

SCENARIO-BASED GENDER RESPONSIVE COSTING FRAMEWORK

For Earthquake and Urban Flooding in Nepal

SUPER PROJECT

Development of GESI Responsive Scenario Narratives and Costing of
Interventions for Guiding Disaster Management and Resilience Planning
Actions

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SCENARIO-BASED GENDER RESPONSIVE COSTING FRAMEWORK

For Earthquake and Urban Flooding in Nepal

**Strengthening Urban Preparedness, Earthquake Preparedness
and Response (SUPER) Project in Western Region of Nepal**

**Submitted to
UN Women,
Nepal Country Office**

The Strengthening Urban Preparedness, Earthquake Preparedness and Response in Western Regions of Nepal (SUPER), under the European Union Humanitarian Aid's generous financial support, is being implemented by UNDP, UNICEF and UN Women. The project seeks to enhance municipal and provincial preparedness for impending urban and earthquake risks for effective disaster response in select places in the western regions of Nepal. It works with various local implementing partners at the provincial level in Lumbini Province, Karnali Province and Sudurpaschim Province; and at the municipal level in Nepalgunj Sub Metropolitan City, Dhangadhi Sub Metropolitan City, Amargadhi Municipality and Jay Prithvi Municipality.

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Abbreviations

CADRE	:	Community Action for Disaster Response
CDMC	:	Community Disaster Management Committees
CEDAW	:	Convention on the Elimination of All Forms of Discrimination against Women
CPRP	:	C19 Nepal: Preparedness and Response Plan
CVA	:	Cash and Voucher Assistance
DDMC	:	District Disaster Management Committee
DMC	:	Disaster Management Committee
DRF	:	Disaster Risk Framework
DRM	:	Disaster Risk Management
DRR	:	Disaster Risk Reduction
DRRM	:	Disaster Risk Reduction and Management
ECD	:	Early Childhood Development
EWS	:	Early Warning System
GBV	:	Gender Based Violence
GDP	:	Gross Domestic product
GESI	:	Gender Empowerment and Social Inclusion
GoN	:	Government of Nepal
GRB	:	Gender Responsive b=Budgeting
HDI	:	Human Development Index
ICGTF	:	Inter Cluster Gender Task Force
IDP	:	Internally Displaced Persons
IEC	:	Information, Education and Communication
IFIs	:	International Financial Institutions
ILO	:	International Labour Organization
INGOs	:	International Non-Governmental Organizations
IRA	:	Initial Rapid Assessment
LGBTIQ	:	Lesbian, gay, bisexual, transgender/transsexual, intersex and questioning
MIRA	:	Multi-Cluster Initial Rapid Assessment
MoUD	:	Ministry of Urban Development
NDRI	:	Nepal Development Research Institute
NDRRMA	:	National Disaster Risk Reduction and Management Authority
NGOs	:	Non-Governmental Organizations
NFI	:	Non-Food Items
NHDR	:	National Human Development Report
NPR	:	Nepalese Rupees
NRA	:	National Reconstruction Authority
NRCS	:	Nepal Red Cross Society
NSC	:	National Seismological Centre
NWP	:	National Water Plan
OCMC	:	One-stop Crisis Management Centre
ODR	:	Owner Driven Reconstruction
PDNA	:	Post Disaster Needs Assessment
PDRF	:	Provincial Disaster Risk Framework
PSA	:	Public Service Announcements
PWD	:	People living with disabilities
RNA	:	Rapid Need Assessments
RRT	:	Rapid Response Team
SAM	:	Severe Acute Malnourishment
SGBV	:	Sexual and Gender Based Violence
SUPER	:	Strengthening Urban Preparedness, Earthquake Preparedness and Response
TLC	:	Temporary Learning Centres
UN Women	:	United Nations Entity for Gender Equality and the Empowerment of Women
UNDP	:	United Nations Development Programme
UNICEF	:	United Nations Fund for Children
WASH	:	Water, Sanitation and Hygiene

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1. Overview

1.1 Introduction

Nepal is a landlocked country with diverse geographic and climatic features that expose it to a number of natural hazards. The country ranks as 20th most multi-hazard-prone country, 11th in the case of earthquake hazard, and 30th in terms of flood hazards ([UNDP/BCPR, 2004](#)). Nepal is recognized as vulnerable to climate change impacts, ranked 128th out of 181 countries in the 2020 ND-GAIN Index ([University of Notre Dame, 2020](#)).

