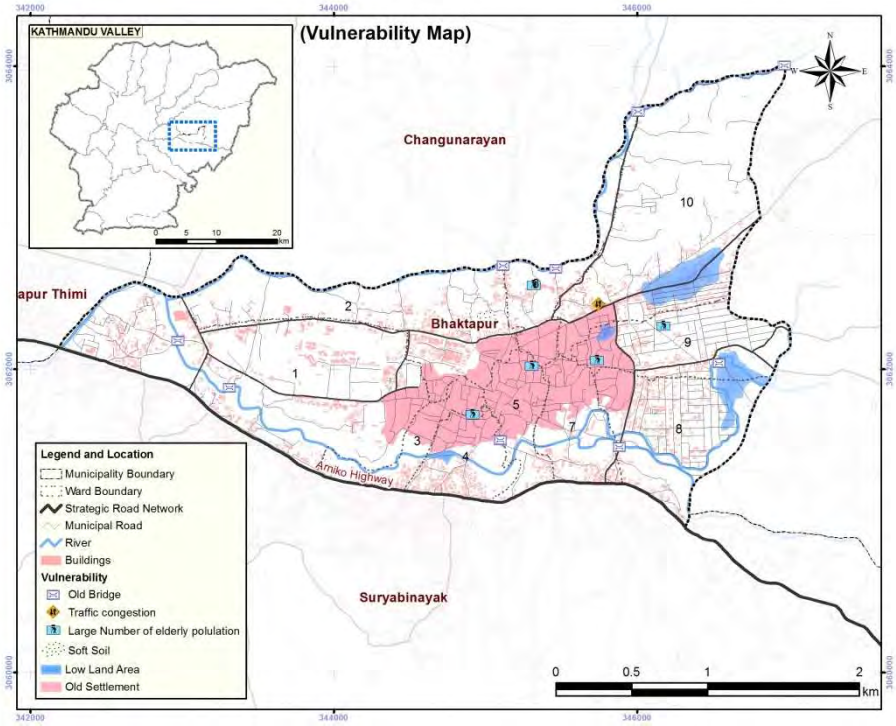
Note: Information is based on the workshop for formulation of LDCRP in Bhaktapur Municipality
Source: JICA ERAKV Project

Figure 3-6 Hazard Map for disasters except the earthquake

3-4. Vulnerability Analysis

Vulnerability is the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (UNISDR, 2009). There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors such as poor design and construction of buildings, inadequate protection of assets. Vulnerability varies significantly within a community and over time.

The result of vulnerability analysis based on the workshop for formulation of LDCRP in Bhaktapur Municipality is shown in Figure 3-7. There are old settlements mainly in city centre.



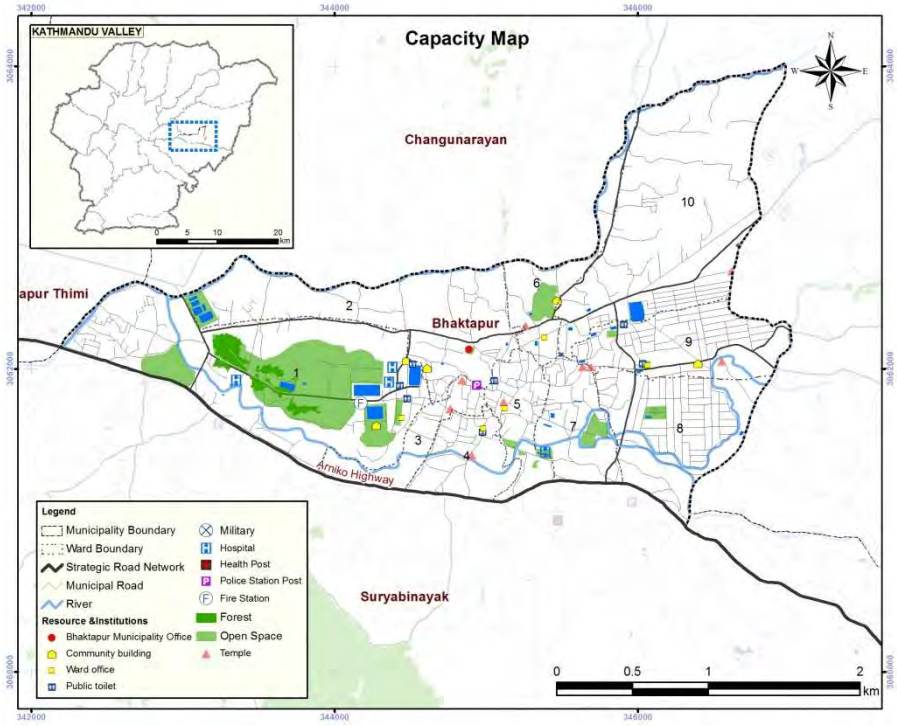
Note: Information is based on the workshop for formulation of LDCRP in Bhaktapur Municipality
Source: JICA ERAKV Project

Figure 3-7 Vulnerability Map

3-5. Capacity Analysis

Capacity is the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals (UNISDR, 2009). Capacity include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management.

The result of capacity analysis based on the workshop for formulation of LDCRP in Bhaktapur Municipality is shown in Figure 3-8. This factor is not static, but should be improved in future in order to cope and/or act to reduce disaster risks.



Note: Information is based on the workshop for formulation of LDCRP in Bhaktapur Municipality and JICA RRNE Project
Source: JICA ERAKV Project

Figure 3-8 Capacity Map

3-6. Risk Identification and Assessment

(1) Earthquake

1) Contents of risk assessment

Risk assessment has been implemented with the combination of seismic hazard assessment and the structural and/or social vulnerability. In case of a disaster, structural vulnerability results in infrastructure and building damage, while social vulnerability results in exposure to loss of life or environmental impact. The damage for each scenario earthquake has been estimated based on the collected data, hazard assessment and the damage function.

Risk assessment for earthquake disaster has been implemented based on following contents and earthquake occurrence scene.

Table 3-4 Earthquake Occurrence Scenes and Corresponding Risk Assessment

Year	Scene	Building	Infrastructure / Lifeline	Human Casualty	Economic Loss
2016	Night	○	○	○	○
	Weekday noon			○	
	Weekend afternoon			○	
2030	Extrapolation	○	-	○	-
	Seismic Stren.	○		○	

Source: JICA ERAKV Project

2) Results of risk assessment

Summary of risk assessment results and risk maps are shown in Table 3-5, and the preconditions of risk assessment by JICA ERAKV Project are as follows.

1. Scenario Earthquake are not the prediction of next earthquake
2. Based on Scenario earthquakes, hazard and risk are assessed for Kathmandu valley to utilize for the purpose of policy making and planning, and others for effective disaster risk reduction and management efforts.
3. Risk Assessment was carried out based on the available data at present.

Table 3-5 Summary of Risk Assessment Results

Category		Physical damage				Economic loss (mil. NPR)*1				Human casualty (Population: 2016: Night & Weekend afternoon -93350 ,WKDY Noon - 104427, 2030 - 120460)				
		Scenario earthquake				Scenario earthquake					Scenario earthquake			
		WN	CNS-1	CNS-2	CNS-3	WN	CNS-1	CNS-2	CNS-3		WN	CNS-1	CNS-2	CNS-3
Building (2016) (Total building 13811)	Heavy damage (EMS DL4&5)	1,200	2,980	5,559	7,708	4,536.0	11,570.0	22,392.0	31,529.0	Night (Weekday and weekend)				
		8.7%	21.6%	40.3%	55.8%					Death	152	429	913	1,388
											0.16%	0.46%	0.98%	1.49%
										Injured	594	1,681	3,577	5,435
											0.64%	1.80%	3.83%	5.82%
										Evacuee	13,817	29,710	49,615	63,665
											14.80%	31.83%	53.15%	68.20%
	Moderate damage (EMS DL3)	955	1,608	2,034	2,001					Weekday (noon, 12:00)				
		6.9%	11.6%	14.7%	14.5%					Death	150	430	923	1,408
											0.14%	0.41%	0.88%	1.35%
										Injured	588	1,685	3,616	5,513
											0.56%	1.61%	3.46%	5.28%
										Evacuee	15,257	33,153	55,666	71,530
											14.61%	31.75%	53.31%	68.50%
	Slight damage (EMS DL2)	1,732	2,340	2,334	1,902					Weekend (afternoon, 18:00)				
		12.5%	16.9%	16.9%	13.8%					Death	106	300	640	971
											0.11%	0.32%	0.69%	1.04%
										Injured	416	1,177	2,504	3,805
											0.45%	1.26%	2.68%	4.08%
										Evacuee	13,862	29,838	49,889	64,082
											14.85%	31.96%	53.44%	68.65%
Building (2030, EMS DL4&5) (Total building 17527)*2	Extrapolation	1,495	3,730	7,000	9,738					Death	191	546	1,171	1,789
		8.5%	21.3%	39.9%	55.6%						0.16%	0.45%	0.97%	1.49%
	Case-1	1,270	3,325	6,511	9,274					Death	160	480	1,076	1,685
		15.1%	10.9%	7.0%	4.8%						0.13%	12.1%	8.1%	5.8%
	Case-2	360	1,785	4,844	7,845					Death	43	253	799	1,429
		75.9%	52.1%	30.8%	19.4%						77.5%	53.7%	31.8%	20.1%
	Case-3	344	1,683	4,569	7,459					Death	40	229	724	1,309
		77.0%	54.9%	34.7%	23.4%						79.1%	58.1%	38.2%	26.8%
	Case-4	666	1,956	4,479	7,106					Death	86	297	811	1,444
		55.5%	47.6%	36.0%	27.0%						55.0%	45.6%	30.7%	19.3%
	Case-5	423	1,401	3,644	6,208					Death	55	223	699	1,338
		71.7%	62.4%	47.9%	36.2%						71.2%	59.2%	40.3%	25.2%
School (Total building 215)	Heavy	10	30	68	104	780.0	2,110.0	4,207.0	5,945.0	Death	14	62	186	332
		4.7%	14.0%	31.6%	48.4%						0.04%	0.17%	0.50%	0.89%
	Moderate	9	21	33	35					Injured	55	243	728	1,300
		4.2%	9.8%	15.3%	16.3%						0.15%	0.65%	1.95%	3.47%
	Slight	19	34	39	33									
		8.8%	15.8%	18.1%	15.3%									
Health facility (Total building 25)	Heavy	0	2	5	9	0.0	2,143.4	5,414.5	8,915.1					
		0.0%	8.0%	20.0%	36.0%									
	Moderate	1	2	4	5									
		4.0%	8.0%	16.0%	20.0%									
	Slight	1	3	5	4									
		4.0%	12.0%	20.0%	16.0%									
Government building (Total building 33)	Heavy	1	4	10	15	122.2	587.7	1,310.6	1,831.3					
		3.0%	12.1%	30.3%	45.5%									
	Moderate	1	3	5	6									
		3.0%	9.1%	15.2%	18.2%									
	Slight	3	5	6	6									
		9.1%	15.2%	18.2%	18.2%									
Road*3 (Total length 91)	Length by landslide (km)	0.0	0.0	0.0	0.0	0.0	0.0	28.9	97.7					
		0.0%	0.0%	0.0%	0.0%									
	Length by liquefaction (km)	0.0	0.0	6.7	28.7									
		0.0%	0.0%	7.3%	31.5%									
Bridge (9 bridges assessed)*4	Heavy	0	0	0	0	0.0	0.0	0.0	0.0					
		0.0%	0.0%	0.0%	0.0%									
	Moderate	0	0	0	0									
		0.0%	0.0%	0.0%	0.0%									
	Slight	0	0	0	0									
		0.0%	0.0%	0.0%	0.0%									
Water supply (Existing) (Total length 45 km)	Damage points	18	40	74	110	0.7	1.5	2.7	4.1					
	Damage ratio (point/km)	0.40	0.90	1.65	2.45									
Water supply (Planned) (Total length 0 km)	Damage points	0	0	0	0	0.0	0.0	0.0	0.0					
	Damage ratio (point/km)	0.0	0.0	0.0	0.0									
Sewage (Total length 47km)	Damage Length (km)	0.2	0.4	0.5	0.9	3.0	6.3	7.8	14.0					
		0.4%	0.8%	1.0%	1.9%									
Power distribution (Total pole 4953)	Pole broken	51	141	294	434	0.7	2.0	4.1	6.1					
		1.0%	2.8%	5.9%	8.8%									
Mobile BTS tower (Total tower 23)	Tower damage	1	3	9	15	1.9	5.7	17.1	28.5					
		4.3%	13.0%	39.1%	65.2%									

Note:

*1 Economic loss is the direct loss due to the damage of building, infrastructure and lifeline, calculated by the necessary construction or repair cost.

*2 The building damage of 2030 accounts for heavy damage only. The ratio of each case is the reduction ratio with respect to that of extrapolation.

Extrapolation: The composition of the structure type of 2030 is assumed as same as that of 2016.

Case-1: Buildings increased from 2016 to 2030 are assumed masonry with cement mortar and RC engineered only. The ratio of masonry and RC is assumed as same as that at the time of 2016.

Case-2: 1) Same as Case-1, 2) All of the existing masonry building are assumed to change to masonry with cement mortar.

Case-3: 1) Same as Case-2, 2) All of the existing RC non-engineered building are assumed to change to RC engineered.

Case-4: 1) 50% of increased new masonry buildings are changed to RC engineered, 2) 50% of existing masonry buildings at 2016 are assumed be reconstructed to RC Engineered, 3) 30% of existing non-engineered RC buildings are assumed be reconstructed to RC engineered.

Case-5: 1) 70% of increased new masonry buildings are changed to RC engineered, 2) 70% of existing masonry buildings at 2016 are assumed be reconstructed to RC Engineered, 3) 50% of existing non-engineered RC buildings are assumed be reconstructed to RC engineered.

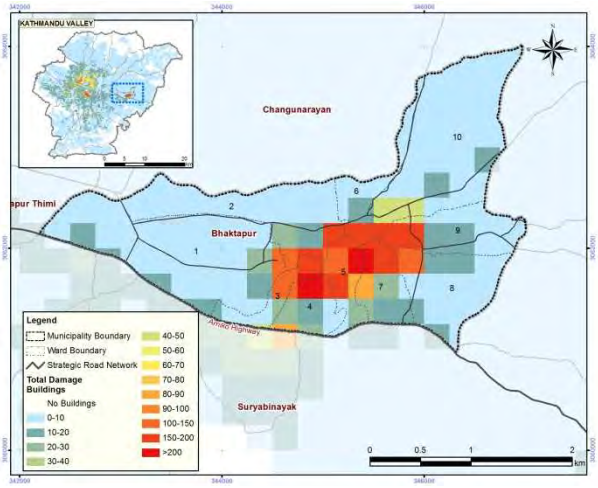
*3 The damage length of road means the road length which located in the high liquefaction and landslide potential area, not the damage length which will happen in the scenario earthquakes.

*4 There are a total of 145 bridges and, among them, 45 of RC multi span bridges were quantitatively assessed for each scenario. The remaining single span and multi span masonry bridges were qualitatively assessed from the point view of seismic performance without relating to scenario earthquakes.

