

Study on Community/ School Based Disaster Risk Management Model for Urban Resilience (BURDAN PROJECT)



नाडशाल एशोसिएसन नेपाल
काभ्रेपलाञ्चोक



Acronyms

ADRA	Adventist Development Relief Agency
BURDAN	Building Resilience to Disaster by Promoting and Mainstreaming Disaster Risk management and Resilience Initiative in Earthquake Affected Communities: Kavre and Dhading District of Central Nepal
CBO	Community Based Organization
CBDRM	Community Based Disaster Risk Management
CDMC	Community Disaster Management Committee
CSSF	Comprehensive Safe School Framework
DCC	District Coordination Committee
DRR	Disaster Risk Reduction
FGD	Focus Group Discussion
EMIS	Education Management Information Systems
ERT	Emergency Response Team
LDCRP	Local Disaster Climate Resilient Plan
HVCA	Hazard Vulnerability Capacity Assessment
IEC	Information, Education and Communication
KII	Key Informant Interview
NAN	Nangshal Association Nepal
NDRC	National Disaster Risk-reduction Centre
NGO	Non-Governmental Organization
NRRC	Nepal Risk Reduction Consortium
PwD	People with Disabilities
RM	Rural Municipality
RMD	Rural Mutual Development
SBDRM	School Based Disaster Risk Management
SIP	School Improvement Plan
SMC	School Management Committee
SDMC	School Disaster Management Committee
SDMP	School Disaster Management Plan
SFDRR	Sendai Framework for Disaster Risk Reduction
INGO	International Non-Governmental Organization
UM	Urban Municipality
UNISDR	UN Office for Disaster Risk Reduction
VCA	Vulnerability Capacity Assessment

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As we strive to make cities more resilient, producing a learning document to help develop better disaster risk management model seems relevant and timely. The study for adopting better model for urban resilience was undertaken by NDRC Nepal as part of the "*Building Resilience to Disaster by Promoting and Mainstreaming Disaster Risk management and Resilience Initiative in Earthquake Affected Communities: Kavre and Dhading District of Central Nepal*" (BURDAN) project funded by ADRA Nepal.

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Executive Summary

Disaster Risk Reduction (DRR) has emerged as one of the most pressing environmental issues all over the world. Cities are vulnerable to hazards when they are developed in an unplanned and haphazard manner on hazardous areas with degraded ecosystems and have high concentration of people and assets. A resilient community is one that can absorb disturbances, change, reorganize, and still retain the same basic structures and provide the same services (Resilience Alliance, 2002). There have been wide attempts to build a consensus on action for Community based DRR and School based DRR. This study on school and community based DRR model for urban resilience is carried out as a part of Building Resilience to Disaster by Promoting and Mainstreaming Disaster Risk management and Resilience Initiative in Earthquake Affected Communities: Kavre and Dhading District of Central Nepal (BURDAN) project. The findings and analysis of this study are based on the field work carried out in selected project working municipalities of two districts viz. Dhading and Kavre of Nepal. The specific objectives of the study are to: (i) Review existing CBDRR/SBDRR initiatives in urban areas; (ii) Develop a learning document for suitable model for SBDRM/CBDRM initiative for urban resilience; and (iii) Prepare policy brief, based on the study findings and valid suggestions and feedback from the stakeholders during sharing meeting.

The study used mostly qualitative tools and information. Primary data was collected through consultation with representatives from municipality offices (rural and urban), schools, and disaster management committees, I /NGOs and CBOs, and District Coordination Committee (DCC) of Dhading and Kavre districts. Secondary data was collected through literature review of the current CBDRM/SBDRM initiatives and models used in Nepalese and global context and related policy guidelines etc. The study includes analysis of DRM and resilience scenario of community and school. The existing CBDRM initiatives in urban resilience are analyzed based on the four components of urban resilience proposed by Jha, Todd, & Zuzana (2013). They are;

- Infrastructural resilience,
- Social resilience
- Institutional resilience and
- Economic resilience.

The study analyzed the existing gaps for urban DRR and resilience based on the insights from the field, NRRRC's nine minimum characteristics and UNISDR's ten essentials for a resilient city. Common indicators of those two documents were condensed to remove overlaps. Existing SBDRM scenario and opportunities/gaps present are analyzed on the basis of three indicators listed as three pillars of safe school by the Comprehensive School Safety Framework (UNISDR and GFDRR, 2014).

Existing endeavors for CBDRM are divided into social, infrastructural, economic and institutional resilience. There have been some initiatives to improve the DRR knowledge of community people, for example, through development of Disaster Preparedness and Response Plan (DPRP), capacity building of Community Disaster Management Committees (CDMCs), and scattered efforts for risk mapping etc. There have been attempts to organize the urbanization process for city resilience. For instance, urban municipalities have started to strictly enforce the National Building Code. Preparations are also underway for making land-use plans, building and improving sewage systems and dikes. Government has been providing support for reconstruction in the form of grants and loans. Unlike in rural setting, livelihood was found much diversified in the urban setting depending upon levels of education, training, cultural etc., which in a way increased social resources and increased coping capacity. Banks and cooperatives have been providing loans and insurance services. Municipalities have been allocating resources to provide training for women, Dalit and people with disability for their different entrepreneurship. Some work has been done to develop an organizational base at municipality, ward and

community levels. For example, in ward no. 5 of Banepa Urban Municipality (UM), ward level CDMC as well as Tole-wise sub-committees have been formed. Task forces have been trained on First aid, Search and Rescue (SAR) and emergency relief response and are equipped with First aid and SAR materials from BURDAN project. DEOCs have been established in both study districts. There's a provision of emergency relief fund in municipalities.

Opportunities/gaps have been identified for developing a resilient community. They are organizational base for resilience, access to DRR information, multi-hazard risk and capacity assessment, disaster response system, DRR/M plans at municipal level, DRR funds, access to community managed DRR resources, low level risk reduction/vulnerability reduction measures, resilient urban development and design, protective functions offered by natural ecosystems, societal resilience capacity, infrastructure resilience for functioning of critical assets, recovery and build back better initiatives and livelihood security and enhancement. Some ideas for way forward have been identified. The government could commence VCA and risk assessments, invest in disaster resilient urban planning, emphasize institutional strengthening, and engage private sector in DRR. The community could take ownership of DRR initiatives, ensure active role of community based groups and committees, start inter and intra- community sharing of DRR learning, as well as lobbying and advocacy for DRR plans and programs mainstreaming. The project could focus on strengthening local government, community ownership/sustainability mechanisms, multi-stakeholder participation, and livelihood-centered DRR.

Efforts have been made to increase school safety. Developments in project intervened schools include - new buildings with child and disable friendly features that follow the National Building Code, preparations for school safety self-assessment guidebook, school safety audit, preparations for incorporation of DRR in School Improvement Plan (SIP) and prepositioning of SAR and first aid materials. Schools have the opportunity to improve their learning facilities and school disaster management system. Unlike new buildings, the majority of old school buildings do not meet the national standard. Non-structural risks are not given enough attention. There is no system for back-up of student educational records. It was also observed that in a few schools, DRR related IEC materials were kept locked up in trunks instead of at library where teachers and students can access them. It was observed that not all teachers who received training from the project shared their learning Formations of School Disaster Management Committee (SDMC) and School Disaster Management Plan (SDMP) are still new for schools. Rigorous effort is needed to incorporate DRR into School Improvement Plan (SIP). Some ideas for way forward have been identified. The government could ensure safe school facilities (e.g. establish guidelines to minimize non-structural and infrastructural risks), mainstream disaster in education (e.g. considering DRR in the Education Sector Development Plans and educational continuity in disaster management plans), promote DRR in teaching and learning (e.g. invest in high quality teaching and learning materials for students and teachers). The school could ensure quality in safe infrastructure (e.g. regular school safety audit), plans, policies and management (e.g. incorporate SDMP in SIP), teaching and learning (e.g. regular drills). The project could initiate teachers and teacher trainers training (e.g. training on risk reduction curriculum materials and methodologies), production of appropriate IEC (based on scope and sequence of skills and competencies in disaster risk reduction or behavior change communication strategy), and integration of hardware component (e.g. model safe structures).

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I. The Context

Disaster Risk Reduction (DRR) has emerged as one of the most pressing environmental issues all over the world. Cities are vulnerable to hazards when they are developed in an unplanned and haphazard manner on hazardous areas with degraded ecosystems and have high concentration of people and assets. About 17 percent of Nepal's population is living in urban areas, and its average urban population growth rate is about 6 % per year since 1970s (World Bank 2013). The pressure for quick paced urbanization and the government's inability to enforce development standards has led to dangerous built environment in the country.