These natural disasters can lead to greater human calamity when the affected population is vulnerable, not having enough social capital, resources, infrastructure or resilience capacities to manage the disaster risks. Women; senior citizens; lesbian, gay, bisexual, transgender/transsexual, intersex and questioning (LGBTIQ+) communities; persons with disabilities (PWD); children; Dalits and other ethnic and caste-based minorities are often disproportionately affected. ([PDNA Sector Report, Nepal, 2015](#)).

Existing social constructs and widespread inequalities, exclusion and discrimination against these social groups, makes them more vulnerable to disasters. Their status in Nepali society further determines their capacity to cope and respond effectively to the disaster as well as participation and benefits from the post-disaster relief and recovery interventions and their general resilience. People in general, but more specifically, from these vulnerable communities need to be prepared for a swift, comprehensive, and more inclusive disaster response to avoid loss of human life and property.

As the Government of Nepal (GoN) aims to enhance disaster preparedness and strengthen response capacities, especially at provincial and municipal levels, it is important to take cognizance of the role of socio-economic status in amplifying the exposure and vulnerability of women and excluded population groups to disasters. A key focus area towards this would be creation of mechanisms to meet Gender Empowerment and Social Inclusion (GESI) provisions, as reflected in the Constitution of Nepal, CEDAW, and Leaving No One Behind in Agenda 2030 within in Disaster Risk Management (DRM) legal, policy and planning frameworks.

This guidance note on **“Scenario-based, gender-responsive costing framework for DRM”** has been specifically developed to be used for evidence-based advocacy across the provincial and municipal governments in Nepal. The note focuses on the development of injects- initial scenario-based costing for gender responsive services/ interventions for earthquake preparedness and urban risk resilience.

With funding from ECHO-HIP, under the Strengthening Urban Preparedness, Earthquake Preparedness and Response in Western Regions of Nepal (SUPER Project), implemented by a consortium of UNDP, UNICEF and UN Women, the Scenario costing development was led by UN Women, Nepal. The process involved conducting case studies in the field, desk review, and consultation with project partners including at the project location. This study also examined best practices, local adaptations, and tools based on review of the literature as well as surveys and interviews with relevant stakeholders and organizations in the project area.

1.2 Scenario Development

A scenario-based projection is a hypothetical construct of what could possibly happen conditional upon fundamental assumptions. These assumptions allow some of the uncertainties that complicate more exact statements on the future to be set aside for the benefit of a scenario exercise. Scenario development means speculating about the uncertainty surrounding the future and envisaging different plausible future outcomes, or, in other words, to create ‘memories of the future’ ([Cambridge Centre for Risk Studies, 2020](#)).

Scenarios are used to better understand the various dimensions of a risk, including the hazard, exposures, and vulnerabilities of the concerned systems, and explore the range of plausible resulting

consequences. They provide a platform to identify potential (dis)inclinations or partialities that individuals and organisations have towards certain situations and decisions. Scenario analysis can be understood as the integration of scenarios into decision making. Taking a broad set of scenarios mitigates well known behavioural effects like confirmation and availability biases (*ibid*).

In the context of risk, scenarios provide a tool to cope with uncertainty, especially in the case of risks that are not well understood or cannot be quantified or even identified. They provide a systematic method for exploring how a complex and diverse array of risks may impact a society; or in other words, how resilient these systems are to potential disruptions.

Simply put, scenarios help identify biases; and ask questions like ‘what if?’, and ‘what for?’. It can be helpful to consider scenarios as stories which have a beginning, middle, and end, and the narrative guides the reader through the events and their implications. Scenario analysis then becomes a story about how the future might develop, aimed to stimulate exploration, understanding, and discussion.

Scenario development can be approached in different ways:

- ⇒ **Exploratory efforts (ask, what if)** aim towards widening the scope of options considered by users and stimulating imagination and creative thinking about the future.
- ⇒ A **normative approach (ask, what for)** can be more easily combined with a back casting approach (as opposed to forecasting), defining scenario pathways only after first describing the end-points and reasons back from these end-points, and exploring short term decisions to make these changes happen.
- ⇒ A **process-oriented scenario (ask, for whom)** includes the user in development, so that they may learn from the experience and feedback to enhance scenario efficacy.