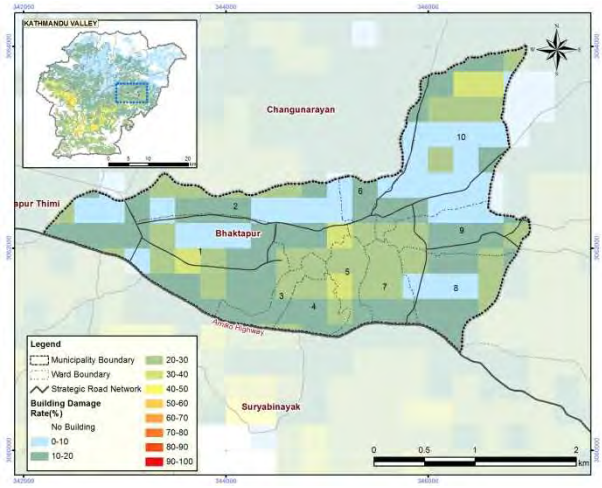
Caution

1. Scenario Earthquake are not the prediction of next earthquake
2. Based on Scenario earthquakes, hazard and risk are assessed for Kathmandu valley to utilize for the purpose of policy making and planning, and others for effective disaster risk reduction and management efforts.
3. Risk Assessment was carried out based on the available data at present.

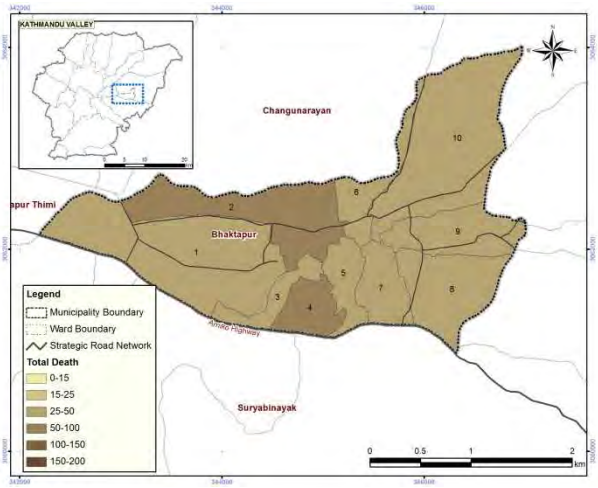
Source: JICA ERAKV Project



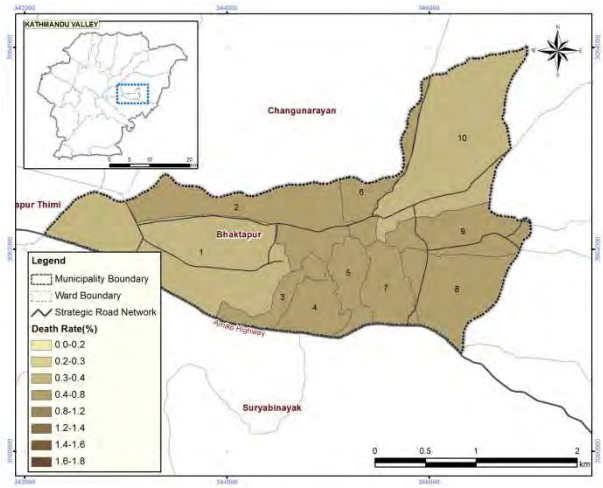
Number of Heavily Building Damage(CNS-1)



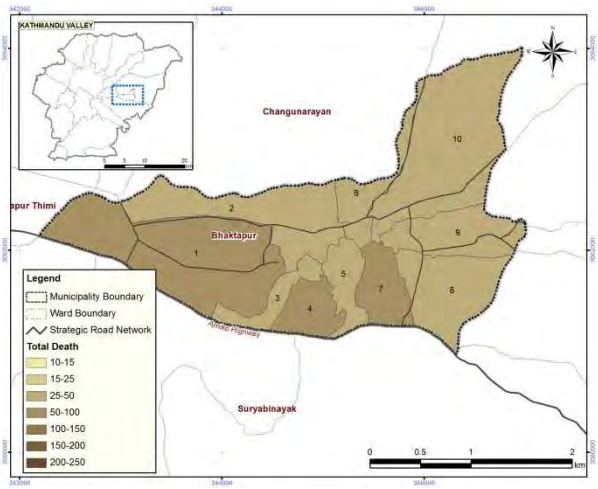
Ratio of Heavily Building Damage(CNS-1)



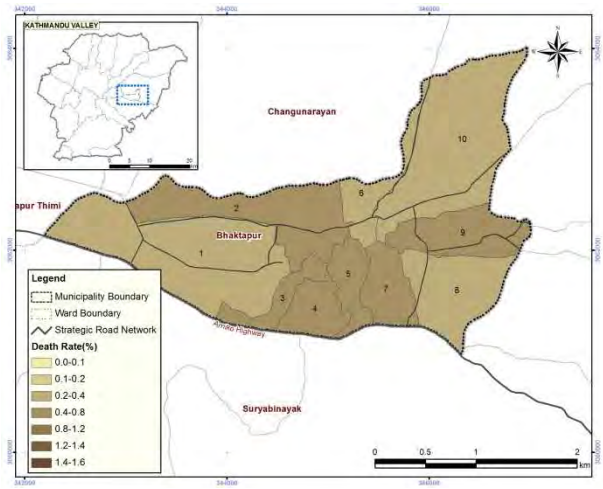
Number of Death in 2016 at Night(CNS-1)



Ratio of Death in 2016 at Night(CNS-1)



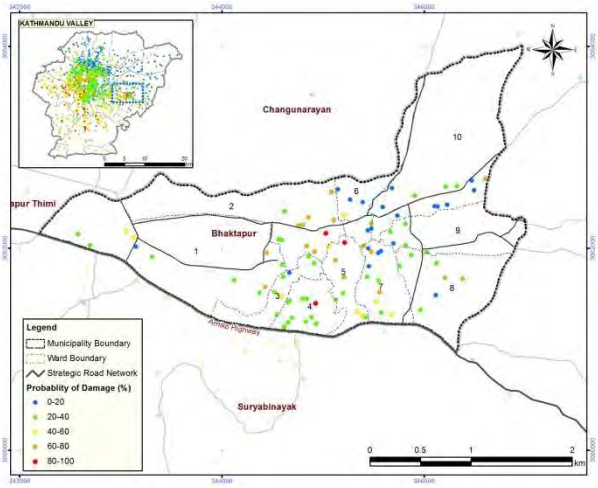
Number of Death in 2016 at Weekday Noon(CNS-1)



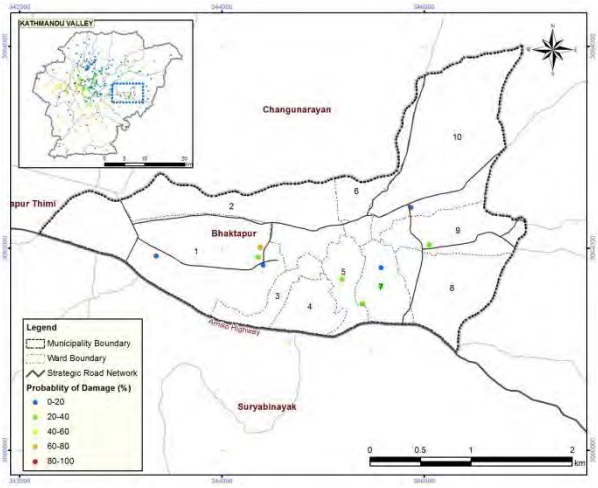
Ratio of Death in 2016 at Weekday Noon(CNS-1)

Source: JICA ERAKV Project

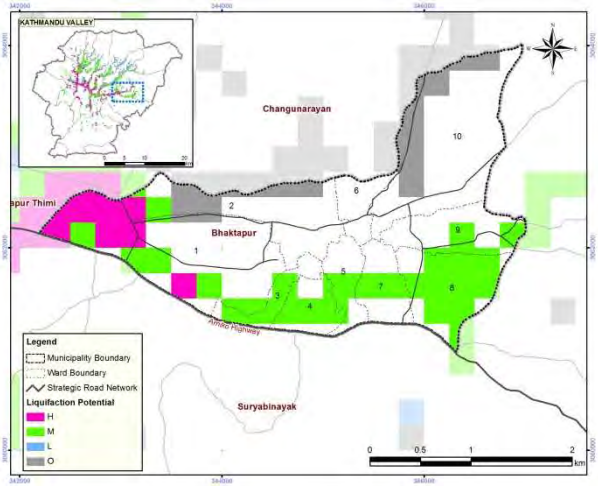
Figure 3-9 Result of risk assessment (1)



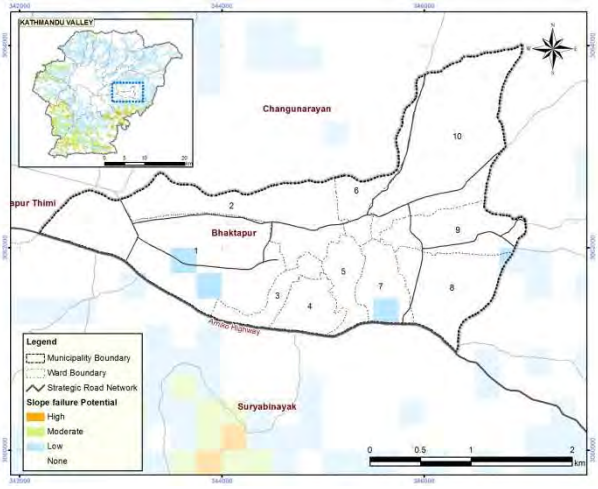
School Building Damage (CNS-2)
Probability of Heavy Damage (Damage Level 4+5 by EMS-98)



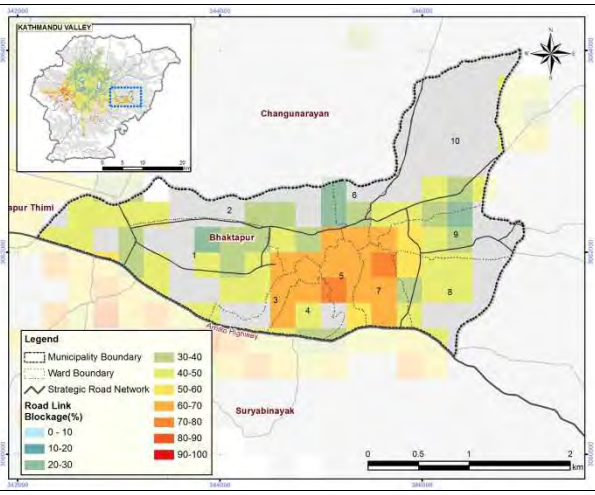
Health Facility Building Damage (CNS-2)
Probability of Heavy Damage (Damage Level 4+5 by EMS-98)



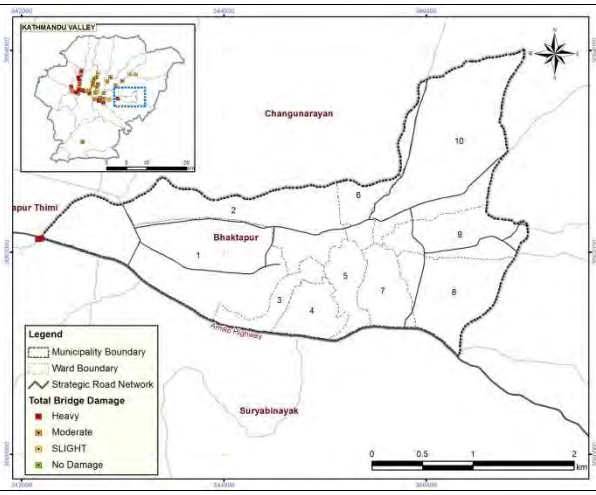
Possible Damage of Road by Liquefaction(CNS-2)



Possible Damage of Road by Slope Failure(CNS-2)



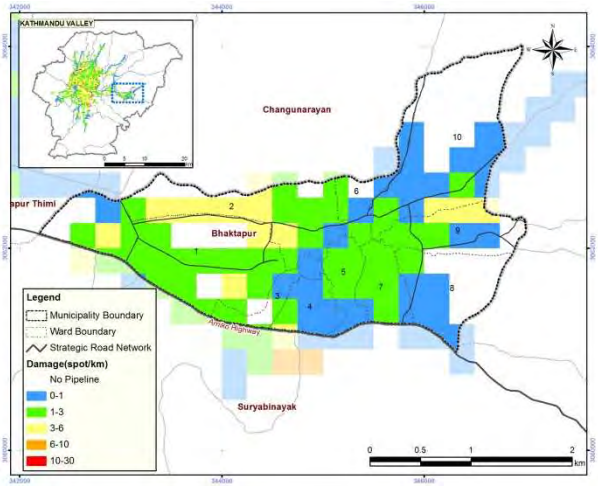
Possible Link Blockage of Road by Building Damage(CNS-2)



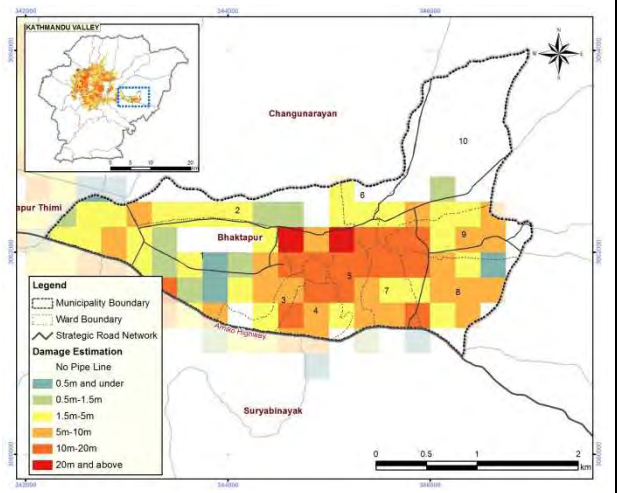
Damage of Bridge(CNS-2)

Source: JICA ERAKV Project

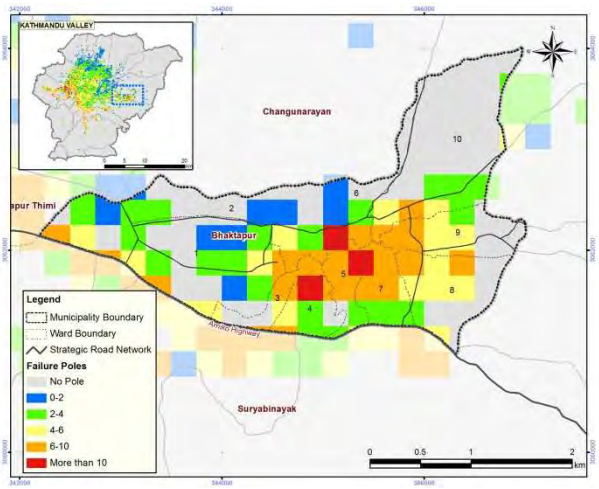
Figure 3-10 Result of risk assessment (2)