Resilience is the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard promptly and efficiently by preserving and restoring essential basic structures (UNISDR, 2011). A resilient community is one that can absorb disturbances, change, reorganize, and still retain the same basic structures and provide the same services (Resilience Alliance, 2002). If communities are to be made disaster-resilient, it is crucial to "look at the many impacts of disasters and build the long-term capacity of communities to both adapt to and cope with uncertain risks" (Jha, Todd, & Zuzana, 2013). The role that communities and local government can and should play in disaster risk reduction (DRR) is widely recognized, with community-based DRR (CBDRR) becoming a cornerstone of DRR programming, promoted through the Hyogo Framework for Action and the more recent Sendai Framework for Disaster Risk Reduction (Oven, et al., 2017). Community Based Disaster Risk Management (CBDRM) is an approach of increasing the disaster resilience of a community by strengthening its local capacity. The successful use of a community-based disaster risk reduction approach is based on the combination of all capacities, including all strengths and resources available for reducing disaster risk or impact within a community, society or organization (UNISDR, 2006).

There have been wide attempts to build a consensus on action for CBDRM and School based disaster risk management (SBDRM). For instance, the United Nations Office for Disaster Risk Reduction (UNISDR) has developed a ten-point checklist to serve as a guide for local level action for CBDRR. Similarly, Nepal Risk Reduction Consortium's (NRRC) flagship 4 program has developed nine minimum characteristics for developing a disaster resilient community. UNISDR and Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector have developed a comprehensive school safety framework (CSSF) to promote school safety for risk reduction and resilience. However, available tools and techniques are mostly based on the structure and functions of rural areas and focus on rural resilience. For example, in communities the parameters considered for capacity analysis and the tools for risk assessments may not work in an urban area where services are abundantly available but society is not as close-knit and communal solidarity not as strong as in rural areas. It is unclear how the available tools and techniques can contribute DRR in school and communities in urban setting. Also, many rural areas are rapidly transforming into urban areas and a clear pathway to address their challenges to establish resilience has not been studied. In this context, current initiatives to make the cities resilient are visibly inadequate. This study attempts to analyze the specific challenges and opportunities for disaster resilience in urban setting and in rural-urban transformation areas.

This study on CBDRM/SBDRM model for urban resilience is carried out as a part of Building Resilience to Disaster by Promoting and Mainstreaming Disaster Risk management and Resilience Initiative in Earthquake Affected Communities: Kavre and Dhading District of Central Nepal (BURDAN) project. The project aims to build community resilience through responsive governance for disaster risk reduction (DRR) and emergency preparedness in Nepal in a post-disaster scenario. The project has major three outcomes: (i) The community and the local government of the project area will understand the DRR, educate and familiar with the DRR

process and adopt the proper risk reduction measures, (ii) The children, teachers, parents and educational authorities understand the importance of school safety and adopt the safe school framework to educate, prepare and act for resilience in education sector (iii) The government, policy makers, civil society and public in general will be familiar with and act to adopt the SFDRR 2016-2030 priorities at the local level planning adopting the policy frameworks. The findings and analysis of this study are based on the field work carried out in selected project working municipalities of two districts viz. Dhading and Kavre of Nepal.

Objective

The main purpose of this study is to develop suitable model for CBDRM and SBDRM initiative for urban resilience. The specific objectives of the study are to:

- Review existing CBDRR/SBDRR initiatives in urban areas
- Develop a learning document for suitable model for SBDRM/CBDRM initiative for urban resilience

2. Study Methods

This proposed study process and method is consistent with the ToR. The study used mostly qualitative tools and information. Primary data was collected through consultation with representatives from municipality offices (rural and urban), schools, and disaster management committees, I /NGOs and CBOs, and District Coordination Committee (DCC) of Dhading and Kavre districts. Project intervened municipalities are Banepa urban municipality (UM), Panauti UM, Mandandeupur UM and Namobuddha UM, and Bhumlu Rural Municipality (RM) of Kavre and Nilkantha UM, Siddhalek RM and Tripurasundari RM of Dhading. The tools used for the data collection were Key Informant Interview (KII) and Focused Group Discussion (FGD).

Study Steps
Step 1: Mobilization
Step 2: Understanding study framework
Step 3: Desk review of secondary information
Step 4: Instruments design
Step 5: Fieldwork for primary data collection
Step 6: Data analysis and interpretation
Step 7: Produce draft evaluation report
Step 8: Debriefing meeting
Step 9: Report finalization

Secondary data was collected through literature review of the current CBDRM/SBDRM initiatives and models used in Nepalese and global context and related policy guidelines etc. This study followed participatory qualitative methods in line with project’s objectives and scopes. Study methodologies are illustrated in the following steps.

Step 1: Mobilization

- Mobilization includes making practical arrangements, collection and stock-taking of relevant data and reports, and preparation for field work.

Step 2: Understanding study framework

The study includes analysis of Disaster Risk Management (DRM) and resilience scenario of community and school. The existing CBDRM initiatives in urban resilience are analyzed based on the four components of urban resilience proposed by Jha, Todd, & Zuzana (2013). They are (i) Infrastructural resilience, (ii) Social resilience (iii) Institutional resilience and, (iv) Economic resilience.

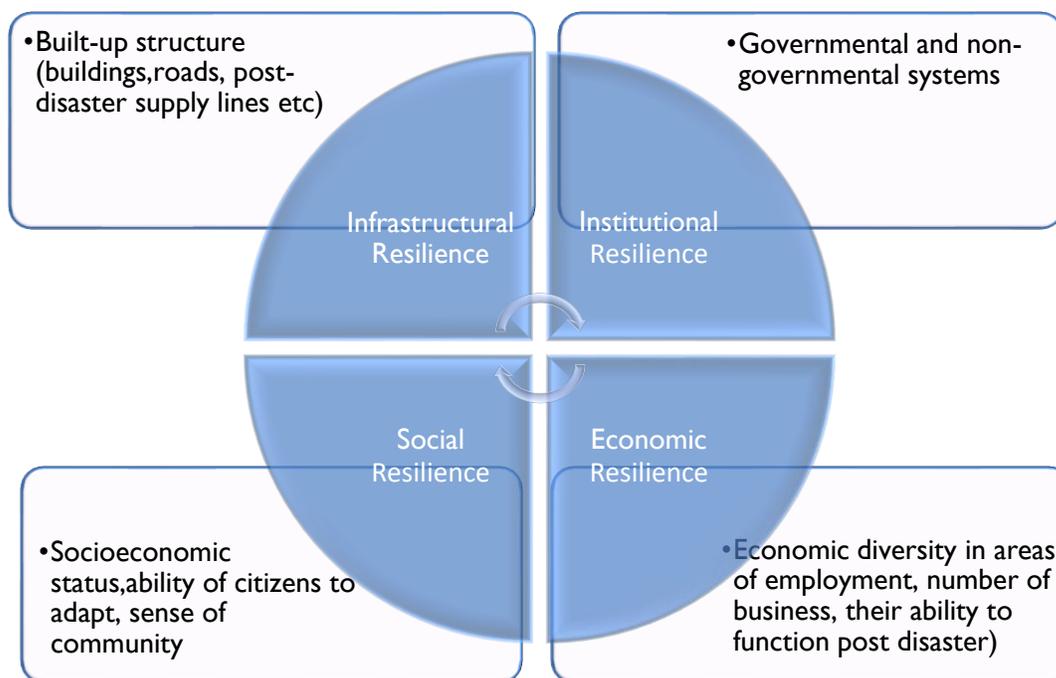


Figure 1 Components of urban disaster resilience

The study analyzed the existing gaps for urban DRR and resilience based on the insights from the field, NRRC’s nine minimum characteristics and UNISDR’s ten essentials for a resilient city. Common indicators of those two documents were condensed to remove overlaps.

Nine Minimum Characteristics of a Resilient Community	Ten Essentials for a Resilient City
<ol style="list-style-type: none"> 1. Organizational base at municipality, ward and community level 2. Access to DRR information 3. Multi-hazard risk and capacity assessments 4. Community preparedness/response teams 	<ol style="list-style-type: none"> 1. Organize for disaster resilience 2. Identify, understand and use current and future risk scenarios 3. Strengthen financial capacity for resilience 4. Pursue resilient urban development and design
<ol style="list-style-type: none"> 5. DRR/M plans at VDC/municipal level 6. DRR funds 7. Access to community managed DRR resources 8. Local level risk/vulnerability reduction measures Community-based early warning systems 	<ol style="list-style-type: none"> 5. Safeguard natural buffers to enhance the protective functions offered by natural ecosystems 6. Strengthen institutional capacity for resilience 7. Understand and strengthen societal capacity for resilience 8. Increase infrastructure resilience 9. Ensure effective disaster response 10. Expedite recovery and build back better
Source: (NRRC, 2013)	Source: (UNISDR, 2012)

Existing SBDRM scenario and opportunities/gaps present are analyzed on the basis of three indicators listed as three pillars of safe school by the Comprehensive School Safety Framework (UNISDR and GFDRR, 2014).