1.3 Objectives and Scope

Scenarios have the potential to enhance understanding and provide new perspectives to uncertainty about possible future disasters. This understanding can then be applied to support and rationalise decision making about the future, and inform preparedness for, management, and mitigation of risks. This guidance note builds on available exploratory/stimulatory information in the context of earthquakes and flooding in Nepal, while applying a combination of normative approach and a process-oriented scenario to inject a GESI perspective into the existing disaster response and resilience management actions. The note also includes an added dimension of costing of stand-alone GESI actions to provide a handy reference for governments and development agencies to plan GESI responsive resilience projects. In this aspect, it is a first of its kind study attempted in the region.

The primary objective is to enhance understanding of GESI characteristics of DRM among practitioners, decision makers, and other stakeholders in the DRM community. Towards this, it aims to serve as an accessible guide for easy communication of GESI concerns and potential intervention that can help in better preparedness and management of disaster risks.

The key objectives include:

- ⇒ Improve understanding the disaster risk for women and LGBTIQ+ persons, using an intersectionality lens to include class, caste, ethnicity, (dis)ability and age dimensions.
- ⇒ Provide deeper insight into the underlying drivers of vulnerability, to demonstrate how current systems do not have the ability to address these.
- ⇒ Offer a creative and structured mechanism to test and validate decisions in a scenario planning process.
- ⇒ Facilitate ease of communication and sharing of GESI ideas, risks, and responses between all stakeholders involved in discussions concerning DRM.
- ⇒ Assist in identifying what and where budgetary resources can most effectively be allocated.

By using scenario narratives, we aim to describe disaster events through a GESI lens, questioning the scope of current measures to address these concerns, and support creative thinking on actions

for responsive planning and management of future disasters. The scenario analysis, aims to further engage the reader in a planning and budgeting mode by delineation and costing of GESI solutions. The core purpose here to establish connection between financial decisions and human rights consideration, so that organisations or communities are motivated to invest in gender responsive disaster interventions.

The scope of the guidance note covers two types of disasters- earthquake and urban flooding, covering preparedness, response, and rehabilitation scenarios. Given the nature of the exercise, the focus of the scenario building needed to be yond numbers to understand social implications for smaller groups/individuals. Hence the note relies on development of non-mathematical scenario narratives. Keeping in mind the objectives of the SUPER project, which will be the primary user of the note, the following four scenarios were developed:

a) Earthquake preparedness, rescue and relief: Understanding of the potential risk of earthquake and its manifestation on women and other social groups; ex-ante actioning of knowledge and capabilities to minimize losses; gender sensitization, resource and logistical planning to increase responders' capacities; equitable evacuation, search and rescue operation management; systematic damage and needs assessment; provision of aid to meet basic subsistence and health demands, to cover all affected irrespective of their social status.

b) Earthquake rehabilitation: Extended humanitarian aid for the most needy; dissemination and communication of aid information; inclusion of voices of communities especially marginalised in recovery planning; costing of services to avoid burden of unpaid work; extensive coverage of house reconstruction and livelihood restoration; focus on women headed households.

c) Urban flooding resilience: Understanding of the potential risk of flooding and its manifestation on women and other social groups; building knowledge and capacities on monsoon planning; incorporation of resilience and GESI lens in urban planning; systematic inclusion of voices of communities especially marginalised in planning and urban development.

d) Urban flood response: Mapping of vulnerable locations and communities; gender sensitization, resource and logistical planning to increase responders' capacities; widespread early warning systems and evacuation planning; systematic damage and needs assessment; provision of aid to meet basic subsistence and health demands, to cover all affected irrespective of their social status.

1.4 Methodology

The brief uses the scenario development framework for Disaster Risk Reduction (DRR) developed by Cambridge

Centre for Risk Studies in 2020 (figure 1). The analysis covers step 1 to 6, while it is expected that steps 7 and 8 will be undertaken as subsequent actions later on to enable gender responsive DRM.