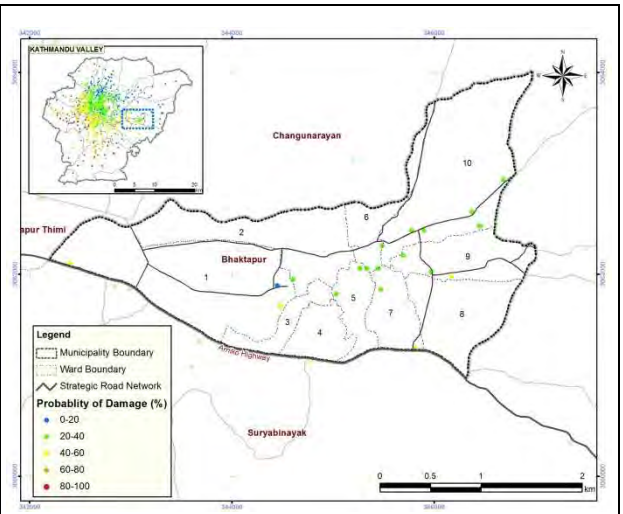
Water Supply Network Damage (Existing) (CNS-2)



Sewage Network Damage(CNS-2)



Power Pole Damage (CNS-2)



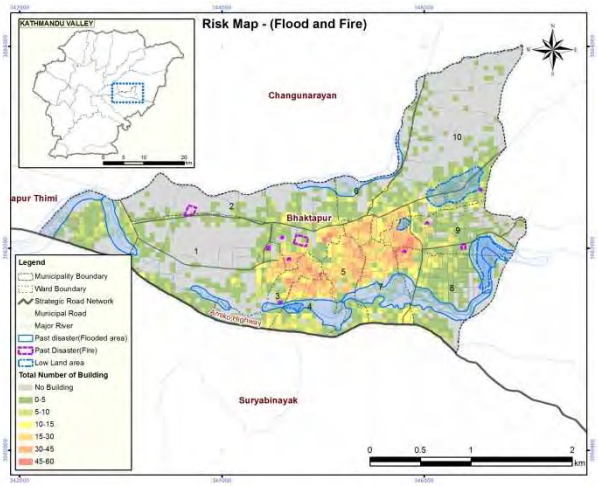
Mobile BTS Tower Damage (CNS-2)

Source: JICA ERAKV Project

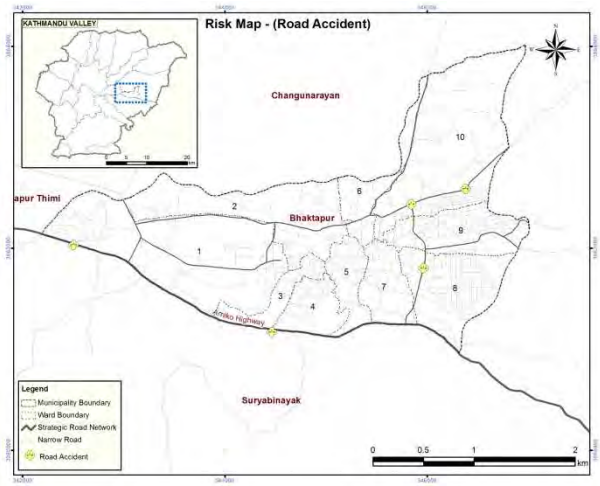
Figure 3-11 Result of risk assessment (3)

(2) Other Disasters

The risks of other disasters except earthquake are identified from the hazard, vulnerability, capacity assessment and land use conditions such as built-up area for considering exposure of damages as shown in Figure 3-12. In the figure, since several flooded area and lowland area is located in the built-up area of the Municipality, these areas are at high risk for flood. On the other hand, since road accidents have occurred on the strategic road of the Municipality, these areas are at high risk for road accident.



Flood and Fire



Road Accident

Note: Hazard and vulnerability information is based on the workshop for formulation of LDCRP in Bhaktapur Municipality
Source: JICA ERAKV Project

Figure 3-12 Risk Map

CHAPTER 4.
LOCAL DISASTER AND CLIMATE RESILIENCE POLICY

4-1. Vision and Mission

The Vision of DCR Plan in Bhaktapur Municipality is:

Develop Bhaktapur Municipality as a Resilient City towards Zero Casualties from Disasters

The Mission of DCR Plan in Bhaktapur Municipality is:

1. To develop policies for disaster risk reduction and management to be safe from the disaster
2. To encourage everyone to build seismic resistant buildings with incorporation of building codes, bylaws to protect people' lives
3. To Increase the capacity and enhance awareness to implement efforts for various disasters in planned, integrated, coordinated and comprehensive manner

- Message from Mayor of Bhaktapur Municipality -

Basic Principle for DCR

Bhaktapur Municipality has suffered from various disasters so far. Especially in the Gorkha earthquake that occurred in 2015, the serious damage was caused such that 252 people lost their lives, 397 people were injured and around 6,000 private houses were completely collapsed, etc. Although already two years have passed since the earthquake, it is important not to forget disasters and to build the culture for disaster risk reduction and management.

Under such circumstances, in Nepal, large earthquakes occurred periodically, and the risk of earthquakes still continues.

In the result of earthquake risk assessment by the JICA ERAKV project, in the Central South Nepal scenario Earthquake, it is very severe situation, specifically 2,980 buildings are assessed to be heavily damaged in CNS-1.

However, regardless of any difficult situation, Bhaktapur Municipality will promote safe and secure city planning in order to protect the lives of residents as a fundamental principle. In particular, since "Risk Reduction of Building Damage" is directly linked to the residents' lives, we will promote countermeasures for buildings.

Then, it is our responsibility to carry out the DCR measures as the top priority by understanding the mechanism of the disasters and our regional characteristics, and imagining the disaster as the basis.

4-2. Disaster and Climate Resilience Strategy

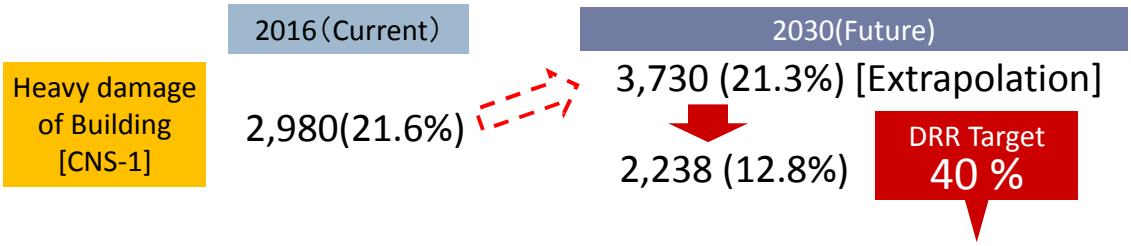
(1) Target level of scenario earthquake

As a first prioritized disaster Bhaktapur Municipality set the target level of scenario earthquake ground motion for DRR efforts based on the results of risk assessment as follows.

- CNS-2 for Critical Facilities such as School, Hospitals, Governmental Buildings, Large Commercial Buildings, High-rise Buildings, etc. and Critical Infrastructure such as Bridges.
- CNS-1 for Other Facilities such as Residential and Small Residential-Commercial Buildings.

(2) DCR Strategies

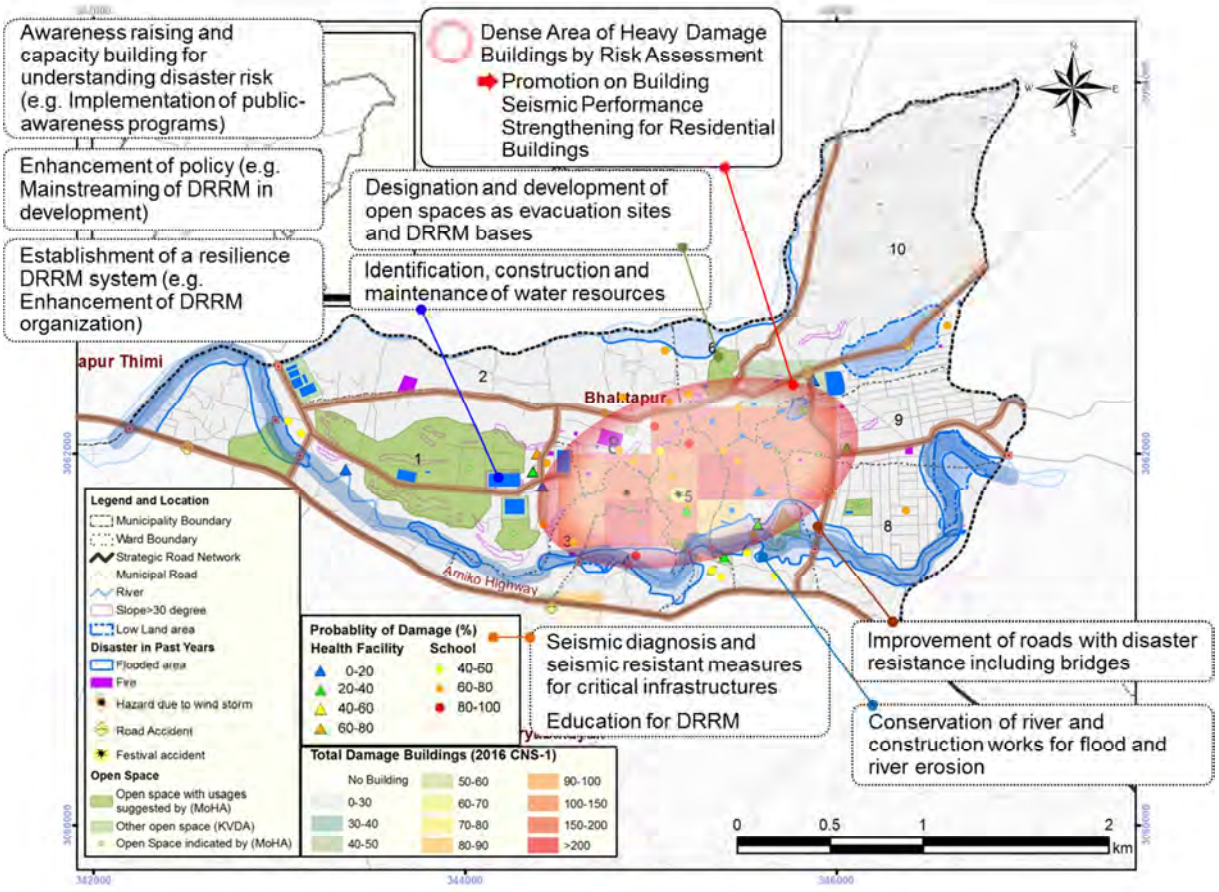
To contribute the DCR of Bhaktapur Municipality and achieve the targets of Sendai Framework for DRR 2015-2030, DCR Strategies with disaster risk reduction ratio as target value were set as follows.



Targets of Sendai Framework for DRR 2015-2030	Strategies (Target value by 2030)
(a) Substantially reduce global disaster **mortality** by 2030	Approx. **40%** Reduce **546 ⇒ 330 (persons)**
(b) Substantially reduce the **number of affected people** globally by 2030	Approx. **40%** Reduce (Evacuees) **37,843 ⇒ 22,700 (persons)**
(c) Reduce direct disaster **economic loss** in relation to global gross domestic product (GDP) by 2030	Approx. **20%** Reduce related to Heavy damage of Building **8,433 ⇒ 7,000 (mil. NPR)**
(d) Substantially reduce disaster damage to **critical infrastructure** and disruption of basic services, among them **health and educational facilities**, including through developing their resilience by 2030	**Reduce**
(e) Substantially increase the number of countries with national and **local disaster risk reduction strategies** by 2020	**This Plan and Strategy**

Source: JICA ERAKV Project

Figure 4-1 DCR Strategies of Bhaktapur Municipality



Source: JICA ERAKV Project

Figure 4-2 Strategic Map for DRR against Earthquake disaster

4-3. Institutional Structure of Disaster and Climate Resilience

The framework of related organizations to DCR is summarized in Figure 4-3. Efforts from many organizations are required for implementing DCR measures. Moreover, DCR measures by each stakeholder are necessary to be collaborated and coordinated.

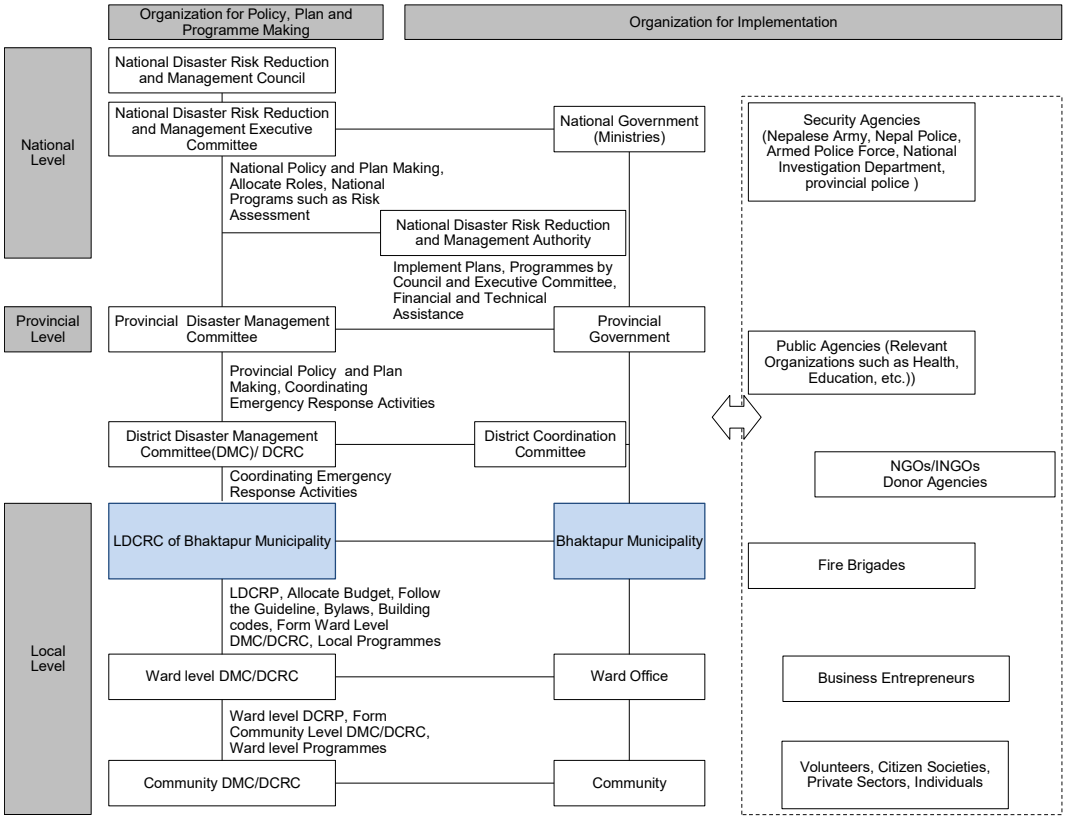


Figure 4-3 Framework of related organizations

In the implementation of DCR activities, LDCRC of the Municipality does not work alone but cooperate with entire Bhaktapur Municipal government, District, Provincial, National Government, NGO/INGOs and relevant organizations.