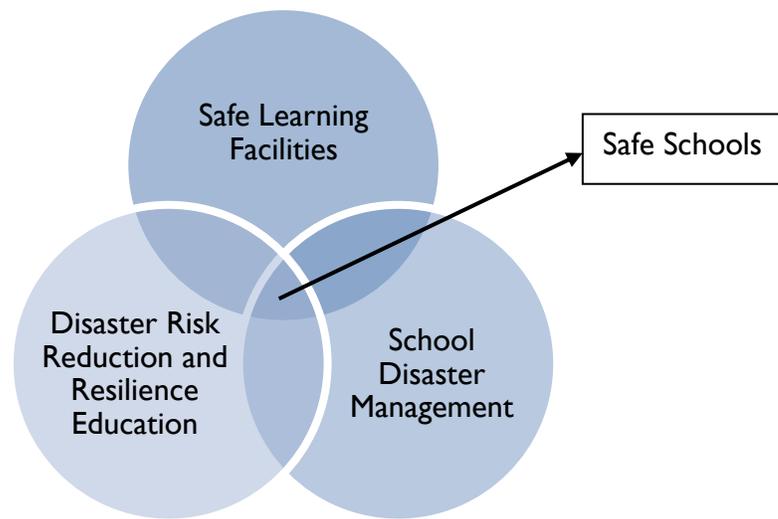


Figure 2 Three pillars of safe school

Step 3: Desk review of secondary information

Secondary data analysis and interpretation comprises review and analysis of project data available prior to the field mission. It includes review of relevant legislation, policies and strategies; scanning of project proposal and project reports.

- Review existing CBDRR/ SBDRR initiatives in urban and progressive rural (rural-urban transformation) areas for urban resilience
- Review literature about the legal documents and current practices of the CBDRM/SBDRM approaches in national and global context (Such as Sendai Framework for Disaster Risk Reduction 2015-2030, Disaster Risk Reduction and Management Act 2074, Local Government Operation Act 2074 etc - Please see Bibliography)

Step 4: Instruments design

- Design simple but concise tools, techniques, checklist/guide questions for primary information collection to address the specified objectives. Prepare assessment checklist for the stakeholders consultation
- Submission of inception report to NDRC Nepal and its finalization in consultation with NDRC Nepal project team and relevant personnel. Inception report includes tools and techniques for data collection viz. FGDs, KIIs, observation etc.

Step 5: Fieldwork for primary data collection

The following tools were adopted to assess the project's results:

a. Focus group discussion (FGD)

Hold consultations with the stakeholders from Kavre, Dhading and Kathmandu. Study area sampling criteria include (i) Newly declared urban areas, (ii) Older municipalities, (iii) Rural municipalities that are transforming into urban settings (iv) Schools in urban and progressive rural centers and (v) Schools in new urban areas. FGDs are conducted with members of Disaster Management Committees, School Management Committees and Parents Teachers Associations with the support of relevant key questions (refer annex). Qualitative data was explored through FGDs.

b. Key informant interview (KII)

To cross check and validate the information gathered from other sources (desk review and FGDs), and to obtain the views of study area about the CBDRM and SBDRM as well as to gather suggestions for similar future project, KIIs was conducted with representatives from rural and urban municipalities, district coordination committees and CBOs and I/NGOs.

While commissioning FGDs and KIIs, ethical norms and organizational policies were considered to ensure confidentiality, free flow of information, and avoid risks of domination of power-elites. Similarly, list of participants both for FGDs and KIIs was disaggregated by caste, gender; age and disability to ensure gender and social inclusion. Cross-cutting issues like gender, inclusion and governance was carefully assessed during participatory interactions and consultations.

c. Observation

Identify existing gaps in DRR initiatives of both urban and progressive rural municipalities and how they are different in terms of challenges. The consultant observed the S/CBDRM initiatives, general understanding, project delivery and gaps. In summary, tools, numbers and major stakeholders are presented as in table 1 below:

Table 1: Tools, numbers, locations and major stakeholders

Tools	Number	Major stakeholders
Focus Group Discussion (FGD)	11	School and community disaster management committee members, management committees, parents teachers associations etc
Key Informant Interview (KII)	9	Municipal authorities, CBOs, I/NGOs

Step 6: Data analysis and interpretation

The secondary data derived from the desk review and primary data gathered from empirical fieldwork was analyzed and interpreted to reach the major findings and conclusion.

Step 7: Produce draft evaluation report

The draft evaluation report is produced once the analysis of evaluation findings is completed. The report incorporates key findings and recommendations. It incorporates the suggestions and feedback as well as the CBDRR and SBDRR project implementation process and outcomes.

Step 8: Debriefing meeting

A debriefing meeting was held at the District Coordination Committee to share key findings/impressions based on the DRAFT evaluation report as well as to collect feedback and suggestion of urban centric SBDRR/CBDRR approach.

Step 9: Report finalization

Upon receiving and analysing the comments of key project staffs, the report was finalized and the findings of the study will be shared at a workshop in Kathmandu.

4. Findings and Analysis - Community

4.1 Existing CBDRM Initiatives for Urban Resilience

The existing CBDRM initiatives are broadly categorized into 14 headings based on the insights from the field, NRRC's nine minimum characteristics and UNISDR's ten essentials for a resilient city.

4.1.1 Social resilience

Social capital, although it is difficult to quantify, refers to a sense of community, the ability of groups of citizens to adapt, and a sense of attachment to a place (Cutter, Burton, & Emrich, 2010). There have been some initiatives to improve the DRR knowledge of community people, for example, through development of Disaster Preparedness and Response Plan (DPRP). In BURDAN project area, Community Disaster Management Committees (CDMCs) have received trainings related to DRR, for first aid, Light Search and Rescue and Result Oriented Leadership Development Program, Sphere and Core Humanitarian Standard (CHS). DRR information has been spread through activities such as street drama, radio programs and orientations through power-point presentation and video shows. BURDAN project has utilized existing self-help groups for generating awareness. In Banepa UM- 5, they have prepared the general Evacuation Plan and conducted disaster awareness campaign in ward level. They have access in different media too, which is useful in disaster situation to provide information. For instance, Mandandepur municipality frequently broadcasts its message via local FM Radio and newspapers.

Scattered efforts for risk mapping were found in the studied municipalities. Neelkantha municipality of Dhading district, for instance, has done risk mapping and identified risk areas. Similarly, Banepa- 5 of Kavre district has also analyzed hazard, vulnerability and capacity and done risk mapping. Communities have basic knowledge of risk and capacity assessments thanks to some DRR awareness initiatives. These initiatives are mostly project-driven. There exist many local institutions in the community such as Tole development committee, mother's groups, self-help groups and youth clubs etc. BURDAN project has mobilized self help groups in certain DRR activities in its working area. The project has also improved communities' DRR knowledge through various awareness raising campaigns and disaster drills. It was observed that social connectedness and neighborhood cohesion was stronger in rural municipalities than in urban municipalities.

"Our village has a practice of forming relief committees to provide food and non-food items, timber and cash to the disaster affected families in disaster situation" – Bhumlu RM, FGD 2018

In terms of material resources, municipalities have ambulance and fire brigade (such as Neelkantha Urban Municipality of Dhading). In BURDAN project working areas, SAR and first aid materials have been distributed to CDMCs. Some trained and technical human resources exist at the community level. For instance, in the project areas, CDMCs members are trained in basic disaster management, First-Aid, LSAR and Relief response, etc. Municipalities are equipped with trained engineers on Earthquake resilience infrastructure and so on.

4.1.2 Infrastructural resilience

Infrastructural resilience refers to sheltering capacity, health care facilities, the vulnerability of buildings to hazards, critical infrastructure, and the availability of roads for evacuations and post-disaster supply lines (Jha, Todd, & Zuzana, 2013). There have been attempts to organize the urbanization process for city resilience. For instance, urban municipalities have started to strictly enforce the National Building Code.

"We have been trying to improve infrastructural resilience. We have made application of building code compulsory in the municipality. We have allocating more money to improve transport and communication facilities as well.... And

more importantly, to ensure community ownership, we encourage 20% community contribution in infrastructure development activities" – FGD 2018, Banepa-5, Kavre

Preparations are also underway for formulations of land-use plans, building and improving sewage systems and dikes. After the 2015 earthquake, infrastructural resilience has gained priority. Following the concept of Build Back Better, the buildings constructed after 2015 are more earthquake resilient. Government has been providing support for reconstruction in the form of grants and loans. Similarly, investments on roads and bridges repair/constructions are also on the rise. In terms of health facilities, the studied municipalities are equipped with hospitals, health care centers and clinics. There is a good coverage of communication (phone and internet) facilities. There is significant capital earmarked for improving drinking water and sewage facilities in municipal plans in the studied municipalities.

4.1.3 Economic resilience

Being resilient means that communities have the capacity to bounce back or even forward and this requires livelihood security and enhancement, and local government support (Oven, et al., 2017).