Figure 1: Adapted Scenario Development Framework for DRR

The key steps followed in the exercise included:

- ⇒ Scoping of priority risks and defining the issues or vulnerabilities that the scenario exercise aims to expose.
- ⇒ Background research on the risk and impact on vulnerable group by consulting with relevant sources of (scientific) knowledge, policy makers, project implementers (including government and non-government), affected communities and other associated stakeholders.
- ⇒ Developing a scenario reference from existing information sources- table top earthquake risk exercise developed by SUPER project; NRCS assessment of Doti Earthquake 2022; News reports of Dhangadhi floods 2022; etc.
- ⇒ Identification of the most vulnerable groups¹ as defined by Common Framework for Gender and Social Inclusion (GESI) in Nepal.
- ⇒ Framing of human-interest stories (response and preparedness) from vulnerable groups based on real-life cases in previous disasters.
- ⇒ Secondary literature review of projects implemented for earthquake preparedness, relief and response and urban flood management post 2015 to map the range of gender responsive actions which have been implemented.
- ⇒ Mapping of interventions for each of the scenarios which are gender responsive and/or focused on specific vulnerable groups
- ⇒ Costing of activities (strategies and solutions) identified above through review of existing programme and budget documents of governments, INGOs, NGOs and IFIs, to identify unit costs for the activities using expenditure approach².

A combination of exploratory and normative approach has been used for scenario development. While the core scenario is used in story telling mode to explore “what if” enabling the user to visualise the difference between neutral and responsive scenarios; the backend reasons which have enabled these have also been analysed to provide the users with an opportunity to identify intervention actions for GESI disaster management. The SUPER project is expected to use the scenario narratives in capacity building programmes and advocacy action, which will strengthen the process orientation.

1.5 Limitation

Scenario development exercises are based on a coherent set of assumptions about key deterministic relationships and driving forces. While efforts have been made to derive the assumptions based on substantial research, given the limited scope of the exercise, a few are based on anecdotal evidence from field experience of the authors.

Promoting analytical thinking on GESI rather than accurate prediction of outcomes has been the key driving feature in the scenario development process. The brief is primarily written with a view of incorporate GESI features within plausible scenarios, so the original scenarios may not be as statistically accurate as is often expected in scenario writing for DRR often used in the insurance sector.

Data limitations for the costing was another key challenge. While quantitative data is challenging to predict in the absence of socio-economic survey data, indications for defining the quantity has been proposed to guide the financial allocations. No micro-costing of activities was undertaken due to lack of time. The expenditure approach to costing was also limited in terms of availability of actual unit costs in public domain. Many of the unit costs had to be estimated based on the various project documents.

¹ Dalits, Janajati, other marginalized groups, sexual and gender minorities, person with disabilities, person without citizenship, people living in remote areas, disaster affected population, elderly, single women, child headed households and HIV/AIDs affected persons.

² The unit costs were derived based on the total expenditure proposed to be incurred for activities of similar nature in various projects, preferably in Nepal, divided by the number of units planned to be covered. Expenditure approach is a top-down accounting exercise using existing allocations.

2. Disaster Management Framework in Nepal

Nepal's current disaster governance is guided by its Constitution (2072) (2015 AD). The Constitution stipulates disaster risk reduction and management as a sole authority/exclusive jurisdiction of local government, and also as a shared authority amongst federal, provincial and local governments.

2.1 National Strategy for Disaster Risk Management in Nepal (NSDRM)

The National Strategy for Disaster Risk Management in Nepal (NSDRM) was prepared in 2009 to fulfil the commitments made by Nepal in international conventions on disaster risk management. The national early warning strategic action plan (2013) has been developed by the Government of Nepal as a complementary document to the NSDRM. The need for an early warning system was mentioned in National Water Resources Strategy (2002) and the National Water Plan (2005) documents as well. The Priority Action 1 of NSDRM focuses on legal, institutional and policy aspects. Almost all districts have now developed District Disaster Risk Management Plans (2010). Similarly, Local Disaster Risk Management Planning Guidelines (2011) were also formulated. Emergency operation centers were also established both at national and district levels. The Priority Action 2 focuses on hazard mapping and monitoring, and development of early warning systems (EWS).

2.2 Disaster Risk Reduction and Management (DRRM)

A key outcome of the NSDRM was the Disaster Risk Reduction and Management (DRRM) Act 2074 (2017 AD). The DRRM Act 2074 sets out structures, roles and responsibilities at federal, provincial, district, and local levels. At federal level, there is provision for a DRRM National Council, Executive Committee, and [National Disaster Risk Reduction and Management Authority \(NDRRMA\)](#).