CHAPTER 5.
LOCAL DISASTER AND CLIMATE RESILIENCE ACTIVITIES

To achieve the Vision and Mission for DCR of Bhaktapur Municipality, priorities for action are as follows based on the Sendai Framework for DRR 2015-2030:

(1) Understanding disaster risk

Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.

(2) Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the national, regional and global levels is vital to the management of disaster risk reduction in all sectors and ensuring the coherence of national and local frameworks of laws, regulations and public policies, by defining roles and responsibilities, guide, encourage and incentivize the public and private sectors to take action and address disaster risk.

(3) Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation.

(4) Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Disaster preparedness needs to be strengthened for more effective response and ensure capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of the disaster, is an opportunity to «Build Back Better» through integrating disaster risk reduction measures. Women and persons with disabilities should be empowered to publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases.

5-1. Understanding Disaster Risk

Based on the DCR policy which had been described in chapter 4, the activities for understanding disaster risk can be seen on Table 5-1.

Table 5-1 Activity list for understanding disaster risk

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
1.Understanding disaster risk								
1-1.Understanding disaster risk								
Understanding disaster risk	Common	***	1-1-1	Accumulation of disaster data for the historical disasters	Accumulation of disaster data ・Accumulation and database compilation of historical disaster data ・Studying the past disasters and disaster trends	Municipality	DCC	1 year
	Common	***	1-1-2	Development of a disaster information database for DRRM	Development of a disaster information database ・Information of past disasters ・Information of physical and social conditions such as geology, people and buildings ・Regularly update database	Municipality	National Government	2 years
	Common	**	1-1-3	Update of VCA in ward level	Update of VCA in ward level (Examples of contents) ・Historical timeline analysis, hazard ranking ・Institutional analysis ・Target group discussion	Ward Office	Municipality	1 year
	Common	**	1-1-4	Update of VCA in municipal level	Update of VCA in municipal level ・Integration of results of VCA in ward level	Municipality	-	1 year
	Disasters except Earthquake	***	1-1-5	Identification of risk area	Understanding and Identification of the risk area of the municipality ・Risk area by VCA and, results of hazard and risk assessment (if any) ・Risk area on risk sensitive land use plan ・Understanding the risk area	Municipality	National and Provincial Government, DCC	2 years
1-2.Effective dissemination of disaster risk information								
Effective dissemination of disaster risk information	Common	**	1-2-1	Development of risk maps and DRRM maps	Development of risk maps and DRRM maps ・Development of risk maps and DRRM maps based on the risk assessment	Municipality	Provincial Government, DCC	1 year
	Common	**	1-2-2	Dissemination of disaster risk information to the residents	Dissemination of disaster risk information to the residents ・Dissemination of risk maps and DRRM maps to the residents ・Development of hoarding boards for disaster risk information and public awareness	Municipality	Ward Office	1 year
1-3.Awareness Raising and Capacity Building for Understanding Disaster Risk								
Enhancement of public awareness of Disaster Risk Reduction/ Management (DRRM)	Common	**	1-3-1	Development of a handbook on DRRM for families	Development and Distribution of a handbook about DRRM for families (Examples of contents) ・Learning about disasters (disaster mechanisms, etc.) ・What to do in the event of disaster	Municipality	Ward Office	1 year
	Common	***	1-3-2	Implementation of public awareness-raising programmes on DRRM	Implementation of awareness-raising programmes on DRRM (Examples of programmes) ・Community workshop for learning disaster risks and DRRM ・Development/Utilization of educational tools ・TV/Radio awareness programme	Municipality	Ward Office	Regularly
	Common	*	1-3-3	Construction and management of DRRM training centre	Construction and management of DRRM training centre for all municipality (communities, municipal staffs) ・Consideration of the concept of DRRM training centre ・Designing the building ・Consideration of the training course/contents ・Planning of the operation and management for the training centre	Municipality	Provincial Government, DCC	3 years

Note: Priority Level *** High, ** Middle, * Low

5-2. Strengthening Disaster Risk Governance to Manage Disaster Risk

Based on the DCR policy which had been described in chapter 4, the activities for strengthening disaster risk governance to manage disaster risk can be seen on Table 5-2.

Table 5-2 Activity list for strengthening disaster risk governance to manage disaster risk

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
2. Strengthening disaster risk governance to manage disaster risk								
2-1.Developing regulatory frameworks								
Enhancement of policy on DRRM	Common	***	2-1-1	Formulation of regulation on DRRM	Formulation of regulation on DRRM ・Development of regulation on DRRM ・Synchronization with the local regulation on land use	Municipality	Provincial Government, DCC	1 year
	Common	***	2-1-2	Mainstreaming of DRRM in development	Mainstreaming of DRRM in development ・Integration of DRRM aspect into the local development plan and all relevant plans	Municipality	-	1 year
	Common	***	2-1-3	Formulation of the local regulation for disaster emergency fund	Formulation of the local regulation for disaster emergency fund	Municipality	Provincial Government, DCC	2 years
2-2.Resilient DRRM Governance								
Establishment of a resilient DRRM system	Common	***	2-2-1	Establishment of Local Disaster and Climate Resilience Committee (LDCRC)	Establishment of Local Disaster and Climate Resilience Committee (LDCRC)	Municipality	-	1 year
	Common	***	2-2-2	Enhancement of DRRM organization	Enhancement of the DRRM section on the municipal level. ・Organizational restructuring including the promotion to the Division "DRRM Division" divided into several sections and allocated tasks. ・Increasing the number of staff, and the employment of experts for DRRM	Municipality	-	1 year
	Common	**	2-2-3	Establishment of sub committees	Establishment of sub committees such as Preparedness and response, Monitoring and evaluation)	Municipality	-	1 year
	Common	***	2-2-4	Management and enhancement of the fire brigade/equipment	Management and enhancement of the fire brigade/equipment ・Establishment of the fire brigade organization (municipal and ward level), allocation of resources ・Procurement of the fire equipment (portable fire engines, fire extinguishers, search and rescue equipment, etc.) ・Training and awareness raising activities	Municipality	National and Provincial Government, DCC	1 year
	Common	***	2-2-5	Establishment of Ward level Disaster and Climate Resilience Committee and Community Disaster and Climate Resilience Committee (CDCRC)	Establishment of Ward level Disaster and Climate Resilience Committee ・Determination of members of committee based on the Ward Citizen Forum ・Determination and allocation of roles and responsibilities of committee ・Determination of DRRM capacity development programmes ・(if necessary) Establishment of CDCRC	Ward Office	Municipality	1 year
	Common	**	2-2-6	Formulation of community DRRM plans	Support for Formulation of Community DRRM plans ・Hazard/Risk assessment of community level based on the risk assessment on the municipal level ・Establishment of planning committee ・Formulation of Community DRRM plans (Example of contents：General overview, Community profile, Risk assessment, DRRM policy, Action plan, etc.)	Ward Office	Municipality	2 years

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Common	***	2-2-7	Human resource development for DRRM administration	Implementation of training for municipal staff in order to develop the human resources needed for DRRM administration. ・Consideration of training programmes for each level. ・Conducting the workshops and training.	Municipality	National and Provincial Government, DCC	Regularly
		Common	***	2-2-8	Monitoring and Evaluation of implementation on the LDCRP	Monitoring and Evaluation of implementation on the LDCRP ・Identification of the activities which is on going ・Regularly monitoring, evaluation of the activities ・Development of the monitoring and evaluation report	Municipality	-	Regularly
		Common	***	2-2-9	Update of the LDCRP	Update of the LDCRP ・Review of the LDCRP ・Update of the LDCRP for effective disaster and climate resilience after five years	Municipality	-	Regularly (Every 5 years)
	Building alliance, collaboration and partnership	Common	*	2-2-10	Strengthening cooperation with other municipalities, the establishment of a support and acceptance system, and conclusion of agreements	Conclusion of agreements for strengthening cooperation with other municipalities and the establishment of a support and acceptance system. ・Coordination with national and province lecel for a cooperation system among municipalities.	National and Provincial Government, DCC	Municipality	5 years
		Common	**	2-2-11	Establishment of DRR platforms to strengthen the cooperation with other agencies (Red Cross, NGOs/INGOs), the establishment of a support and acceptance system, and conclusion of agreements	Conclusion of agreements for strengthening cooperation with other related agencies for emergency response and the establishment of a support and acceptance system. ・Coordination with Red Cross, NGOs/INGOs, etc.	National and Provincial Government, DCC	Municipality	2 years

Note: Priority Level *** High, ** Middle, * Low

5-3. Investing in Disaster Risk Reduction for Resilience

Based on the DCR policy which had been described in chapter 4, the activities for investing in disaster risk reduction for resilience can be seen on Table 5-3.

Table 5-3 Activity list for investing in disaster risk reduction for resilience

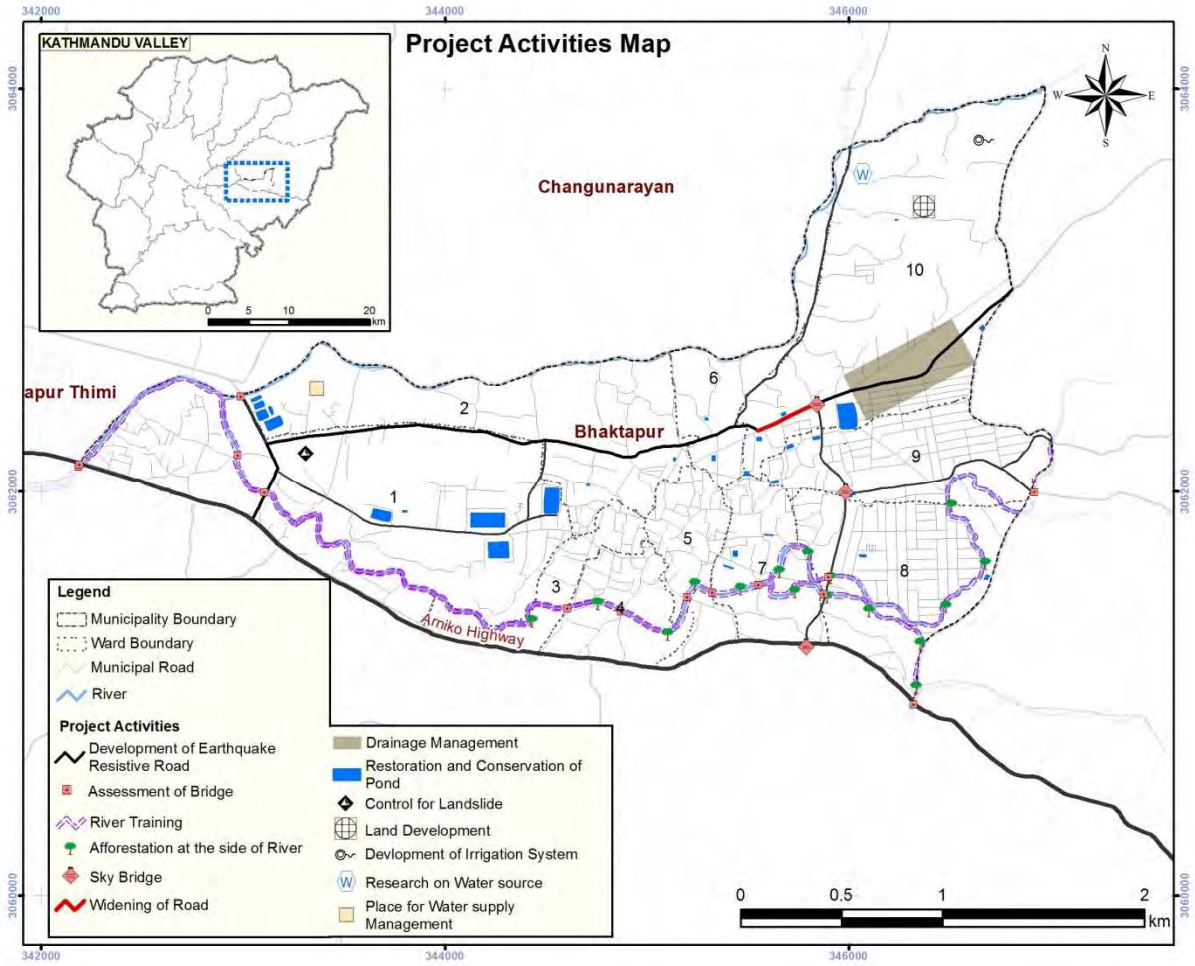
Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
3. Investing in disaster risk reduction for resilience								
3-1.Risk Reduction for Buildings								
Resilience and safety of houses	Earthquake	***	3-1-1	Application of National Building Codes(NBC), enforcement of the building permission and inspection system	Enforcement of the building permission and inspection system applied to NBC ・Capacity development of the building permission and inspection section ・Strengthening of intermediate inspection for such as high-rise buildings ・Improvement of E-BPS(Electronic – Building Permit System) such as the listing of those who were trained TOT(Training of Trainers)	Municipality	National and Provincial Government, DCC	Regularly
	Earthquake	***	3-1-2	Financial and technical support for seismic diagnosis, seismic resistant measures of houses, and the dispatch of experts for seismic diagnosis	Financial and technical support for seismic diagnosis, and seismic resistant measures of houses. ・Dispatch of experts, technicians for seismic diagnosis and checking houses ・Technical support for seismic retrofitting of buildings according to the guidelines by national government	Municipality	National and Provincial Government, DCC	Regularly
	Earthquake	***	3-1-3	Development of capacity and public awareness for seismic resistant houses	Development of capacity and public awareness for seismic resistant houses. ・Distribution of posters, brochures, pamphlets, books on design and construction/retrofitting methods. ・Holding workshops and training for the construction of seismic resistant houses and retrofitting for masons, etc.	Municipality	Provincial Government, DCC	Regularly
3-2.Risk Reduction for Critical Facilities and Infrastructures								
Resilience and safety of public buildings	Earthquake	***	3-2-1	Seismic diagnosis of all public buildings and the reinforcement of public buildings	Seismic diagnosis of public buildings ・Conduct detailed building diagnosis for public buildings ・Consider methods for reinforcement ・Reinforcement of public buildings	Municipality	National and Provincial Government, DCC	1-5 years
	Earthquake	***	3-2-2	Construction of community buildings	Construction of community buildings for utilization of DRRM ・Identification of location ・Construction of community buildings	Municipality	Provincial Government, DCC	1-5 years
	Common	***	3-2-3	Designation, development, improvement and enhancement of DRRM base facilities	Designation, development, improvement and enhancement of DRRM base facilities. ・Designation of DRRM base facilities in a municipality (Municipal office, etc.). ・Improvement and enhancement of facilities as the DRRM base. (Seismic resistant measures, stockpile, communication facilities, etc.)	Municipality	Provincial Government, DCC	2 years
Enhancement of medical, health care and social welfare services	Earthquake	***	3-2-4	Seismic diagnosis and seismic resistant measures of hospitals on the municipal level, health centres and health posts	Seismic diagnosis and seismic resistant measures of hospitals on the municipal level, health centres and health posts ・Dispatch of experts, or technicians for seismic diagnosis and checking hospitals. ・(If necessary) Seismic resistant measures and retrofitting ・Establishment of a legal system in order to ensure seismic resistance of private hospitals.	Municipality	National and Provincial Government, DCC	1-5 years
	Common	**	3-2-5	Formulation of a disaster waste management plan	Formulation of a disaster waste management plan for future disasters. (Example of contents) ・Establishment of a disaster waste management system. ・Estimation of the amount of debris. ・Promotion of recycling (development of recycle centres, etc.) ・Ensuring of temporary stock place for disaster waste.	Municipality	–	1 year