Unlike in rural setting, livelihood was found much diversified in the urban setting depending upon levels of education, training, cultural etc., which in a way increased social resources and increased coping capacity. Banks and cooperatives have been providing loans and insurance services. Government has also been supporting agriculture through subsidies. In the field discussion with municipal authorities, it was revealed that municipalities provide various training related agriculture and small scale enterprises to communities every year. Municipalities have been allocating resources to provide training for women, Dalit and people with disability for their different entrepreneurship.

Identified Ways for Economic Resilience

- Formation/establishment of new institutional frameworks or structures
- Implementing infrastructure projects that underscore compact urban growth
- Establishment of new financing methods as well as increasing local authorities' access to financing DRR projects
- Enhancement of knowledge and capacity building of human resources
- Enhancement of technology skills according to purpose/context
- Scaling of good practices on urban efficiency and economic success to fit other parts of the region
(Lim, 2015)

4.1.4 Institutional resilience

Some work has been done to develop an organizational base at municipality, ward and community levels. Most urban municipalities had already set-up committees to work on DRR before the recent government restructuring. These structures have to be reformed based on the new government structure. Committee establishment and capacity building endeavors have taken place in some municipalities, aided by development projects.

Community disaster management committees (CDMC) have been formed in all BURDAN project intervened wards. For example, in ward no. 5 of Banepa Urban Municipality (UM), ward level CDMC as well as Tole-wise sub-committees have been formed. After a basic training on Disaster Management, they have formed five different Task Forces. The importance of forming preparedness/response teams has been realized by the studied municipalities. In the studied municipalities of Kavre district, five task forces were formed after basic training.

"The Task force brought one pregnant woman safely to the hospital using stretcher which was provided by BURDAN project. Doctor of the hospital admired the team because they brought her safely in right position by providing basic first aid." - Ramesh Raj Kharel, Chairperson, Bhumlu Rural Municipality Ward No. 7

Some municipalities in Dhading have also formed such task forces. The task forces have received training such as first aid, SAR and emergency response. In addition, BURDAN project have distributed search and rescue as well as first aid materials to the ward offices. The project has also conducted various drills in the community. DEOCs have been established in both study districts.

Municipalities are aware that DRRM plans need to be prepared. Since the current government is new and many sections of the municipality do not have adequate human resource, DRR/M plans have not been formed yet. There's a provision of emergency relief fund in municipalities. A heading for "Environmental protection and disaster management" can also be seen in annual municipal plan. During the field discussion, it was revealed that after the 2015 earthquake, DRR activities have been prioritized by the municipalities. During interviews with the municipal authorities, it was reported that the capital allocated for DRR was in increasing trend. Neelkantha Urban Municipality of Dhading, for instance, has allocated more than NRs.1,000,000 as disaster relief fund and is planning for various disaster risk management activities. Mandandeupur Municipality of Kavre has allocated NRs. 200,000/- for disaster management activities in each wards.

4.2. Opportunities/Gaps in Developing a Resilient Community

4.2.1 Organizational base for resilience

In terms of committees working on DRR, municipalities of Kavre and Dhading districts still need to focus on their formation except in the project working municipal wards. The municipal disaster management committees are not in function under the new federal structure. Previously formed municipal level DMCs are also not functional – for instance, in Neelkantha Urban Municipality. Disaster management plans have not been formed either. Forming committees alone would not be enough. They would need to be equipped with skills and experience in disaster resilience – risk identification, mitigation, planning, response and post event response. In terms of coordination and planning, a clear coordination of all relevant pre-event planning and preparation activities was not seen between relevant organizations. In order to strengthen institutional capacity for resilience, a linkage has to be formed amongst private sector, insurance sector and civil society. Lead agency teams are not well established, properly resourced /funded, nor do they have authority to act across all DRR stages – pre, event response and post disaster. During field discussion, it was reported that bureaucrats and electoral representatives were confused about their specific roles and accountability under the new system. Therefore, there is opportunity to organize trainings to resilience professionals (from city government, voluntary or other sources) and establish system/ process for updating relevant training. Learning activities need to be executed with other cities and other practitioners.

4.2.2 Access to DRR information

A single integrated set of resilience data for practitioners is unavailable at the municipality. Information provision to other organizations on readiness and risk is rudimentary at best. During field work, no special plans or mechanisms were found to support CDMCs to access, interpret and use technical information required to enable them to identify the hazards and risk faced, and to design and implement their local disaster risk management plan. Where Vulnerability and Capacity Assessments (VCAs) were conducted previously, its information had not been transferred to the wider audience, especially the more vulnerable groups.

"The elite groups take part in all kinds of training and interaction programs. Sometimes we only find out about the programs after it has finished and sometimes, we just don't get invited." FGD 2018, Dhading.

It is vital to share the data on the city's resilience position with other organizations involved with the city's resilience, community organizations and public. Inadequate expertise can hinder disaster related information generation as well as information flow. During the field work, only a few human resources with DRR expertise

(including local knowledge and scientific/technical expertise) were found available at the community, municipal levels. Interestingly, in Neelkantha Municipality, the executive officer was found to be trained in DRR. In field, it was found that the public has some exposure to education and awareness materials/ messaging but they are not motivating enough. Education and training should be designed wisely to make it effective and made available in all languages spoken in the city. Apart from the project intervention, there have not been DRR related training or awareness activities.

4.2.3 Multi-hazard risk and capacity assessments

During the field work, it was found that multi-hazard risk and capacity assessments are seen by both the government and community as a project's job.

“Different NGOs come here to learn about our ward. They each have their own agenda and programs. We cooperate when asked. That's all we can do” – KII 2018, Kavre

HVCAs were done in project areas but not on municipal level. These assessments are I/NGO driven and thus not properly owned by the government/community. Though community people understand that DRR is an important issue, there is not enough motivation for them to value the undertaking of multi-hazard risk and capacity assessments. Moreover, how their concerns can be addressed to ensure that the process is useful and beneficial to the community and is all inclusive has not been considered. Also, the community does not have access to the scientific and technical information they need to undertake an informed assessment of the hazards and risks faced. Risk reduction steps cannot be taken unless updated scenarios setting out city-wide exposure and vulnerability from each hazard level are available- updated in last 18 months and reviewed by a 3rd party. There are not any risk assessments that identify business output and employment at risk, populations at risk of displacement, housing at risk, agricultural land and ecosystems at risk and cultural heritage at risk for key disaster scenarios. City-wide critical assets have not been identified and systematically linked so as to allow prioritization of upgrades and repairs. There are no hazard maps to guide current urban development either.

4.2.4 Disaster response system

New groups or community preparedness/response teams need to be established in the municipalities. Task forces have not been formed in all of the studied municipalities. For example, *it has been formed in Banepa-5 of Kavre but not in Nalang-2 of Dhading*. How existing human resource within the community that could be drawn upon in establishing these task forces has not been planned. Even where task forces are established, how the community will deal with the loss of members is not planned. There is an opportunity to prepare emergency response plans that integrate professional responders and community organizations. In terms of training, human resources have been developed in the project area but they need refresher and follow-up training. Since the government has just been restructured, training on working procedure under the new system and mainstreaming of activities could be beneficial for the optimal utilization of preparedness/response. While EOCs exist in Dhading and Kavre, there is a scope for more participation from all agencies and development of automating standard operating procedures specifically designed to deal with “most likely” and “most severe” scenarios. The current coordination arrangements identified for all post-event activities in the city's area could be made more comprehensive with clarity of roles and accountability across all relevant organizations. During field discussion, it was revealed that there was no organizational chart documenting structure and role definitions at each relevant agency to achieve a single overall point of co-ordination. Pre-positioning of standardized emergency items, either within the organizations or through blanket pre-purchase agreements (BPA's) at suppliers is rare even in areas known for seasonal disasters. Also, for the proper functioning of these teams, distribution of SAR and first aid materials only are not enough. They also need to be assisted with proper standard operating procedure/guidelines and relevant IEC materials. Current dependency upon

projects for SAR materials in the municipalities and wards must be changed. Organizing effective drills and training and testing of plans annually, by reference to simulated emergency and actual non-emergency events could be done to improve emergency response system. During the field work early warnings were not seen as reliable and specific to the city. In other words, it was found that early warning system remained unexplored. While there is a scope for using mobile and e-mail “systems of engagement” to enable citizens to receive and give updates before and after a disaster, it remains to be done. Warnings need to exist for all hazards known to be relevant to the city, which would allow time for reaction as far as technology permits.

4.2.5 DRR/M plans at municipal level

DRRM plans have not been formed at the municipal level, which has been attributed to the establishment of new government system. During the field work, it was indicated that the municipalities would soon be drafting such disaster plans. However it is not clear whether the plans would truly address the needs and actions identified by the communities themselves as part of the multi-hazard risk and capacity assessments. It is also yet to be seen how such plans would be implemented in the new context, how funds would be identified for the actions and activities identified and how it would be integrated into the local level annual and periodic planning processes. From the field discussion, it was inferred that the communities are not aware of their role in the monitoring and evaluation of the municipal plan.