The DRRM Regulations 2076 further elaborate the functions of different government decision-making mechanisms in line with provisions of the DRRM Act 2074. The higher-level mechanisms NDRRMA will mainly deal with formulating policy and programs of DRM, while the local levels will deal with the implementation aspects. For example, installing warning system is the responsibility of the local level. In the new Act, there is a provision of Disaster Management Fund at the federal, the provincial, the district and the local levels. The Act has given the security forces the responsibility of search and rescue under civilian command.

The first amendment of the DRRM Act 2074 in 2075 (2019 AD) also includes a provision for a Province Disaster Management Council (Chapter 6, Clause 13Ka) and further specifies the structure and functions of Provincial Disaster Management Executive Committees. The Act also stipulates a structure (a Disaster Management Committee) and DRRM functions for each local government. Local governments are also guided by the Local Government Operationalization (LGO) Act 2074 (2017 AD), which established disaster management structures and functions for each local government and their ward units ([Oxford Policy Management, 2020](#)). The Act provides mandates and functions to local municipal governments to manage disasters, including preparedness, search and rescue, relief and rehabilitation.

The Government of Nepal (GoN) has also endorsed a National DRRM Policy 2075 and Disaster Risk Reduction National Strategic Action Plan 2018-2030, which provides a comprehensive planning framework for disaster risk reduction and management in Nepal, encompassing different priority areas and guiding government actors and stakeholders to achieve targets by adopting appropriate processes. It includes both preparedness, rescue and relief actions as well as rehabilitation measures. Some provincial governments and municipalities like Dhangadhi, Amargadhi and Jayaprithvi have also endorsed Municipal DRRM Act, Disaster Management Fund Operational Procedure, and Emergency Preparedness and Rescue Action Plans. While these have included some gender mainstreaming and social inclusion elements, there is the need for strengthening the same.

2.3 National Water Plan (NWP)

The Water and Energy Commission Secretariat started formulating the National Water Plan (NWP) in 2002, which was approved by the Government of Nepal in 2005. The NWP was prepared to operationalize the National Water Resources Strategy. NWP identified seven programs which are related to Water Induced Disaster including Water-related Disaster Management Policy and Program, Risk/Vulnerability Mapping and Zoning Program, and Disaster Networking and Information System Improvement Program. The Water Induced Disaster Management Policy, 2016 emphasizes the need to align with the integrated river basin development and conservation and to formulate a master plan for water induced disaster management at a national level while giving due recognition to the needs of local level and with full involvement of local governments. The National Water Resources Policy (Draft Version), 2018 has set one of its goals as to mitigate the damaging impact of flood, landslides and drought. To address the flood risk, it has emphasized flood forecasting and early warning system as one of the key strategies. The policy has clearly stated the need for regular drilling and training of the local community in these aspects to enhance their capability to deal with flooding at the local level. It also aims to improve women's involvement in order to have gender equality in water resources management issues at all levels. Further, it also stressed the role and responsibility of each institution involved in flood risk mitigation is clear. The National Land Policy (2019) enacted in the Land Use Act (2019) also acknowledges the significance of increasing flood risk.

2.4 National Urban Development Strategy

The National Urban Development Strategy (2017) is intended to provide strategic direction to urban development and the role to be played by the Ministry of Urban Development. It commits to urban safety and resilience including: a) the promotion of multi-hazard approach including the preparation of risk sensitive resource mapping identifying high risk areas in all urban areas and developing rapid hazard appraisal techniques, b) allowing settlement development in safer locations only and excluding risk prone and environmentally sensitive areas, and c) strengthening building codes, regulations, guidelines and planning by-laws.

Aiming to balance urban development, develop disaster-resilient cities and enhance urban resilience, the government has also formulated the urban development strategy and declared new programs for the development of emerging urban centers and "smart" cities in the valley. However, such centrally-planned infrastructure development activities lack coordination and contradict the formal policy intentions, and are facing resistances in some places, rendering their implementation uncertain. The majority of the urban population lacks resiliency and the government lacks institutional and financial capacities and coordination crucial for undertaking inclusive, equitable, and resilient urban development. The current constitutional provision that restrains the government from imposing any kind of restriction on the use of private property has come up as an additional impediment to urban governance in Nepal and thus making urban areas increasingly disaster-prone and the urban population, primarily the urban poor, vulnerable to multiple hazards.