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Common	**	3-2-6	Ensuring of temporary stock places for disaster waste	Ensuring of temporary stock places for disaster waste in advance so that the space can be effectively utilized. ・Investigation of open spaces and consideration of candidates for temporary stock place for disaster waste ・Development of the spaces can be effectively utilized for temporary stock place	Municipality	-	3 years
	Enhancement of school education	Earthquake	***	3-2-7	Seismic diagnosis and seismic resistant measures of schools	Seismic diagnosis and seismic resistant measures of schools ・Dispatch of experts or technicians for seismic diagnosis and checking schools ・(If necessary) Seismic resistant measures, retrofitting shall be implemented. ・Establishment of a legal system in order to ensure the seismic resistance of private schools.	Municipality	National and Provincial Government, DCC	1-5 years
		Common	***	3-2-8	Education for DRRM	Education for DRRM in the school curriculum. ・Consideration of school curriculum for the DRRM and the experience of the Gorkha EQ. (Example contents of curriculum) ・Learning about the disaster, mechanisms, DRRM. ・Learning about ensuring safety when a disaster happens. ・Sharing the experience of the Gorkha EQ. ・Implementation of evacuation drills.	Municipality	-	Regularly
		Common	***	3-2-9	Enhancement of the DRRM functions of schools	Enhancement of the DRRM functions of schools in order to secure the children and promote the DRRM base. ・Seismic resistant measures ・Securing stockpiles ・Development of communication facilities, etc.	Municipality	National and Provincial Government, DCC	5 years
	Enhancement of infrastructure	Common	***	3-2-10	Improvement of roads with disaster resistance for smooth emergency response, transportation and evacuation	Development of roads with disaster resistance ・Designation of a traffic control road network and emergency transportation road ・Detailed survey for the structure of bridges and reinforcement based on the survey result ・Improvement of designated roads and bridges ・Promotion of road widening ・Cooperation with road and bridge development in urban development projects and different administrative levels	National and Provincial Government, DCC	Municipality	5 years
		Flood	***	3-2-11	Removal of debris and waste in the river	Removal of debris and waste in the river ・River clean-up activities for smooth flow	Municipality	-	Regularly
		Flood	***	3-2-12	Conservation of river and construction works for flood and river erosion	Conservation of river to prevent flood ・Identification of high risk area ・Tree plantation ・Construction of embankment/retaining wall, river improvement works	Municipality	Provincial Government, DCC	5 years
		Flood	**	3-2-13	Development and management of monitoring system for Flood	Development and management of monitoring system for flood ・Installation of equipment for rainfall and water level measurement ・Monitoring of rainfall, water level and other necessary information for flood	National and Provincial Government, DCC	Municipality	5 years
		Road Accident	**	3-2-14	Installation of traffic signs and signals to control the traffic	Installation of traffic signs and signals to control the traffic ・Selection of locations for installation ・Installation of traffic signs and signals ・Installation of street lights ・Traffic control management	National and Provincial Government, DCC	Municipality	5 years

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Road Accident	**	3-2-15	Construction of facilities for safety of pedestrians	Construction of facilities for safety of pedestrians ・Selection of location for construction ・Installation of pedestrian crossing ・Construction of pedestrian bridge	Municipality, National and Provincial Government, DCC	-	5 years
	Enhancement of lifeline facilities	Earthquake	***	3-2-16	Taking seismic resistant measures for supply lines and other related facilities, and improve their supply systems	Improvement of the supply system ・Seismic resistance of the supply system of water and electricity and improvement of the system ・Examination of the usage of solar energy as a alternative energy ・Improvement of drainage, sewage, and sanitation systems	National Government	-	5 years
		Flood	**	3-2-17	Conservation, construction and maintenance of sewage and drainage system	Conservation, construction and maintenance of sewage system ・Regularly maintenance, clearance and repair of sewage and drainage (if necessary) ・Selection of location for construction ・Construction of sewage and drainage	National and Provincial Government, DCC	Municipality	3 years
		Fire	**	3-2-18	Construction of water supply pipe lines for fire fighting	For fire brigades, development of water resources under the ground ・Preparation of network plan ・Construction of water supply pipe lines and installation of fireplug	Kathmandu Upatyaka Khanepani Ltd (KUKL)	Municipality	2 years
		Fire	***	3-2-19	Management of electric poles and wires	Management of electric poles and wires ・Survey of condition for electric poles and wires ・Management of electric wires (non covered wires to outer plastic cover and old wires to new wires, etc.)	Nepal Electricity Authority (NEA), related agencies	Municipality	2 years
		Fire	***	3-2-20	Identification, construction and maintenance of water resources for fire fighting	Identification, construction and maintenance of water resources for fire fighting ・Identification of water resources ・Regularly conservation and maintenance of water resources (if necessary) ・Selection of location for construction ・Construction of water resources such as wells, ponds	Municipality	-	1 year
		Windstorm	*	3-2-21	Management of trees, cables, poles and towers for electricity and telecommunication from windstorms	Management of trees, cables, poles and towers to prevent falling down and damage from windstorms ・Survey of condition for trees, cables, poles and towers for electricity and telecommunication from windstorm ・Repair and regularly maintenance	Nepal Electricity Authority (NEA), Nepal Telecommunications Authority (NTA), Municipality	-	1 year
3-3.Resilient DRRM system									
	Development of effective evacuation system for DRRM	Common	***	3-3-1	Formulation and dissemination of evacuation plan	Formulation and dissemination of an evacuation plan. ・Designation of evacuation sites/routes and dissemination. ・How to lead residents to the evacuation site. ・How to operate the evacuation site (open spaces and evacuation shelters).	Municipality	DCC	2 years
		Common	***	3-3-2	Designation and development of open spaces as evacuation sites and DRRM bases	Development of open spaces as DRRM bases and evacuation sites. ・Examination and designation of the function of each open space and prioritization for development ・Develop open spaces (including space for stockpiling, evacuation routes, etc.) ・Understanding of parks and open spaces to be utilized as temporary heliports. ・Designation and development of temporary heliports. ・Dissemination of evacuation sites to residents	Municipality	Provincial Government, DCC	5 years

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Common	***	3-3-3	Designation and development of evacuation shelters	Designation and development of evacuation shelters ・Designation buildings as temporary evacuation shelters ・Develop evacuation shelters (including space for stockpiling, evacuation routes, etc.) ・Dissemination of evacuation sites to residents	Municipality	Provincial Government, DCC	5 years
		Common	*	3-3-4	Development of stockpile warehouses, and ensuring disaster stockpiles	Development of stockpile warehouses, and ensuring disaster stockpiles. ・Development of stockpile warehouses and installation. ・Listing of necessary emergency goods (food, medical equipment, daily necessities, rescue equipment, fuel, etc.). ・Procurement of stockpiles.	Municipality	Provincial Government, DCC	3 years
	Promotion of land use restriction	Common	***	3-3-5	Revision of the land use zoning and building regulations based on hazard and risk assessment	Revision of the land use zoning and building regulations ・Analysis and comparison of current land use and hazard, risk assessment, risk sensitive land use plan ・Revision and enforcement of land use and building regulations	National and Provincial Government, DCC, Municipality	-	2 years
		Flood	**	3-3-6	Promotion on relocation of unplanned settlement and settlement in high risk areas	Promotion on relocation of unplanned settlement and risk areas ・Management and promotion on relocation of unplanned settlement and settlement in high risk areas	National and Provincial Government, DCC, Municipality	-	5 years
	Promotion of a DRRM cooperation system	Common	*	3-3-7	Strengthening cooperation with private enterprises, and conclusion of agreements	Conclusion of agreements for strengthening cooperation with private enterprises, (Examples of agreements) ・Developing guidelines for procurement of food, medicines, materials and equipment, etc.	Municipality	Provincial Government, DCC	2 years
		Common	*	3-3-8	Support for the formulation of BCP for private enterprises	Support for the formulation of BCP (Business Continuity Plan) for securing the safety of private enterprises and industries (Examples of contents: Risk assessment, policy making (selection of important businesses), how to recover quickly and operate in the event of disaster, prevention and preparedness, etc.)	National and Provincial Government, DCC, Municipality	-	2 years
		Common	**	3-3-9	Development of an acceptance system for volunteers	In order to manage the volunteers, a development of acceptance system should be created as follows. ・Establishment of section or assignment of staff in charge of volunteer activities. ・Establishment of a contact centre for volunteers.	Municipality	-	2 years

Note: Priority Level *** High, ** Middle, * Low



Note: Information is based on the workshop for formulation of LDCRP
Source: JICA ERAKV Project

Figure 5-1 Priority Activity Map for mainly infrastructure

Table 5-4 Priority Activity List for mainly infrastructure

S/N	Project	Category	Location	Spatial Information in above figure
1	Devlopment of Irrigation System, Wanti Sukuna Fant	Irrigation	Wanti Sukuna Fant	Located
2	Settlement Management by Land development and Provision of Open Space	Land Development	Sukuna Fant	Located
3	Drainage Managment	Drainage	Kamal Binayak to Chwakha and Sarada College	Located
4	River training works	River Training	Maheshwari to Srijana Nagar in both side of river	Located
5	River training works	River Training	Maheshwari to Srijana Nagar in both side of river	Located
6	Place to be utilized for Management of Drinking Water supply	Drinking Water supply	Ward-2	Located
7	Control of Landslide	Landslide	Sallaghari, Chonga Ganesh area	Located
8	Management of Electric Lines	Electric Lines	All over the municipality	NA
9	Development of Footpath for Pedestrian Safety in Highway	Footpath	Sallaghari - Jagati	NA
10	Development of Footpath for Pedestrian Safety in Highway	Footpath	Kharipati - Byasi	NA
11	Upgradation of Road	Road	Suryabinayak-Gapali Ram Mandir - Taumadhi	NA
12	Upgradation of Road	Road	Doka Falcha(Highway)- Bansha Gopal	NA
13	Upgradation of Road	Road	Varbacha Gate - Taumadhi	NA
14	Upgradation of Road	Road	Chyamasingha - Taumadhi	NA
15	Upgradation of Road	Road	Adarsha Vagbati - Taumadhi	NA
16	Sky Bridge	Sky Bridge	Adarsha Chowk	NA
17	Sky Bridge	Sky Bridge	Byasi Jhaukhel Road	NA
18	Sky Bridge	Sky Bridge	Hakuko Hiti Sthan	NA
19	Cleaning of River	Sanitation	Bramhayeni pith to Hanumante Bridge	NA

S/N	Project	Category	Location	Spatial Information in above figure
20	Cleaning of River	Sanitation	Wanti to Sallaghari	NA
21	Provision of Traffic Light	Traffic Light	Chyamasingha	NA
22	Provision of Traffic Light	Traffic Light	Kamal Binayak	NA
23	Provision of Traffic Light	Traffic Light	Dokocha	NA
24	Provision of Traffic Light	Traffic Light	Byasi	NA
25	Provision of Traffic Light	Traffic Light	Hakuko Hiti	NA
26	Provision of Traffic Light	Traffic Light	Jilla Sahakari Sangh, itapakhe	NA
27	Provision of Traffic Light	Traffic Light	Sallaghari Chonga Ganesh Park	NA
28	Provision of Traffic Light	Traffic Light	Dudh pati, Inagal	NA
29	Provision of Traffic Light	Traffic Light	Near Bhaktapur Hospital and Telecome	NA
30	Provision of Traffic Light	Traffic Light	Jagati Chowk	NA
31	Provision of Traffic Light	Traffic Light	Adarsha Chowk	NA
32	Provision of Traffic Light	Traffic Light	Doko Falcha Barahi Sthan Chowk	NA
33	Replacement of Drinking Water supply Pipelines	Drinking Water supply	All over the municipality	NA
34	Sky Bridge	Sky Bridge	Jagati Chowk	Located
35	Sky Bridge	Sky Bridge	Chyamasingha Chowk	Located
36	Sky Bridge	Sky Bridge	Kamal Binayak Chowk	Located
37	Upgradation of Upachar Pokhari	Pond	Sallaghari	Located
38	Research on Water source	Drinking Water supply	Ward-10	Located
39	Upgradation of Pond	Pond	Kamalpokhari	Located
40	Upgradation of Pond	Pond	Siddhapokhari	Located
41	Upgradation of Pond	Pond		Located
42	Upgradation of Pond	Pond		Located
43	Widening of Road	Road	Kamalbinayak	Located
44	Afforestation at the side of River	Afforestation	Near Maheshwari Football Ground	Located
45	Safety against Road accident	Safety	w-10	Located
46	Safety against Road accident	Safety	Sallaghari Nagarkot Road	Located
47	Development of Earthquake Resistant Road, including traffic lights, Upgradation of Bridge	Road	Sallaghari - Dudhpati - Kamalbinayak	Located
48	Development of Earthquake Resistant Road, including traffic lights, Upgradation of Bridge	Road	Sallaghari - Chyamasingha (Araniko Rajmarga)	Located
49	Detail Risk Survey and Upgradation of Bridge	Bridge	Mane Bridge	NA
50	Detail Risk Survey and Upgradation of Bridge	Bridge	Bramhayeni Bridge	NA
51	Detail Risk Survey and Upgradation of Bridge	Bridge	Makeshwari Bridge	NA
52	Detail Risk Survey and Upgradation of Bridge	Bridge	Ram Mandir Bridge	NA
53	Detail Risk Survey and Upgradation of Bridge	Bridge	Dhala Khusi Bridge	NA
54	Detail Risk Survey and Upgradation of Bridge	Bridge	Sallaghari Bridge	NA
55	Detail Risk Survey and Upgradation of Bridge	Bridge	Srijana Nagar Bridge	NA
56	Detail Risk Survey and Upgradation of Bridge	Bridge	Nikoshara Bridge	NA
57	Detail Risk Survey and Upgradation of Bridge	Bridge	Naya Pul	NA
58	Detail Risk Survey and Upgradation of Bridge	Bridge	Syalancha Bridge	NA
59	Detail Risk Survey and Upgradation of Bridge	Bridge	Wanti Bridge	NA
60	Detail Risk Survey and Upgradation of Bridge	Bridge	Gata vindhyo Bridge	NA
61	Detail Risk Survey and Upgradation of Bridge	Bridge	Barahi Bridge	NA
62	Detail Risk Survey and Upgradation of Bridge	Bridge	Shrastike Bridge	NA
63	Detail Risk Survey and Upgradation of Bridge	Bridge	Itapake Bridge	NA
64	Detail Risk Survey and Upgradation of Bridge	Bridge	Syavalancha Bridge	NA
65	Detail Risk Survey and Upgradation of Bridge	Bridge	Kasana Bridge	NA

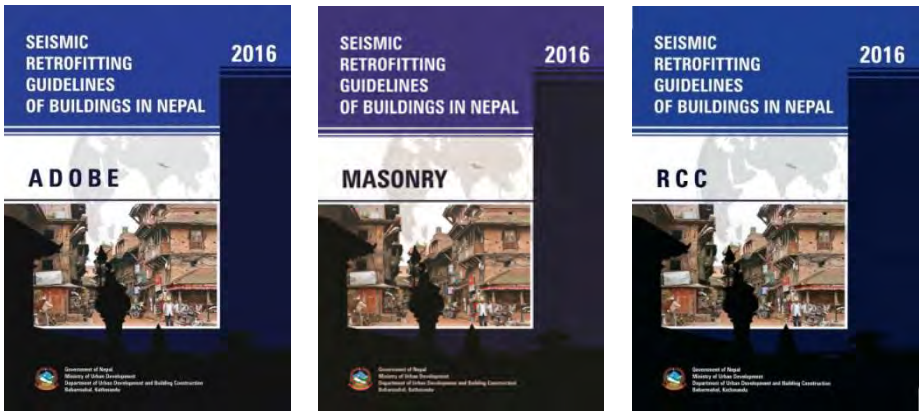
Note: Information is based on the workshop for formulation of LDCRP
Source: JICA ERAKV Project

[Details of Activities]

■3-1-2: Financial and technical support for seismic diagnosis, seismic resistant measures of houses, and the dispatch of experts for seismic diagnosis

・Dispatch of experts, technicians for seismic diagnosis and checking houses

・Technical support for seismic retrofitting of buildings according to the guidelines by national government



Source: Department of Urban Development and Building Construction, Ministry of Urban Development

Figure 5-2 Seismic Retrofitting Guidelines of Buildings

■3-2-4: Seismic diagnosis and seismic resistant measures of hospitals on the municipal level, health centres and health posts

Seismic diagnosis for health facilities shall be implemented with priority referring to Table 5-5 based on the seismic risk assessment.