4.2.6 DRR funds

While municipalities have the provision of “emergency relief” fund, there is no provision of separate disaster risk reduction fund. Also, the whole of the community is not aware of the process of accessing the fund, especially the “vulnerable” groups. There is a heading for “Environmental protection and disaster management” in annual municipal plan. However, it is not clear whether assigning a budget head would really ensure that sufficient amount of money is allocated for it. Municipalities allocating money for emergency fund is appreciable. For example, Neelkantha municipality has allocated over 10 lakh. However, there is still space for DRR fund. During field observation, most municipalities were found to focus on other environmental issues rather than DRR while planning programs under the “Environmental protection and disaster management” heading.

“It is true that we had not been focusing on disasters till the 2015 earthquake. As you can see, in a poor country like ours, poverty, road access and electricity are of bigger concerns. But the earthquake has taught us to be prepared. We will see rise in DRR funds in the coming years. It takes time...” – FGD 2018, Dhading

Another impediment to earmarking of DRR funds at this stage is also the absence of proper DRM plan which could act as a guideline to determine the amount of fund required.

4.2.7 Access to community managed DRR resources

In terms of human resources, more technical expertise and resources for multi-hazards risk reduction, response and recovery are required in the community and municipality. Also, there is a potential for building community learning center with DRR resources as currently available materials resources are not enough. For instance, during field discussion, the community’s knowledge of “most probable” risk scenario and knowledge of key response and preparation steps was reported to be limited. During field work, it was seen that even in municipalities where fire brigade, ambulance and SAR materials are available, only selected people are aware of the location of resources and the process for accessing them.

“The municipality must have such search and rescue materials. But how would we know where they are or how to get them? You will have to ask municipal authorities about that.” – FGD 2018, Kavre

Careful planning must be done on what material resources the community could benefit from, how the equipment could be funded, where it could be stored and how it could be most appropriately managed. Given that the communities are not fully aware of the resources available in their own community, and a comprehensive data is missing in the municipality as well, there is a huge scope for carrying out Vulnerability and Capacity Assessment (VCA). When questioned about the VCA, people responded that the resources available should be documented based on how fast the resources can be made available to the community in case of need or their physical closeness to the needy community instead of their availability within the administrative boundary. It is because as per the revised administrative structures, municipalities cover huge area and for communities residing in the border of a ward or a municipality, the resources available in a different administrative unit is closer and of more importance during disaster response.

4.2.8 Risk reduction/vulnerability reduction measures

Risk reduction measures can be implemented only when risks are identified and prioritized through VCA and DRR planning process. During field work, it was observed that the major bottleneck in reducing vulnerabilities in municipalities is the paucity of VCA. While there have been scattered efforts by projects at performing VCA, the government needs to lead the initiative and cover all areas for effective DRR. Communities do not have access to the technical/scientific information required to support them in identifying and prioritizing local level risk/vulnerability reduction measures for the hazards in their communities. There have been some endeavors to address disaster risks through the allocation of funds in the annual municipal plans and programs. For example, there are budget every year for riverside dams and plantation. However, the current efforts are scattered, done unsustainably and are thus not as effective as desired. Moreover, development initiatives overshadow DRR in terms of priority resulting in inadequate funding for DRR. Government could encourage the communities to take action by allocating fund for implementing risk reduction measures.

4.2.9 Resilient urban development and design

While disaster issues attract more attention since the 2014.2 earthquake, response is still given more priority than preparedness. Land zoning and management of urban growth is visibly missing in the studied municipalities. Lot more needs to be done for risk-aware planning, design and implementation of new buildings, neighborhoods and infrastructure, using innovative or existing/traditional techniques as applicable. All municipalities consulted expressed that enforcement of national building code was a great challenge.

“The municipality just doesn’t have enough resources to monitor whether everyone’s house is built as per the national code. Some people just care about building big houses and earning money from rent. You can’t do much if some people have the wrong intention. Strict enforcement will be possible someday. But changes can’t be expected overnight.”
– FGD 2018, Dhading

There are opportunities for addressing needs of informal settlements including basic infrastructure deficits such as water, drainage and sanitation. Existing structures need to be assessed for resiliency to potential hazards incorporating appropriate retro-fitting of prevention measures. Most municipalities consulted expressed that enforcing the national building code and municipal transport management plan was a huge challenge for them as locals still looked at short term profit rather than long term benefits of safe houses. In municipalities that are slowly turning into concrete jungle such as Panauti UM of Kavre and Nilkantha UM of Dhading, inundation in unplanned built-up areas were reported. It would be prudent to maximize use of urban design solutions such as impermeable surfaces, green areas, shadowing, water retention areas, ventilation corridors etc that can cope with risks and also reduce the dependency on technical infrastructure like sewage systems, dikes etc. Municipal authorities opined the dearth of local DRR experts for missing DRR action in

urban development and design. During the community discussion, it was opined that there needed to be appropriate and proportional engagement of affected stakeholders when making urban development decisions.

4.2.10 Protective functions offered by natural ecosystems

During field discussion, it was reported that infrastructural development was given more priority than greenery promotion in the annual plans and programs of municipalities. Though people recognized the benefits from ecosystem services for disaster risk reduction in both urban and progressive rural municipalities, they did not accord it much value. Instead of working round the nature, shopping down natural resources was perceived as a part of urbanization. Ecosystem services that benefit a city may be located many miles away - for example, where upstream forests may manage floodwater run-off to the benefit of cities on downstream floodplains (UNISDR, 2017). There was gap in cooperation with municipalities specifically for a regional approach of land use planning to protect natural buffers in the rural hinterland of the city, watershed and wider region. Although the new DRRM Act 2017 and Local Government Operation Act 2017 clearly advocates for collaboration of a municipality with other municipalities for work implementation and resource mobilization for disaster management, it remains to be translated in practice. The dearth of environment and disaster expertise in the municipality was attributed for the absence of such collaborative actions. Since some ecosystem services may not be recognized or even suspected, and external expertise may be required to identify them, there is a scope for such studies, especially by including the private sector.

4.2.11 Societal resilience capacity

Since there exists many groups and committees in the community such as Tole development committee, mother's groups, self-help groups and youth clubs, there is ample opportunity to use them for pre and post event response for each neighborhood in the city. While BURDAN project has mobilized self help groups in certain DRR activities in its working area, the potential of these social entities have not been fully explored. During community discussion, it was revealed that community bodies neither had clear identification and coordination of pre and post event roles, nor were they supported by training (except in some project intervened wards). Also, there was low social connectedness and neighborhood cohesion in urban municipalities and rapidly progressing rural municipalities – more so in new neighborhoods with migrant population. It decreases the likelihood of residents being contacted immediately after an event, and regularly thereafter to confirm safety, issues, needs etc – especially in vulnerable population. Not only was the sharing of learning between two communities not seem sharing among the members of the same community was also rare in the urban municipalities- with knowledge transfer limited to close friends and family circles. Municipalities would do well to encourage effective community engagement (particularly from the vulnerable section) in DRR activities by supporting regular community organization meeting. While BURDAN project has initiated community engagement through drills, disaster drills have taken place few and far in between and need to be encouraged by the government. Apart from community, private sector involvement is also missing. During field discussion, it was revealed that employees rarely take part in communicating with their workforce about resilience issues or take part in resilience training or even allow small amounts of time off for resilience volunteer activities. Also, no trend of making business continuity plan was observed.

“We hadn't heard of business continuity plan. It seems wise to make it. But we just don't like to think that disaster is going to strike one day. We don't like to plan for such a bad day.” – FGD 2018, Dhading

4.2.12 Infrastructure resilience for functioning of critical assets

Critical infrastructures are required for the operation of the city, specifically for emergency response. These may include water sanitation transportation, communication, gas, health care, educations, prisons,

administrative operations, computer systems and data. During field work, municipalities were observed to be inadequately prepared for the continuity of critical services during disaster and response post-disaster. For instance, transportation system (including road construction and maintenance) was found to be dismal in progressive rural municipalities as well as sections of urban municipalities. In terms of database management, there were no back-up computing facilities, and databases of open spaces (public and private) that could serve as shelter during emergency and additional pumps and generators etc. that could be critical in response phase. In terms of communication, municipalities did not have emergency or incident command centers, and associated communications and monitoring/situation awareness systems – such as mass SMS communication, placement of cameras and sensors in strategic locations etc. Although healthcare system is critical during emergency, it was reported that the health-sector emergency preparedness and response plan had not been implemented fully. The identified vulnerabilities in the major hospitals systems have not been addressed, and a majority of health facilities including the major hospitals have not prepared emergency preparedness and response plans. There is also room for better planning for safety and survivability of cultural heritage sites and artifacts. Also, there is scope for investing in hardening the relevant infrastructure to reduce the burden of restoring the city to normal life after a disaster.