Table 5-5 Probability of heavy damage for health facilities in case of CNS-2

S/N	Ward No.	Name	Classification	Operator	Capacity of bed	Building	Building Structure	Probability of Heavy Damage [CNS-2]
1	1	Bhaktapur Hospital	Hospital	government	75	Main Building	Load Bearing Brick Wall in Cement Mortar	0.32
						Associate Building	Load Bearing Brick Wall in Cement Mortar	0.32
						Associate Building	Engineered Reinforced Concrete	0.12
						Associate Building	Engineered Reinforced Concrete	0.12
2	7	Siddhi Memorial Hospital	Hospital	private	50	Main Building	Engineered Reinforced Concrete	0.21
						Associate Building	Engineered Reinforced Concrete	0.21
						Associate Building	Engineered Reinforced Concrete	0.21
						Associate Building	Engineered Reinforced Concrete	0.21
						Associate Building	Engineered Reinforced Concrete	0.21
3	1	Dr.Iwanura Memorial Hospital and Research Center	Hospital	private	51	Main Building	Engineered Reinforced Concrete	0.15
						Associate Building	Engineered Reinforced Concrete	0.15
4	9	Bhaktapur Janaswastha	Clinic	government	6	Main Building	Engineered Reinforced Concrete	0.11
						Associate Building	Load Bearing Brick Wall in Cement Mortar	0.30
5	7	Siddhi Ganesh Saccos Health Clinic	Clinic	private	0	Main Building	Non Engineered Reinforced Concrete	0.21
						Associate Building	Engineered Reinforced Concrete	0.13
6	1	Bhaktapur Cancer Hospital	Hospital	government	75	Main Building	Non Engineered Reinforced Concrete	0.15
						Associate Building	Engineered Reinforced Concrete	0.08
						Associate Building	Engineered Reinforced Concrete	0.08
						Associate Building	Engineered Reinforced Concrete	0.08
						Associate Building	I Load Bearing Brick Wall in Mud Mortar	0.69
7	5	Bagwati Sthan Jana Swastha Kendra	Clinic	government	0	Main Building	Load Bearing Brick Wall in Cement Mortar	0.39
8	7	Bhaisharjya Washa Pasha	Clinic	private	0	Main Building	Non Engineered Reinforced Concrete	0.19
9	1	Sewa Dental Home	Clinic	private	0	Main Building	Non Engineered Reinforced Concrete	0.19
10	10	Binayak Pharma & Clinic	Clinic	private	0	Main Building	Non Engineered Reinforced Concrete	0.18
11	10	Khwopa Pharma & Clinic	Clinic	private	0	Main Building	Non Engineered Reinforced Concrete	0.18

Note: Risk Assessment was carried out based on the available data at present and based on the scenario earthquakes. Scenario earthquakes are not the prediction of next earthquake

■3-2-7: Seismic diagnosis and seismic resistant measures of schools

Seismic diagnosis for schools shall be implemented with priority referring to Table 5-6 based on the seismic risk assessment.

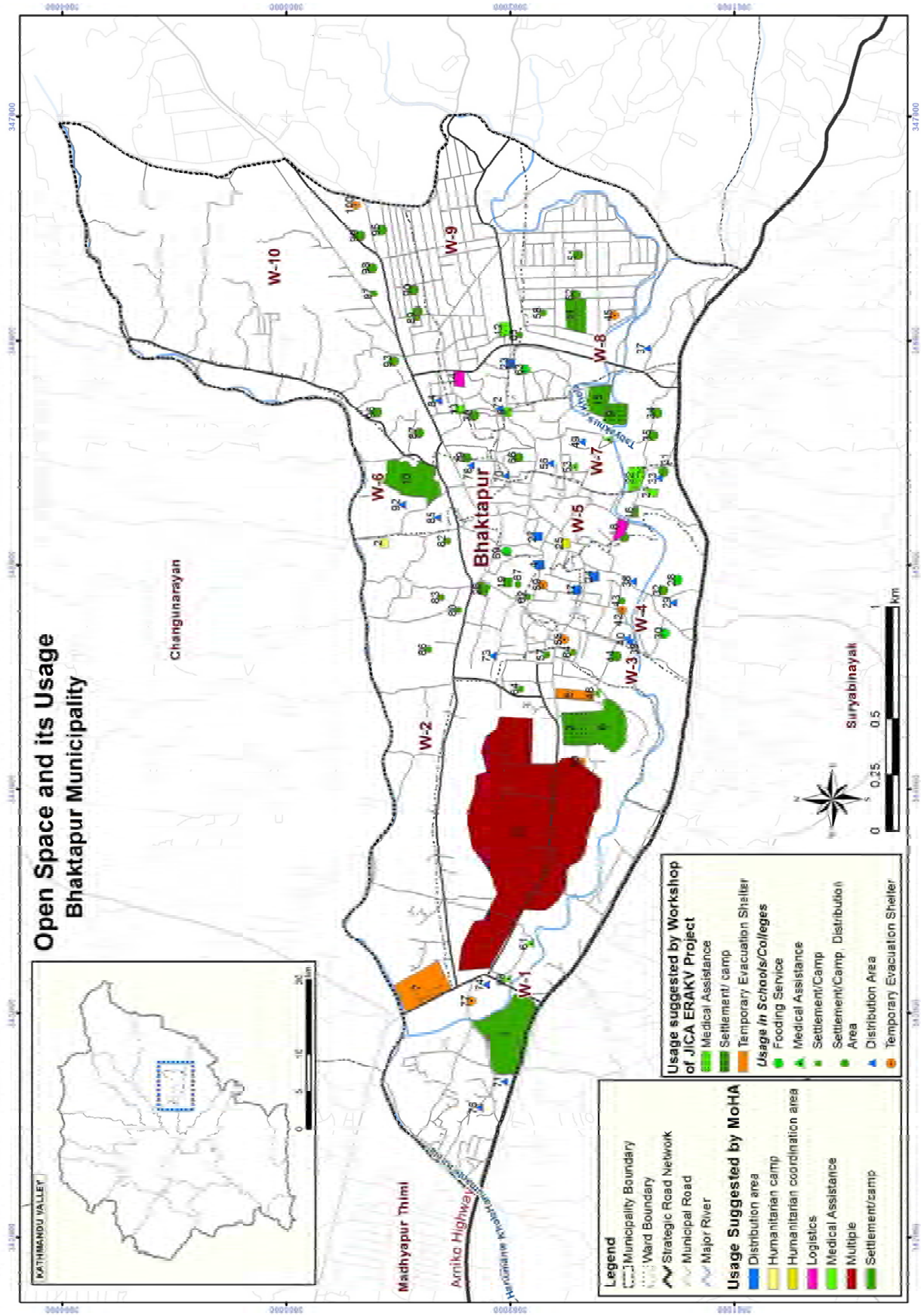
Table 5-6 Probability of heavy damage for schools in case of CNS-2 (Probability ≧ 0.5)

S/N	Ward No.	Name of School	Classification	Operator	Building	Building Structure	Probability of Heavy Damage [CNS-2]
1	2	Basu Higher Secondary School	Higher Secondary	government	Associate Building	Load Bearing Brick Wall in Mud Mortar	0.69
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.69
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.69
2	5	Vidyarthi Niketan	Higher Secondary	government	Associate Building	Load Bearing Brick Wall in Limesurkhi Mortar	0.74
					Associate Building	Load Bearing Brick Wall in Limesurkhi Mortar	0.74
3	10	Sharada Campus	College	private	Associate Building	Load Bearing Brick Wall in Mud Mortar	0.72
4	7	Shree Primary School	Primary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.74
5	7	Bal Sewak Lower Secondary School	Lower Secondary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.76
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.52
6	10	Shree Hangshabahini Primary School	Primary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.74
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.74
7	2	Jaycees School	Secondary	private	Main Building	Load Bearing Brick Wall in Mud Mortar	0.68
8	7	Shree Siddhi Sharada Primary School	primary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.75
9	4	Shanti Niketan Secondary School	Secondary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.63
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.83
10	2	Motherland English School	Secondary	private	Main Building	Load Bearing Brick Wall in Limesurkhi Mortar	0.68
					Associate Building	Load Bearing Brick Wall in Limesurkhi Mortar	0.68
11	2	Samudayik School	Lower Secondary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.70
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.70
12	2	Bhintuna English Boarding school	Lower Secondary	private	Main Building	Load Bearing Brick Wall in Mud Mortar	0.82
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.82
13	2	Holy Garden English Boarding School	Secondary	private	Associate Building	Load Bearing Brick Wall in Mud Mortar	0.69
14	5	Bardayini Lower Secondary School	Lower Secondary	government	Main Building	load_bearing_brick_wall_in_limesurkhi_mortar	0.79
15	8	Bal vikash English Secondary School	Secondary	private	Associate Building	Load Bearing Brick Wall in Mud Mortar	0.80
16	5	Balbodh Shanti School	Lower Secondary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.82
17	1	Shree Ganesh Lower Secondary School	Lower Secondary	government	Associate Building	Load Bearing Brick Wall in Mud Mortar	0.76
18	2	Padma Higher Secondary School	Higher Secondary	government	Main Building	Load Bearing Brick Wall in Limesurkhi Mortar	0.74
					Associate Building	Load Bearing Brick Wall in Mud Mortar	0.74
19	1	Gyan Bijaya Lower Secondary School	Lower Secondary	government	Main Building	Load Bearing Brick Wall in Mud Mortar	0.75

Note: Risk Assessment was carried out based on the available data at present and based on the scenario earthquakes. Scenario earthquakes are not the prediction of next earthquake.

■3-3-2: Designation and development of open spaces as evacuation and DRRM bases

- Examination and designation of the function of each open space and prioritization for development based on Figure 5-3
- Develop open spaces (including space for stockpiling, evacuation routes, etc.)
- Dissemination of evacuation sites to residents



Note: Information is based on the workshop for formulation of LDCRP.
Source: MoHA, KVDA, JICA ERAKV Project

Figure 5-3 Open Space Map

Table 5-7 Open Space List with its usage

Ward	S/N	Name of Open Space	Latitude	Longitude	Area (m^2)	Ownership	Usage	Source for Open Space	Source for Usage Information
1	1	99-Ropani Public Place/Sallaghari Tinkune	27.67307	85.40713	63,589	Nepal Government	Settlement/camp	KVDA	MoHA
1	3	Bhaju Pokhari	27.67056	85.42103	17,439	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Project
1	5	Bhaktapur Mini Buspark	27.67064	85.42254	7,083	Nepal Government	Temporary Evacuation Shelter	KVDA	JICA ERAKV Project
1	6	Bhaktapur Multiple Campus	27.66926	85.42111	29,039	College	Settlement/camp	KVDA	MoHA
1	20	Sainik Aawasiye Maha Bidhyalaya	27.67259	85.41631	388,379	office	Multiple	KVDA	MoHA
2	2	Basu School	27.6784	85.4293	2,625	No Information	Humanitarian camp	MoHA	MoHA
2	7	Bhaktapur Upachar Samyentra	27.67661	85.40923	30,494	Nepal Government	Temporary Evacuation Shelter	KVDA	JICA ERAKV Project
2	19	Padma Kanya Highschool	27.6734	85.4276	17,094	No Information	Settlement/camp	MoHA	MoHA
2	26	Tourist Buspark	27.67441	85.42728	2,623	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Project
3	17	Nasamana	27.6706	85.4273	762	No Information	Distribution area	MoHA	MoHA
4	24	Talako	27.6699	85.4279	1,054	No Information	Distribution area	MoHA	MoHA
5	4	Bhaktapur Darbar Square	27.6721	85.4284	5,936	No Information	Distribution area	MoHA	MoHA
5	16	Masangat	27.66829	85.43082	1,968	Nepal Government	Settlement/camp, Distribution	KVDA	JICA ERAKV Project
5	18	Padma Higher Secondary School/Bhelukhel	27.66888	85.43005	4,141	School	Logistics	KVDA	MoHA
5	21	Shree Adarsha Aajad Higher Secondary School	27.66763	85.43176	2,791	School	Medical Assistance Area	KVDA	MoHA
5	25	Taumadi	27.6711	85.4294	1,999	No Information	Humanitarian coordination area	MoHA	MoHA
5	27	Vidyarthi Niketan	27.6722	85.4297	12,325	No Information	Distribution area	MoHA	MoHA
6	10	Khwopa College	27.67728	85.4322	33,629	Nepal Government	Settlement/camp	KVDA	MoHA
7	8	Datattratya	27.6735	85.4353	1,938	No Information	Medical assistance	MoHA	MoHA
7	9	Hanuman Ghat	27.66911	85.43528	9,502	Nepal Government	Settlement/camp	KVDA	JICA ERAKV Project
7	15	Maheshwari Play Ground	27.66991	85.43589	14,112	Nepal Government	Settlement/camp	KVDA	MoHA
7	22	Siddhi Smarak Foundation	27.6683	85.43239	6,590	office	Medical Camp	KVDA	JICA ERAKV Project
8	11	Khwopa Engineering College	27.67079	85.43975	12,962	Nepal Government	Settlement/camp	KVDA	MoHA
9	12	Khwopa Polytechnic Institute	27.67366	85.43903	2,801	Nepal Government	Medical Camp	KVDA	JICA ERAKV Project
9	13	Kwathandu	27.6754	85.4354	1,532	No Information	Medical assistance	MoHA	MoHA
9	14	Lanugal Pokhari/Saraswati Vidyagriha	27.67547	85.43676	4,141	Nepal Government	Logistics	KVDA	MoHA
9	23	Suryamadi	27.6734	85.4375	796	No Information	Distribution area	MoHA	MoHA

Note: Information is based on the workshop for formulation of LDCRP, No Information: Usage information is not available.
Source: MoHA, KVDA, JICA ERAKV Project

Table 5-8 School List with its usage

Ward No.	S/N	Name of Schools/Colleges	Latitude	Longitude	Classification	Ownership	Usage
1	46	Sunshine school	27.669236	85.422088	Secondary	Private	Settlement/Camp
1	48	Shree Ganesh Lower Secondary School	27.669798	85.422646	Lower Secondary	Government	Medical Camp
1	50	Little World School	27.670362	85.419505	Secondary	Private	Temporary Evacuation Shelter
1	57	Shree Udaya Primary School	27.671787	85.424354	Primary	Government	Settlement/Camp
1	61	Iwamura College of Heath Science	27.67233	85.411265	college	Private	Medical Camp
1	64	Gyan Bijaya Lower Secondary School	27.672816	85.422795	Lower Secondary	Government	Settlement/Camp
1	68	Iwamura College of Heath Science (Nursing Block)	27.673218	85.409632	College	Private	Medical Camp
1	71	Nichholson Higher Secondary School	27.673296	85.405012	Higher Secondary	Private	Distribution
1	74	Bal Vidya Mandir Secondary School	27.674068	85.409394	Secondary	Private	Distribution
1	75	Suryabinayak English School	27.674275	85.403812	Secondary	Private	Distribution
1	77	Oxford Practical School	27.674653	85.408647	Secondary	Private	Temporary Evacuation Shelter,Distribution
2	67	Padma Higher Secondary School	27.672986	85.427511	Higher Secondary	Government	Settlement/Camp
2	73	Himalayan Glory School	27.673977	85.424265	Secondary	Private	Distribution
2	80	Everest Bhaktapur School	27.67537	85.426295	Primary	Private	Settlement/Camp

Ward No.	S/N	Name of Schools/Colleges	Latitude	Longitude	Classification	Ownership	Usage
2	82	Holy Garden English Boarding School	27.675843	85.429436	Secondary	Private	Settlement/Camp
2	83	Samudayik School	27.676059	85.426874	Lower Secondary	Government	Settlement/Camp
2	86	Everest English School	27.676555	85.424516	Secondary	Private	Settlement/Camp
2	94	Basu Higher Secondary School	27.678338	85.429182	Higher Secondary	Government	Settlement/Camp
3	44	Gyan Tara English School	27.668979	85.424309	Secondary	Private	Settlement/Camp, Distribution
3	54	Future Star English School	27.670733	85.424475	Secondary	Private	Settlement/Camp
3	55	Kanya Co-education Secondary School	27.671097	85.425065	Secondary	Government	Temporary Evacuation Shelter,Distribution,Water source
3	59	Bal Mandir Primary School	27.671971	85.427515	Primary	Government	Temporary Evacuation Shelter
3	62	Jagriti School	27.672578	85.426936	Secondary	Government	Settlement/Camp
4	28	Minerva English School	27.666549	85.427806	Secondary	Private	Distribution, Fooding Service
4	29	Demos School	27.666732	85.426762	Secondary	Private	Distribution
4	30	Learners Academy	27.667049	85.42537	Secondary	Private	Distribution, Fooding Service
4	32	Bright Star School	27.667127	85.427325	Secondary	Private	Settlement/Camp, Distribution
4	38	Shanti Niketan Secondary School	27.668355	85.427711	Secondary	Government	Distribution
4	39	Shree Sharada Primary School	27.66845	85.424956	Primary	Government	Distribution
4	40	Glitter Future English Secondary School	27.668569	85.425106	Secondary	Private	Distribution
4	42	Shree Janasewa Primary School	27.668774	85.4264	Primary	Government	Temporary Evacuation Shelter
4	43	Shree Tara Secondary School	27.668779	85.426826	Secondary	Government	Settlement/Camp
5	31	Vidya Arjan Secondary School	27.667179	85.432702	Secondary	Private	Settlement/Camp, Distribution
5	33	Proxima English Boarding School	27.667376	85.432391	Secondary	Private	Distribution
5	36	Adarsha Azad Higher Secondary School	27.667672	85.431901	Higher Secondary	Government	Settlement/Camp, Distribution
5	41	Bhariti Primary School	27.668729	85.429716	Primary	Government	Settlement/Camp, Distribution
5	60	Vidyarthi Niketan	27.672228	85.429642	Higher Secondary	Government	Settlement/Camp, Distribution
5	69	Sharda Higher Secondary School	27.673462	85.428989	Higher Secondary	Government	Fooding Service
6	78	Scholar's Home	27.674949	85.43285	Secondary	Private	Distribution
6	85	Prabhat English Higher Secondary School	27.676268	85.430476	Higher Secondary	Private	Distribution
6	91	Khwopa Higher Secondary School and College	27.677466	85.432287	College	Government	Settlement/Camp, Distribution
6	92	Golden Gate School	27.677696	85.431042	Secondary	Private	Distribution
7	34	Vidhya Bikash Secondary Boarding School	27.667471	85.435329	Secondary	Private	Settlement/Camp, Distribution
7	35	Wiseland Secondary School	27.667613	85.434321	Secondary	Private	Settlement/Camp, Distribution
7	47	Bal Sewak Lower Secondary School	27.669431	85.434119	Lower Secondary	Government	Medical Camp, Distribution
7	49	Suryodaya English Secondary School	27.670487	85.433988	Secondary	Private	Distribution
7	53	Nabin Lower Secondary School	27.670811	85.432848	Lower Secondary	Government	Medical Camp, Distribution
7	56	Image Secondary School	27.67175	85.432996	Secondary	Private	Distribution
7	66	Shree Siddhi Sharada Primary School	27.673036	85.433248	Primary	Government	Settlement/Camp, Distribution
7	70	Shree Primary School	27.673524	85.432422	Primary	Government	Distribution
8	37	Communicative English School	27.667908	85.438245	Secondary	Private	Distribution
8	45	Shree Bhim Adarsha Lower Secondary School	27.669228	85.43974	Lower Secondary	Government	Temporary Evacuation Shelter, Distribution
8	51	Bal vikash English Secondary School	27.670721	85.442443	Secondary	Private	Settlement/Camp, Distribution
8	52	Khwopring Academy	27.670815	85.440639	Secondary	Private	Settlement/Camp, Distribution
8	58	Lisha English Secondary School	27.672104	85.439798	Secondary	Private	Settlement/Camp
8	63	Shree Samaj Sudhar Secondary School	27.672803	85.437226	Secondary	Government	Fooding Service, Distribution
9	65	Bageshwori Higher Secondary School	27.673047	85.438789	Higher Secondary	Private	Settlement/Camp
9	72	Shree Dattatreya Lower Secondary School	27.673817	85.43543	Lower Secondary	Government	Distribution
9	76	Shree Brahmacharini Primary School	27.674835	85.435124	Primary	Government	Settlement/Camp, Distribution
9	81	Saraswoti Vidyagriha	27.67557	85.436623	Secondary	Government	Settlement/Camp
10	79	Creative English School	27.675128	85.433199	Secondary	Private	Settlement/Camp, Distribution
10	84	Mount Valley English School	27.6763	85.435778	Secondary	Private	Distribution
10	87	Geniune Secondary School	27.677052	85.434299	Secondary	Private	Settlement/Camp, Distribution
10	88	Paragon Academy	27.677171	85.439809	Secondary	Private	Settlement/Camp, Distribution
10	89	Wisdom English School	27.67718	85.439506	Primary	Private	Settlement/Camp
10	90	Neologian Academy	27.677327	85.440768	Secondary	Private	Settlement/Camp, Distribution
10	93	Manakamana English Secondary School	27.678102	85.437527	Secondary	Private	Settlement/Camp, Distribution
10	95	Kalika Secondary School	27.678642	85.443455	Secondary	Private	Settlement/Camp, Distribution
10	96	Himalayan English Secondary School	27.678753	85.435217	Secondary	Private	Settlement/Camp, Distribution
10	97	Samata Shikshya Niketan School	27.678936	85.440581	Secondary	Private	Settlement/Camp
10	98	Nyatapole English Secondary School	27.679021	85.441723	Secondary	Private	Settlement/Camp, Distribution
10	99	East Point English Secondary School	27.679513	85.4432	Secondary	Private	Settlement/Camp, Distribution
10	100	Sharada Campus	27.67971	85.444564	College	Private	Temporary Evacuation Shelter, Distribution

Note: Information is based on the workshop for formulation of LDCRP
Source: JICA ERAKV Project

5-4. Enhancing Disaster Preparedness for Effective Response, and to «Build Back Better» in Recovery, Rehabilitation and Reconstruction

Based on the DCR policy which had been described in chapter 4, the activities for enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction can be seen on Table 5-9.

Table 5-9 Activity list for enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
4. Enhancing disaster preparedness for effective response, and to ≪Build Back Better≫ in recovery, rehabilitation and reconstruction								
4-1. Emergency Preparedness								
Capacity enhancement of emergency response	Common	***	4-1-1	Establishment of an information collection and dissemination system	Establishment of an information collection and dissemination system ・Establishment of information collection from the ward level ・Development of a damage and recovery information sharing system with the rescue and health/medical institutions, road and bridges, lifelines, etc. ・Establishment of an information dissemination system (development of information flow (from municipality to residents), utilization of media) ・Development of the multiplexing of communication means (e.g. Installation of satellite line) in order to avoid disconnection of the communication line and the disruption of information due to congestion in the event of a disaster ・Development of DRRM administrative radio	National and Provincial Government, DCC, Municipality	-	5 years
	Common	*	4-1-2	Development of an information sharing system for vulnerable people and deprived/marginalized people (Pichadiyeko barga)	Development of an information sharing system for vulnerable people and deprived/marginalized people (Pichadiyeko barga) ・Collection and sharing of information for vulnerable people (Name, Address, Condition, etc.) ・Establishment of a support system. (establishment of assistant group, etc.)	Municipality	-	2 years
	Common	**	4-1-3	Establishment of early warning system	Establishment of early warning system ・Promotion and coordination with national and provincial government	National and Provincial Government, DCC, Municipality	-	2 years
	Common	**	4-1-4	Establishment of Emergency Operation Centre (EOC)	Establishment of EOC ・Securing space and human resources for EOC ・Development of EOC including equipment such as PC, communication devices, etc.	National and Provincial Government, DCC, Municipality	-	2 years
	Common	*	4-1-5	Establishment of the initial system and mobilization system for emergency response	Formulation of manuals including the following items in order to execute the initial emergency response activities smoothly: ・Establishment of a disaster response committee (how to inform, gather, etc.) ・Establishment of an initial system such as the mobilization of staff (how to inform, gather, etc.)	Municipality	-	2 years
	Disasters except Earthquake	***	4-1-6	Formulation of a disaster emergency response manual (SOP)	Formulation of a disaster emergency response manual (SOP) (Examples of contents) ・Flow chart and check list of each section and each response activity such as search and rescue, medical, food provision, etc. ・Several formats for information collection, etc.	Municipality	National and Provincial Government, DCC	2 years

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
	Common	*	4-1-7	Implementation of DRRM exercises for emergency response	Implementation of DRRM exercises for capacity development of emergency response. ・Formulation of step-by-step exercise programmes for capacity development (From seminars, table-top-exercises, to command post exercises) ・Exercise in collaboration with other agencies ・Verification of exercises and revision of SOP (Examples of contents) ・Information collection and dissemination, sharing ・Mobilization ・Coordination with other agencies	Municipality	National and Provincial Government, DCC	Regularly
Capacity enhancement of rescue, first-aid and emergency medical activities	Common	*	4-1-8	Designation of disaster base hospitals, medical centres	Designation of disaster base hospitals, medical centres ・Improvement and enhancement of facilities as the disaster base hospital (Seismic resistant measures, stockpiles, communication facilities, etc.)	National and Provincial Government, DCC, Municipality	-	1 year
	Common	**	4-1-9	Establishment of an emergency medical transportation system	Establishment of an emergency medical transportation system in order to achieve quick emergency transport ・Management of health information system ・Improvement of ambulances and the transportation system ・Cooperation with national and province level	National and Provincial Government, DCC, Municipality	-	2 years
Traffic/transportation and lifeline management	Common	**	4-1-10	Development of a plan/manual for the elimination of road obstacles, strengthening of elimination of road obstacles system, strengthen cooperation with the police	Development of a plan/manual for the elimination of road obstacles ・Designation of priority roads for the elimination of road obstacles ・Establishment of an elimination of road obstacles system in cooperation with Police	National and Provincial Government, DCC, Municipality	-	1 year
	Common	*	4-1-11	Conclusion of agreements related to emergency recovery for roads with the construction companies	Conclusion of agreements related to emergency recovery for roads with the construction companies ・Selection of construction companies ・Consideration of contents of agreements (responsible areas, expenses, etc.) ・Conclusion of agreements	National and Provincial Government, DCC, Municipality	-	1 year
	Common	*	4-1-12	Strengthening of emergency response capacities in cooperation with lifeline operators	Establishment of a cooperation system with lifeline operators ・Implementation of the training in cooperation with lifeline operators to strengthen disaster response capabilities.	Municipality	National and Provincial Government, DCC, Related Agency	Regularly
Enhancement of CBDRRM (Community Based Disaster Risk Reduction and Management)	Common	*	4-1-13	Promotion of the preparation of emergency stockpiles by families	Promotion of the preparation of emergency stockpiles by families. ・Preparation of list of emergency ・Promotion of preparation of emergency stockpiles by families (Development of brochure, leaflet for stockpiles)	Municipality	Ward Office	1 year
	Common	***	4-1-14	Formulation of "community carte" for summarized information of current conditions on DRRM at the community level	Formulation of "community carte" (Examples of contents) ・Community Profiles(Population, Geography, Location) ・DRRM related information (Status of preparedness, Vulnerable people, Evacuation places/routes, etc.)	Ward Office	Municipality	1 year
	Common	***	4-1-15	Implementation of DRRM capacity development programmes for community leaders	Implementation of DRRM capacity development programmes for community leaders ・Establishment of Task forces ・Determination and implementation of DRRM capacity development programmes (Examples of programmes) ・Consider disaster preparedness of community (DRRM planning, Making action plans, etc.)	Ward Office	Municipality	Regularly