4.2.13 Recovery and build back better initiatives

The issues of recovery and building back better have been well prioritized after the earthquake of 2014.2. Nonetheless, no emergency preparedness or response plan exists even for the majority of lifelines and critical facilities such as the telephone, -electricity, -health, -water supply departments and other facilities. None of the ministries or departments or industrial establishments has adequate emergency response and business continuity plans either. There is a paucity of agreed upon national standard for emergency response: even the existing norms for relief are not widely known. There is no system for the enrolment and sustained operation of volunteers programs. As per the field discussion, municipalities have slowly realized the community's role as the first responder but have not initiated capacity building process to empower them. While the effort of National Reconstruction Authority in the post-earthquake scenario is laudable, inability to reach the most vulnerable through loans and grants because of bureaucratic rigmarole, and complex paper work process have dampened the spirit of Build Back Better.

"Some of our neighbors have not been able to rebuild their houses after earthquake. It's hard to make use of the government provisions for people we can't read and write properly and are not clever enough to understand and follow the complicated government process. These are also the people who are most in need of help." – FGD 2018, Kavre

There is a good opportunity to set up a system for periodic assessment/updating of and monitoring of disaster response capability. Although there is good scope for private sector to pitch in reconstruction as well as DRR activities, it has not happened yet. The government could catalyze the process by providing incentives (monetary or otherwise) to include all sections of the society in DRR.

4.2.14 Livelihood security and enhancement

In the field discussion, livelihood security was recognized as an important factor for resilience. Livelihood security was reported to be a greater challenge for the urban poor, informal settlers and daily wage workers. Unfortunately, these vulnerable sections are not getting support.

"For a poor person like me life was hard before, but it's become worse after the 2014.2 earthquake. All this intellectual talk about disaster risk reduction is not going to help my family. What we care about is whether or not we have satisfactory meals on our plate morning and night. We need work for that – a livelihood. If our present and future incomes are secure, we have hope for a better life. Instead of investing of preaching about bouncing back to normal life,

why don't these projects give us an opportunity to earn and actually do it? That's how we become resilient, if you ask me. – FGD 2018, Dhading

Trainings provided for livelihood diversification have failed to show result in the absence of start-up support and entrepreneurship skills. Compared to rural setting, urban setting had weaker social support system or network to maintain the moral fiber and to assist in the relief and recovery from the impact of hazards. Also, traditional coping mechanisms did not exist in the new setting, especially in the new migrant settlements and the population seemed increasingly dependent on outside interveners to help in this process. While the current schemes for insurance, loans and subsidies are laudable, they have failed to support those who are most at need due to rigorous paper work, lackadaisical publicity and support mechanisms.

4.3. Learning and Way Forward

Way forward based on the learning are broadly divided into three categories, i.e. for the government, for the community and for the project.

4.3.1 Government

- **Initiate VCA and risk assessments:** The government needs to lead the VCA and risk assessments and ensure that these processes are participatory so that no section of the society is left behind.
- **Invest in disaster resilient urban planning:** Unlike in the past, land use planning and strict and complete enforcement of national building code and municipal transport management plan should be strictly implemented. Disaster risk reduction component should be incorporated in all infrastructural works and it should be ensured that critical infrastructures are resilient and function during emergency through enforcement of standards and regulated monitoring and repair/maintenance. For effectiveness, municipality must employ DRR experts and engage them in urban planning.
- **Emphasize institutional strengthening:** Formation of community, ward and municipal level disaster and climate risk management committees, response teams and task forces should be given topmost priority. It should also be ensured that there are human resources with expertise in DRR in municipalities for proper and satisfactory implementation of DRR activities.
- **Engage private sector in DRR:** Recognizing the potential of private sectors and respecting the Sendai Framework's concept, the government should regulate and provide incentives for engaging the private sector in DRR. Concrete measure for engaging the private sector should be included in the municipal policies as well as annual plans.

4.3.2 Community

- **Take ownership of DRR initiatives:** The community should take ownership of DRR activities taking place in their communities, whether they are project-driven or government-driven and ensure the continuity/sustainability of such DRR activities.
- **Ensure active role of community based groups and committees:** The community people must understand that in order to develop community's resilience against disasters, proper planning and implementation of risk reduction measures have to be carried out. Only by becoming active can committees and community based groups carry out activities such as planning and fund-raising for risk reduction measures.
- **Inter and Intra- community sharing of DRR learning:** Committees and community-based organizations must take initiatives for sharing their learning within the community and with other communities. Knowledge and information obtained by participating in various programs and trainings organized by I/NGOs and the government must not be allowed to stagnate within a single person, organization or community and shared on self-made platforms.

- **Lobbying and advocacy for DRR plans and programs mainstreaming:** Communities should make it their duty to raise their voice for different DRR program in the municipal plans based on the findings and analysis from VCA and risk assessments.

4.3.3 Project

- **Focus on strengthening local government:** Since the new government is still in the process of establishment with recruitment of new staff, the project can contribute by organizing DRR capacity development programs for government staffs and electoral representatives.
- **Community ownership/sustainability mechanisms:** Community ownership is the biggest challenge as the DRR activities currently being promoted are seen a project's responsibility. The project needs to work more on developing community ownership so that DRR activities initiated are continued after the project. Activities should be designed based on the behavioral change communication guideline and "Big Benefits" should be showcased for prioritization of DRR issues.
- **Multi-stakeholder participation:** For effectiveness of project activities, the project has scope of collaborating with private sector and other community based organization while implementing its activities. It would also make the project more visible and act as a model for the government and other projects to follow.
- **Focus on livelihood-centered DRR:** Since livelihood is identified as the main pillar for resilience, the project would do well to design livelihood-centered DRR promotional activities. It would also garner project goodwill and ensure community ownership of the project-initiated actions.

5. Findings and Analysis: School

5.1 Existing SBDRM initiatives

The existing SBDRM initiatives are broadly categorized into three headings based on the three pillars listed in the Comprehensive School Safety Framework.

5.1.1 Safe Learning Facilities

During field work, it was found that school committees were well informed about the importance of disaster-resilient design and construction for making every new school building safe. Some schools were planning while some were in the process of constructing new earthquake resilient school buildings (such as Sharada Secondary School, Bhumlu-8), toilets, playground and other physical facilities with child and disable friendly features. In some schools, such as Dedithumka higher secondary school, such features could already be seen in drinking water and toilet facilities. The buildings being constructed followed the National Building Code. In some schools, old buildings were found to be repaired to make it safer. In the project working schools, the school administration is being sensitized on non-structural risk reduction as well. During field consultation, it was revealed that the project was facilitating for the safety audit of school and guidebook for school safety self-assessment of schools was being prepared which would contribute to make schools safer.

Safe learning in schools

- ✓ New buildings with child and disable friendly features and following NBC
- ✓ Preparations for school safety self-assessment guidebook
- ✓ School safety audit
- ✓ Preparations for incorporation of DRR activities in School Improvement Plan (SIP)
- ✓ Prepositioning of SAR and first aid materials

Source: FGD and KII in project working schools, 2018, Kavre and Dhading

5.1.2 School Disaster Management

School Based Disaster Management Committees (SDMCs) have been formed and DRR activities are being incorporated in School Improvement Plan (SIP) in the project intervened schools. These schools have done risk mapping and identified the risk area. They have also prepared general evacuation plan. From time to time,

extra classes are run on disaster management. Teachers and students are trained on first aid and SAR and materials pertaining to these have been prepositioned thanks to the project's efforts.

"A student of Grade V had his hand broken in the school. He was given First Aid in the school and sent to the hospital. The doctor there appreciated the task (First Aid), which had been done properly." - KII 2018, Kavre

The project has engaged students and staff in real-life school and community disaster management activities, including school drills for fire and earthquake. One achievement of the project is that it has been able to sensitize schools for the formation of School Disaster Management Plan.

5.1.3 Risk Reduction and Resilience Education

Government of Nepal has incorporated a few lessons related to disaster in the course book of school. Disaster management related training and awareness campaign have been conducted. In the project intervened schools, DRR relation education has been impressively integrated into extra-curricular activities. For example, schools have organized DRR related essay competition, DRR games and talk program/debate, and encouraged students to contribute in wall magazine. DRR information boards were seen in project intervened schools during field work. Project activities have also aroused the interest of teachers and school management motivating them to ensure that DRR and resilience lessons are covered in school education. Teachers and the project team has been able to communicate key messages for safety and preparedness, understanding risk drivers and mitigating the consequences of disasters, building community risk reduction capacity and a culture of safety and resilience, and learning to live together.