Sector		Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
					Activity List	Contents	Main Responsible Organization	Supporting Organization	
		Common	**	4-1-16	Carrying out of community DRRM exercises	Carrying out of community DRRM exercises ・Formulation of annual plan for DRRM exercise ・Carrying out of community DRRM exercise (Examples of exercise) ・Evacuation exercise ・Fire-fighting exercise ・SAR, first-aid exercise	Ward Office	Municipality	Regularly
	DRRM measures for tourist sites	Common	**	4-1-17	Designation and development of evacuation sites adjacent to tourist sites	Designation and development of evacuation sites to ensure the safety of tourists ・Investigation of open spaces and facilities available to be utilized as evacuation sites adjacent to tourist sites ・Designation and development of evacuation sites such as the development of stockpile warehouses	National and Provincial Government, DCC, Municipality	-	1 year
		Common	***	4-1-18	Establishment of a guidance system for tourists in the event of a disaster	Establishment of a guidance system for tourists in the event of a disaster. ・Establishment of a guidance system (section in charge) to evacuate tourists to evacuation sites safely ・Creation and distribution of guide maps and sign boards ・Consideration of safety confirmation of tourists (creation of format for gathering tourist information) ・Implementation of exercises for the evacuation of tourists periodically	National and Provincial Government, DCC, Municipality	-	2 years
		Common	*	4-1-19	Enhancement of stockpiles for tourists	Enhancement of stockpiles not only for residents but also including tourists. ・Estimation of number of tourists and estimation of the necessary amount of stockpiles for tourists ・Development of stockpile warehouses for tourists ・Procurement of stockpiles for tourists	National and Provincial Government, DCC, Municipality	-	2 years
4-2. Emergency Response activities during disaster		Common	-	4-2-1	Establishment and management of Emergency Response Headquarter (ERHQ)	Refer to SOP	Municipality	-	Immediately
		Common	-	4-2-2	Gathering disaster information	Refer to SOP	Municipality, Ward Office	National and Provincial Government, DCC	Immediately
		Common	-	4-2-3	Emergency rescue activities (Search and Rescue (SAR), and first-aid) for disaster victims	Refer to SOP	National and Provincial Government, DCC, Municipality	-	Immediately
		Common	-	4-2-4	Fire extinguishing activities	Refer to SOP	Municipality	Provincial Government, DCC	Immediately
		Common	-	4-2-5	Management of evacuation shelters (distribution of emergency kit such as food, clothing, health care, drinking water and sanitation)	Refer to SOP	Municipality	Ward Office	1 hour-
		Common	-	4-2-6	Environment management (temporary toilet, management of dead bodies, cleaning hygiene and epidemic prevention measures, treatment for solid waste and debris)	Refer to SOP	Municipality	Provincial Government, DCC	1 hour-
		Common	-	4-2-7	Providing information to public	Refer to SOP	Municipality	Ward Office	1 hour-
		Common	-	4-2-8	Protection and support for vulnerable groups	Refer to SOP	Municipality	Ward Office	1 hour-
		Common	-	4-2-9	Emergency recovery for the function of critical facilities, infrastructures and lifelines to secure the transportation network	Refer to SOP	National and Provincial Government, DCC, Municipality	-	Immediately

Sector	Disaster Type	Priority	S/N	Disaster and Climate Resilience Measures		Responsibility		Time Period
				Activity List	Contents	Main Responsible Organization	Supporting Organization	
	Common	–	4-2-10	Accepting the support of volunteers	–	Municipality	Ward Office	1-3 day-
	Common	–	4-2-11	Safety control and panic prevention Measures	–	National and Provincial Government, DCC, Municipality	–	1-3 day-
	Common	–	4-2-12	Management of emergency fund	–	National and Provincial Government, DCC, Municipality	–	1-3 day-
	Common	–	4-2-13	Collaboration and request for support and acceptance with other organizations	–	National and Provincial Government, DCC, Municipality	–	1-3 day-
4-3. Activities in the Aftermath of Disaster with Build Back Better	Common	–	4-3-1	To conduct assessment of damage and loss due to disaster	–	National and Provincial Government, DCC, Municipality	–	–
	Common	–	4-3-2	To formulate action plan for rehabilitation and reconstruction with BBB	–	Municipality	Provincial Government, DCC	–
	Common	–	4-3-3	Recovery of public facilities and infrastructure and reconstruction of disaster victims' houses	–	Municipality	Provincial Government, DCC	–
	Common	–	4-3-4	To recover/normalize the life of disaster victims	–	Municipality	Provincial Government, DCC	–
	Common	–	4-3-5	To conduct social, economic, and cultural rehabilitation of disaster victims	–	Municipality	Provincial Government, DCC	–

Note: Priority Level *** High, ** Middle, * Low

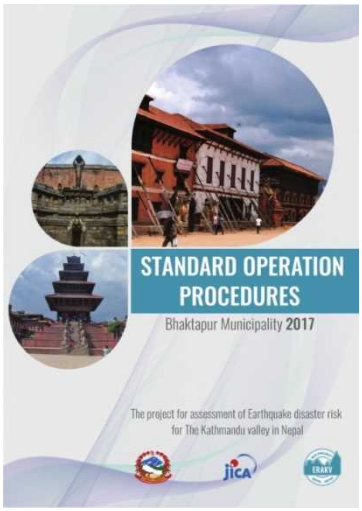
[Details of Activities]

■4-1-6: Formulation of a disaster emergency response manual (SOP) for except of earthquake

(Examples of contents)

・Flow chart and check list of each section and each response activity such as search and rescue, medical, food provision, etc.

・Several formats for information collection, etc.



1. Preface

2. Mobilization of officials

2-1. Flow of Mobilization (On and Off-duty)
2-2. Preparation for Mobilization

3. Establishment of Emergency Response Head Quarter (ERHQ)

3-1. Establishment of ERHQ
3-2. Structure of ERHQ
3-3. Function of ERHQ
3-4. Relationship of ERHQ with other Organizations
3-5. Role of Ward Office

4. Response and Preparedness Activities against Earthquake

4-1. Preparedness Activities
4-2. Response Activities

[APPENDICES]
Appendix A: Activity Flowchart
Appendix B: Disaster Information Format
Appendix C: List of Evacuee at Evacuation Shelter
Appendix D: Personal Data of Officials

Figure 5-4 Table of Contents of SOP for Earthquake

Responsible Division: "Social Welfare Section"

	Main Activity	Check box	Operational Activity
Social Welfare Section	Disaster Information Team	☐	**Form "Disaster Information Team":** Assembles the members of "Disaster Information Team".
		☐	**Asking "Disaster Information" from Ward leaders:** "Disaster Information Team" asks to collect and submit disaster information from Ward leaders
		☐	**Dispatch "Disaster Information Team":** "Disaster Information Team" goes to affected area and start collecting information.
		☐	**Collecting information:** "Disaster Information Team" collects latest information in the affected area with the help of 'Format B'. (from "Disaster Information Team" and "Ward Leaders")
		☐	**Summarize "Disaster Situation Report":** "Disaster Information Team" makes a "Disaster Situation Report".
		☐	**Submit "Disaster Situation Report":** "Disaster Information Team" submits the "Disaster Situation Report" to ERHQ.
	Emergency Rescue Team	☐	**Form "Emergency Rescue Team":** ERHQ assembles members of "Emergency Rescue Team" based on report from "Disaster Information Team".
		☐	**Dispatch "Emergency Rescue Team":** "Emergency Rescue Team" goes to the affected area and starts providing medical support to affected people. (It needs to collaborate with Red-Cross)
	Collaboration	☐	**NDRRMC, SDMC, DDMC, LDMC, CDMC, etc.:** ERHQ collaborates with other organization and agency for sharing information of disaster. Please see page 8 for more information.
	Provide information to Citizens	☐	**Provide information to citizens:** ERHQ shares information and "Social Welfare Section" announces this information to citizens including "caution for secondary disaster, evacuation shelter, etc.".
	Provide information to Media	☐	**Preparation for Press Conference Room:** Press Conference Room is prepared for media.
		☐	**Decide time and contents for Press Conference:** Time for press conference is decided and Contents are prepared.
		☐	**Conducting Press Conference:** Press Conference is conducted at Press Conference Room.
	Medical Support	☐	**Communication with available hospitals:** Available hospitals are examined and latest information is reported to ERHQ.
	Support for disaster affected people	☐	**Support for Pregnant women:** Assistance is provided to pregnant women in evacuation shelter as well as in their own house.
		☐	**Support for handicapped persons:** Assistance is provided to handicapped persons in evacuation shelter as well as in their own house.
		☐	**Preparation and Distribution of Sanitary and Baby items:** Sanitary and baby items are prepared and distributed. It is better to stock these items in emergency kit before disaster.

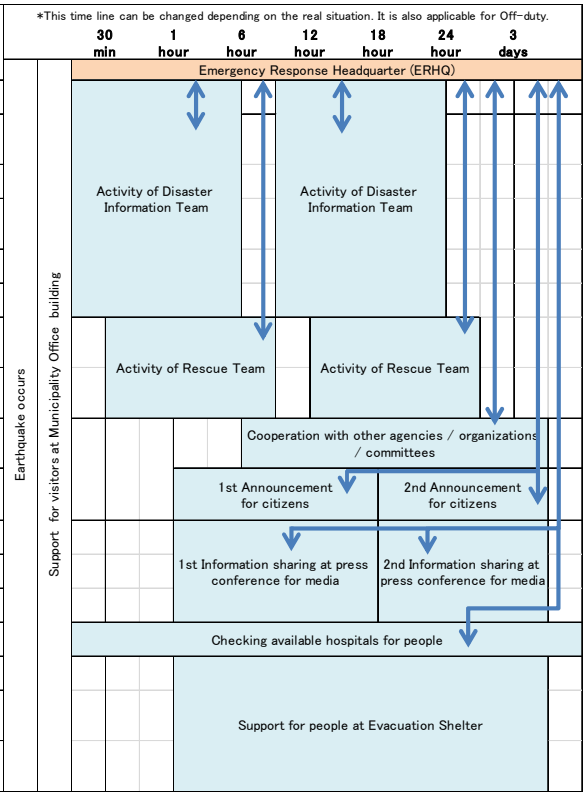


Figure 5-5 Format A Activity Flowchart of SOP for Earthquake

■4-1-14: Formulation of "community carte" for summarized information of current conditions on DRRM at the community level

(Examples of contents)

・Community Profiles(Population, Geography, Location)

・DRRM related information (Status of preparedness, Vulnerable people, Evacuation places/routes, etc.)

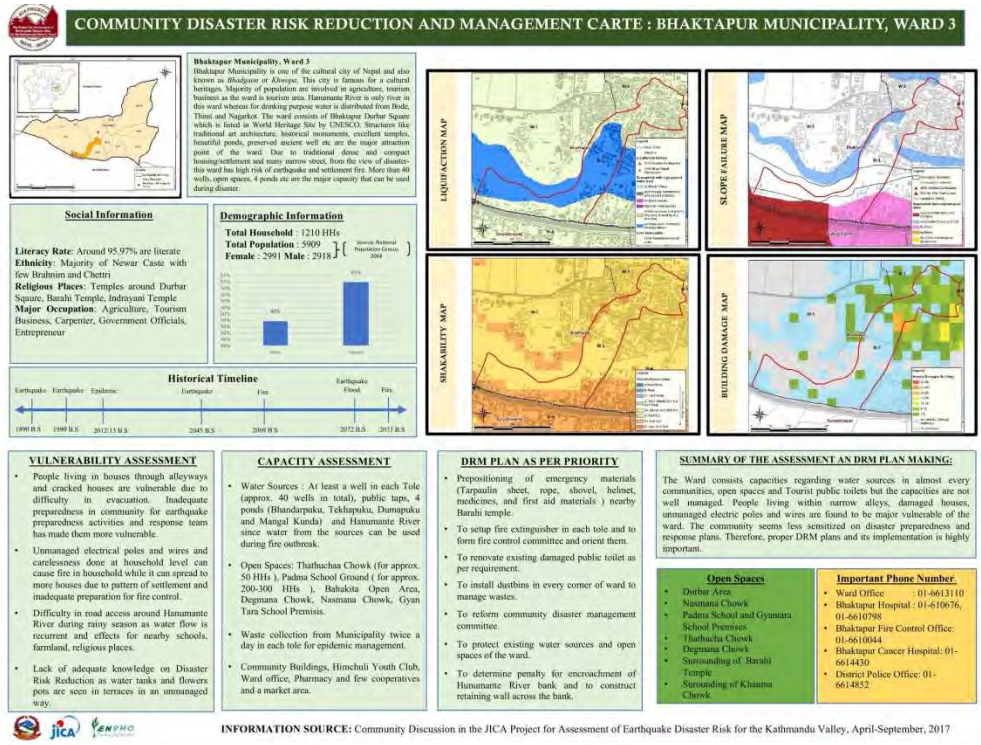


Figure 5-6 Community DRR Carte (Top) and DRR Map (Bottom) (Example of Ward 3)

CHAPTER 6. MONITORING, EVALUATION AND UPDATE OF PLAN

6-1. Monitoring and Evaluation

(1) Monitoring

Monitoring is an activity to observe the progress of the implementation of the DCR Plan in Bhaktapur Municipality and to identify as well as anticipate emergence of problems, so that they can be prevented or solved as early as possible.

Monitoring is carried out to observe the progress in the delivery of funds, achievement of outputs and emerging constraints. Monitoring needs to be done regularly to obtain accurate information of the implementation of the activities, the performance of the program and the results achieved.

Monitoring and evaluation are conducted with regard to the following principle;

a. Efficiency, that is the degree of interrelatedness between the goods/services produced by a program/activity and the resources needed to produce the goods/services that is measured by the cost per unit output
b. Effectiveness, that is the degree of how far a program/activity reaches its desired result and benefit
c. Benefit, which is the expected condition if the output can be accomplished within the timeframe, in the right location and the right target, and can function optimally.
d. Impact, namely long-term change is achieved as a result of a function of an output.
e. Sustainability, which is the process of implementing an activity to produce an output continuously.

The monitoring and evaluation sub-committee of LDCRC shall be formed in Bhaktapur Municipality shall monitor the effectiveness of program related to DRM and recommend to Municipality as required.

(2) Evaluation

Evaluation of the implementation of the DCR Plan in Bhaktapur Municipality will be done to program outputs in the form of goods or services and to program outcomes in the form of impact or benefit for the community and/or government. In principle, evaluation is a series of activities that compare the realization of program inputs, outputs and outcomes with the plan and benchmark. Evaluation is done based on the resources used and the performance indicators and targets of an activity and/or program performance indicators and targets.

Table 6-1 Monitoring and Evaluation

Action	Budget		Indicator		Level of Achievement	Notes
	Planned	Realisation	Planned	Realisation		

As in monitoring, the evaluation of the implementation of the DCR Plan in Bhaktapur Municipality will be done by the all stake-holders in accordance to their respective duties and responsibilities of implementation of the DCR Plan.

(3) Reporting

Monitoring and evaluation report has to be submitted once in a year to the related agency, local agency and the ministry of local development.

6-2. Review and Update of Plan

(1) Review

The DCR Plan shall be reviewed every year and reflected in annual programs and plans to address relevant changes in vulnerability, capacity and risk due to disaster in any sector of the Municipality. This periodical review is intended to assess the achievement result through the implementation of DCR activities/programs as well as their effectiveness and efficiency.

(2) Update

To make the DCR activity more effective, the DCR Plan will be revised regularly every 5(five) years or at any time when disaster occurred.