5.2. Opportunities/Gaps in DRR initiatives

5.2.1 Learning Facilities

During field work, it was observed that some of the schools were in places not accessible for children with disability. Because children with disability are a rare minority in schools, access and safety for people with disabilities are not incorporated in design and construction of school's facilities. Inaccessible school features may also be the reasons for low number of admissions of PwD in schools. In certain schools damaged by the earthquake, vulnerable objects and rubbles are only just being cleared. Students reported road accidents to be their major risk/challenge among other hazards that have remain unaddressed by the school administration. School management (such as Himalayan Secondary School, Kavre), on the other hand, reported limited resources to address the need of school particularly to make disaster resilient physical infrastructures as their greatest challenge. Although new buildings meet standard, the majority of old school buildings don't. It raises the safety question, more so in schools that are not motivated to invest in physical structures as they operate in rented buildings. Moreover, there is no culture of school safety audit. Currently, there is not government approved guidance for non-structural and infrastructure safety measures for schools. There is no system for back-up of student educational records. Schools seemed to be struggling for making a prioritization schema for retrofit and replacement (e.g. including relocation of unsafe schools). Upon field observation, it was seen that a great deal still needs to be done to minimize non-structural risks as well as structural (in old buildings) of school. A government staff inferred that evacuation plan was still a challenge for most schools, more so in urban areas where open space is rare. Schools used as temporary community shelters do not have plans for suitable alternate facilities for educational continuity. During field observation, water and sanitation facilities were found to be poor in most schools. Slightly better managed toilets were locked for staff use only. There is also a scope for more rigorous monitoring, financing, and oversight for ongoing facilities maintenance and safety.

5.2.2 School Disaster Management

There is an opportunity to allocate separate funds in schools to disaster risk reduction activities during the field work. Schools are passively waiting for the project to concretize School Disaster Management Plan (SDMP). Proper integration of SDMP into SIP could be a goodwill trophy for the project. Timely incorporation of SDMP into SIP would give the project time to see what works and what does not. Otherwise, it would just be just another farewell gift that is untested. The participation of parents and guardians in DRR activities could be improved. Programs are hardly organized to discuss and plan the limited use of schools as temporary post-disaster shelters, while protecting educational continuity. A municipal authority pointed out that school management committee (SMC) need to be invested towards DRR, and encourage participation of staff, students, parents and community stakeholders in this work. The schools were also found inadequately engaged in making early warning system (EWS) meaningful and effective.

The school management also did not seem to have established communication and coordination linkages with disaster management sector to fortify their disaster risk reduction and response system. While the projects effort to organize drills is laudable, it is unlikely that the school drills will find continuity unless it is ingrained in the school policy for which SDMC needs to take initiative. School Disaster Management Committees (SDMCs) have the opportunity to practice, critically evaluate, and improve on response preparedness, with regular school-wide and community-linked simulation drills. There is also a need to adapt standard operating procedures to specific context of each school.

5.2.3 Risk Reduction and Resilience Education

While the school curriculum does have DRR, it would be better to incorporate it starting from the primary level corresponding to the comprehensive capability of students. During school FGD, it was opined that more practical lessons and hands-on training are more effective. The teachers also need to be properly trained for that. The general perception was that only the science teacher should be responsible for imparting DRR knowledge which put more pressure on one teacher. Factors such as teachers' motivation, their work status (temporary or permanent), and their work load, all affected the quality and frequency of DRR lessons the students received. There is a scope for developing strategies to scale-up teacher involvement for effective integration of DRR topics into formal curriculum as well as non-formal and extra-curricular approaches with local communities. It was also observed that in a few schools, DRR related IEC materials were kept locked up in trunks instead of at library where teachers and students can access them. Students also expressed that the currently available IEC materials were not captivating enough.

There is an opportunity to develop educational materials incorporated to meet differential needs of children of different ages, gender and disabilities. Teachers complained that there was dearth of quality teaching and learning materials for students and teachers. Materials that address all dimensions of climate-smart risk reduction education: disaster mechanisms, key messages for safety and preparedness, understanding risk drivers and mitigating the consequences of disasters, building community risk reduction capacity and a culture of safety and resilience would be excellent. Teachers also feel that more teachers training could be organized for both teachers and teacher trainees on risk reduction curriculum materials and methodologies. It was observed that not all teachers who received training from the project shared their learning with other teachers and were selected only because they were available for the training, or were more interested to go for other reasons. Also, teachers were randomly selected for the training without realizing whether they were the most appropriate ones for imparting DRR knowledge to SMC, SDMC and students.

5.3. Learning and Way Forward

Way forward based on the learning are broadly divided into three categories, i.e. for the government, for the community and for the project.

5.1 Government level

- **Ensure safe school facilities:** In order to ensure safe school policies, the government should establish guidelines to minimize non-structural and infrastructural risks. Incorporating safe facilities monitoring into Education Management Information Systems (EMIS) could be another way. The government could start a campaign for identifying and prioritizing unsafe schools for retrofit or replacement. School safety audit could be made compulsory. Guiding and funding school maintenance for disaster risk reduction could be effective. Another step would be to establish national and sub-national contingency plans, based on Interagency Network for Education in Emergencies (INEE) Minimum Standards (2010), to support educational continuity, including plans and criteria to limit the use of schools as temporary shelters. It should also be ensured that early warning systems for major and local hazards reach schools, and schools have the opportunity to participate in early warning systems.
- **Mainstream disaster in education:** Disaster risks should be considered in the Education Sector Development Plans and educational continuity planning should be considered in disaster management plans at all levels. Policy and legal framework for disaster risk reduction should exist with decentralized responsibilities and capacities in the education sector at all levels. Establishing Disaster Management Offices within national and sub-national education authorities, and identifying DRR focal points could be the right step forward. Disaster management and educational continuity plans should be developed at all levels of the education system. Nationwide multi-hazard risk assessment in schools in collaboration with disaster management authorities and mechanisms could help change the way DRR is viewed by schools. These risks should be incorporated into the EMIS, and monitored at each level. Schools should also be engaged in making early warning and early action systems meaningful and effective.
- **Promote DRR in teaching and learning:** DRR should be infused into the curriculum and school-wide activities, starting from the primary level, based on scope and sequence of skills and competencies in disaster risk reduction. The government should develop knowledge management tools to permit sharing, user ratings, re-use, adaptation and impact testing of educational materials. It should also invest in high quality teaching and learning materials for students and teachers. Prioritizing capacity development in teacher training institutes to teach future generations of teachers could be another step.

5.3.2 School level

- **Safe infrastructure:** Schools should consider risk reduction and resilience-building for site selection, design, construction, and maintenance of schools. Regular school safety audit should be done. SDMC and SMC should involve community for reducing disaster risks as well as planning continuity of education post-disaster. Also, there should be systems for back-up of student educational records. Systems should be in place to monitor, archive and disseminate changing data on school structural, infrastructural and environmental vulnerabilities.
- **Plans, policies and management:** School disaster and emergency management policies and plans should be formulated and implemented to reduce the vulnerability of children in and out of school. Dedicated and adequate resources should be made available to implement disaster risk reduction plans and activities. SDMP should be incorporated into SIP. SMC and SDMC should be empowered to lead identification of hazards and community and action-planning for ongoing disaster risk reduction and preparedness activities. Procedures should be in place to exchange relevant information about impacts on schools, during hazard events, disasters, and emergencies and to undertake post-event reviews.
- **Teaching and Learning:** School curricula should be holistically-infused to include disaster risk reduction, resilience and recovery concepts and practices. Students and staff should be engaged in real-life school and community disaster management activities, including school drills for fire (and other hazards, where applicable). Training drills and rehearsals should be held to test and develop disaster and emergency

response capacity and included in the academic calendar. Teachers and staff should be trained on risk reduction curriculum materials and methodologies.

5.3.3 Project level

- **Teachers and teacher trainers training:** The project could contribute by organizing training for teachers and teacher trainees on risk reduction curriculum materials and methodologies. Sharing of their learning within school should be mandatory for ensured knowledge transfer. Participants should be selected based on pre-formed criteria such as status of work (temporary or permanent teachers), interest for participation (knowledge sharing or other training benefits), suitability (teachers responsible for imparting DRR knowledge or of dominant political party) etc.
- **Production of appropriate IEC:** IEC should be designed based on scope and sequence of skills and competencies in disaster risk reduction or behavior change communication strategy. It should also be ensured that the IEC materials are made accessible to everybody by putting in libraries and not locked inside trunks.
- **Integration of hardware component:** Since most schools are struggling to develop safe infrastructure, the project could help build model structures in schools. Incorporating hardware component along with software would help to attract the beneficiaries' attention towards DRR issues, collect goodwill and also increase project visibility.

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7. Annex

Annex-I Guiding Questions

Government

1. What is the difference between disaster and hazard?
2. Which groups do you consider are most vulnerable to disasters?
3. What roles can the government play in improving disaster preparedness of the schools and communities?
4. What are the challenges in DRR of urban setting? How do they differ from the challenges in rural setting?
5. What DRR programs are being run in the municipality?
6. What is the tentative estimated budget allocation for DRR programs?
7. What is the trend of budget allocation for DRR programs?
8. Do you think the current budget allocation is enough? If not, what changes could be made?
9. How do you think the municipality can coordinate and collaborate with other actors for DRR?
10. Status of Disaster Management section in the municipality?
11. Status of Disaster Management Plan and hazard, vulnerability and capacity assessments?
12. Status of their implementation?
13. Status of Disaster Management Committees and task forces?
14. How active are they?
15. Are there people trained in search and rescue, primary first aid etc in the municipality?
16. Status of Disaster Relief Fund and Emergency Fund?
17. Status of Information Management related disaster – (data of vulnerable houses, stakeholders/actors mapping etc)
18. Pre-positioning of standardized emergency items?
19. Early warning system? If yes, what does the system incorporate?
20. How has the local authority maintained transparency of transaction of DRR related projects?
21. How has the BURDAN project added value to the DRR initiative? What could be done in a better way?

Community

1. What is the difference between disaster and hazard?
2. Which groups do you consider are most vulnerable to disasters?
3. If you are ever affected by disaster what supports can you receive from the government?
4. If you were to receive any information on disaster, disaster management what are the most appropriate means/mediums for you and your family to receive those information/messages?
5. If you want to gather some information on disaster management activities or other information on disaster where should you contact?
6. Do you know the exact budget allocated for DRR by the government for your communities?
7. Do you think community /beneficiaries should know about the project activities and budget?
8. If you are ever affected by disaster what supports can you receive from the government?

9. Are you familiar with the process of receiving support from the government?
10. Are you familiar with the term Task force? What are their roles and responsibilities?
11. Do you understand Early Warning System? Do you think it is essential in your community?
12. If you are evacuated to a safe location, what services should be made available to keep yourself safe and healthy?
13. How can communities reduce the risk of disaster (e.g. Construct safe location/community centers, Maintain the water supply/sewage system, Identify and disseminate information on evacuation routes, Establish a ware house to store food grains, Establish community seed bank to protect seeds from disaster, Stockpile search and rescue materials, Aware community about disaster risk reduction in community etc.)?
14. Is there a DRM plan for your community? If yes, what activities have been included in the DRM plan of your community?
15. Are there any community based institutions that works specifically in the field of disaster management/disaster risk reduction?
16. What activities are being done by disaster management committees in your community?
17. Were there any Hazard, Vulnerability and Capacity Assessment (HVCA) exercises in the community? If yes, did you/your family members participate while conducting HVCA?
18. Are the safe areas in community identified? Is there an evacuation plan for the community?
19. What materials have been managed by the community for rapid response after disaster?
20. Have you received any training on (i) first aid, (ii) search and rescue, (iii) Early warning or any other disaster risk management related training?
21. If yes, have you made any changes at the household level to prepare for disasters after the training (e.g. Identification of evacuation routes, Identification of safe areas near the houses Identify different variety of crop/animals that can withstand the impact of hazards, Storing necessary food and nonfood items for disaster, Educate family members/community to keep themselves safe during disaster)
22. Have you or your family member done anything to prepare for future disasters (e.g. go bags, evacuation and reunion plan)?
23. Have you allocated any emergency fund for your family?
24. Is there any resource centre for learning disaster risk reduction in community?
25. Do you/your family members visit to resource center to gain knowledge on disaster management? Why?
26. Are other information and communication materials (pamphlets, posters, hoarding boards) on disaster risk reduction/disaster management such as earthquake safety, sanitation and hygiene during emergencies available in the language that you understand?
27. Do you/your family have access to water during emergency? How far is the water resource from the location that you use for temporary shelter during disaster? Can it be accessed by people with disabilities and older persons?
28. What are the top three hazards in the community? What initiatives (by the government, community and the project) are in place to reduce their risks?
29. Do you receive message on potential disaster? If yes, who relays messages of disaster to community?

30. How has the BURDAN project added value to the DRR initiative? What could be done in a better way?
31. What disasters have you experienced?
32. What has your community been doing to ensure the continuation of daily activities post-disaster?

School

1. What do you consider a “Safe School”?
2. Who should be involved in school disaster preparedness activities?
3. Do you think your school is safe from disasters and everyday emergencies?
4. Do you know how to conduct Hazard, Vulnerability and Capacity Assessment (HVCA) in school?
5. Do you know how to conduct mock drill/simulation exercise in school?
6. Do you know about evacuation plan and safe place?
7. Who should be involved in school disaster preparedness activities?
8. What can be done to improve the resilience of school?
9. What are your roles to promote risk reduction and resilience education at school level?
10. What other disaster/emergency risk reduction/management institutions are involved in school activities? Mention the parties involved
1. What has been done by the school to keep its infrastructure safe?
2. Are there measures in place for structural and non-structural safety?
3. Are the school facilities accessible by disabled children and the elderly? How have these services been made accessible?
4. What are climate-friendly interventions that are being implemented in your school?
5. Are the school infrastructures and services regularly maintained?
6. Has the school established a school disaster management committee (SDMC)?
7. Does the school have School Improvement Plan?
8. Does the school have Disaster Management and Contingency Plans? And are they incorporated in the School Improvement Plan?
9. Are the students included in these plans?
10. Does school consider the need of students with special need in the planning or discussion on disaster preparedness?
11. Are the plans regularly reviewed and monitored?
12. Does the school cooperate with other external parties which deal with disaster?
13. Does your school allocate funding to support activities increasing school safety? If yes, how much? Do you think it is adequate?
14. Are the school students, teachers and staffs trained for disaster emergencies (first aid, search and rescue.)?
15. Are disaster related simulations and drills conducted (fire, earthquake...)?
16. How inclusive are these simulations and drills?
17. Does the school have an early warning system? What does it entail?

18. Are disaster related issues incorporated in the school curriculum? Since what class is the topics covered? What are the key contents covered?
19. Is DRR included as one of extracurricular activities at school?
20. Are there any resources in your library that gives you knowledge on disaster?
21. How has the BURDAN project added value to the DRR initiative? What could be done in a better way?
22. What disasters have you experienced?
23. What has your school been doing to ensure the continuation of daily activities post-disaster?

Annex- 2 List of institutions/ people interviewed

Kavre			
S.N	Name	Designation	Location
1	Bal Bikram Adhikari	Ward Chairman	Banepa MP ward #5
2	Uttam Bhattarai	Chairman	Himalayan Secondary School, Banepa
3	Dhruba Prasad	Principal	Himalayan Secondary School, Banepa
4	Kumari Shrestha	Teacher	Himalayan Secondary School, Banepa
5	Ambika Sapkota	Teacher	Himalayan Secondary School, Banepa
6	Krishna Pd. Manandhar	Teacher	Himalayan Secondary School, Banepa
7	Samjhana Shrestha	Teacher	Himalayan Secondary School, Banepa
8	Mary Shrestha	Teacher	Himalayan Secondary School, Banepa
9	Raj Kumar Timilsina	Vice Principal, Member of SMC, SMPT, Ward Member, Parents and child club member	Gorakhnath Basic School, Panauti-6
10	Kalyan Singh Dhama	Principal	Dedi Thumka Secondary School, Mandandepur-9
11	Jit Bahadur Tamang	Ward Chairman	Mandandepur MP-9
12	Ramesh Raj Kharel	Ward Chairman	S Bhumlu Rural Municipality - 7
13	Govinda Raj Kharel	Elected Ward Member	S Bhumlu Rural Municipality - 8
14	Sukman Tamang	Elected Ward Member	S Bhumlu Rural Municipality - 9
15	Shova Upreti	CDMC Member	S Bhumlu Rural Municipality - 10
16	Kanchha Ram Lama	CDMC Member	S Bhumlu Rural Municipality - 11
17	Guna Raj Upreti	Principal, LDO of Kavre	Sharada Higher Secondary School, Bhumlu
Dhading			
S.N	Name	Designation	Location
1	Bhimsen Adhikari	Vice Principal	Salyankot Secondary School, Tripurasundari RM-5
2	Hari Prasad Timilsina	Teacher	Salyankot Secondary School, Tripurasundari RM-6
3	Bhimsen Sadaula	Teacher	Salyankot Secondary School, Tripurasundari RM-7
4	Shashidhar Pathak	Principal	Rani Pauwa Secondary School. Tripura Sundar-1, Salyantaar
5	Bhim Bahadur	Vice Principal	Rani Pauwa Secondary School. Tripura Sundar-1,

	Silwal		Salyantaar
6	Hari Itani	Principal and SDMC Chairman	Chandeshwori Secondary School, Murali Vanjyang - 9
7	Hari Silwal	Principal	Siddeswor Scondary School, Nalang
8	Lekhamani Khatiwada	Vice - Principal and teachers team	Jaleswori Secondary School, Salang, Siddhalek - 4
9	Jagannath Lamichhane	Executive Officer	Neelkantha MP, Dhading
10	Kamal Bahadur Gurung	Ward Chairman	Nalang RM Ward # 2
11	Anjana Sharma	Organization representative	Oxfam

Annex-3 Photographs



Ward Chairman, Mandandepur MP, Kavre



Dedithumka Sec. School



Ward Chairman Banepa MP -5



Dasharatha Basic School, Panauti



Ranipauwa Sec. School, Salyantar



Jaleswori HSS, Nalang