2.5 Gender Responsive Budgeting

The GoN has also demonstrated a strong commitment to advancing GESI principles in public policies and budgets. In this pursuit, GoN has made substantial efforts to develop and promote gender-responsive budgeting (GRB) at the national level. There is a mandate for scrutinising and gender-marking of all budget allocations and public expenditures and to assess the impact of development policies on women and men. The implementation of GRB in the DRR sector, however is limited. For example, while the NDRRMA does report an indirect impact on women; the National Reconstruction Authority (NRA), formed after the 2015 earthquake to lead the reconstruction programme does not report any expenditure and is classified as gender neutral. This study aims to establish a link between the government policy commitments on GESI responsive DRRM to be translated to budgetary implications.

3. Earthquake Risk in Nepal

3.1 Background

Earthquake planning scenarios provide public officials, policymakers, businesses, and community with a realistic assessment of a plausible earthquake impacts. Generally, these scenarios develop a model earthquake, which illustrates potential geologic hazards for a region and possible consequences in terms of building and infrastructure damages, social disruptions, and economic damages and losses. Our purpose of earthquake scenario development differs in this aspect as it does not focus on the extent of damage but on understanding the complexity of the damage for persons belonging to communities marginalised due to their gender and/or social status. It highlights the social and human dimensions of the earthquake impacts to raise awareness on the need for GESI in earthquake preparedness, rescue, relief, and rehabilitation.

3.1.1 Socio-economic Overview

Nepal is a landlocked country of South Asia, located in the Himalayas between India and China. The terrain is generally mountainous and contains many of the world's highest peaks, including the Mount Everest. The country also has low-lying areas in the south with elevations less than 100 meters.

About 33.8% of the country's 29 million inhabitants ([Census 2021](#)) lives in rural municipalities. Small-scale, subsistence agriculture is a mainstay of Nepal's economy, employing 69% of the country's workforce in 2015 ([World Bank, 2020](#)). Nepal currently has a high dependency on Services-61.1% of Gross Domestic Product (GDP); followed by agriculture-25.8% of GDP; and very low share of manufacturing-13.1% of GDP ([NRB, 2021](#)). The Gross National Income (GNI) per capita, has increased from USD 745 in 2018 to USD 911 in 2020 and USD 1198 in 2022, but it is still low, placing Nepal in the Least Development Country category ([NHDR, 2020](#)). With a score of 0.602, Nepal also ranked a 143th on the Human Development Index (HDI) in 2021 ([UNDP, 2022](#)).

The country's growth story has been broad-based with multidimensional poverty having declined from 30.1% in 2014 to 17.4% in 2019. However, gender disparities remain high. Despite the significant steps undertaken in the last few decades, Nepal has a low female Labour Force Participation Rate of only 26.3%. Nepalese women are also largely employed in informal sector (90.5%) often working as Home-Based Workers (34.4%) ([UN Women, 2021](#)). Women also earn around 30% less than men in average, with the average monthly earnings of an employed women being NPR 13,630 as against NPR 19,464 for men ([ibid](#)). Furthermore, the gender pay gaps are wider in urban areas than in rural areas: urban women earned 42% less than men, compared to 28% less than men in rural areas ([UN Women, 2015](#)). The estimated GNI per capita of females in Nepal is just half of what males earn, which is low compared to all South Asian countries except Afghanistan and Pakistan ([NHDR, 2020](#)).

Added to this, is the limitation in terms of access to resources with only 19.7 % women having land ownership and house ownership ([PDNA Sector Report Vol B, Nepal, 2015](#)). This is in spite of the fact that around 26% of the households in Nepal, in 2015, were female headed ([ibid](#)). Women also have limited financial inclusion and access to information in Nepal ([CRT, 2015](#)). As in other parts of South Asia, Nepalese women and girls also bear the disproportionate share of unpaid care and domestic work, with women reporting doing nearly 6 times more such work than men ([ILO, 2020](#)).

3.1.2 Earthquake Susceptibility

The Himalayan Mountains are an area of intense seismic activity that results from the tectonic collision of the Indian and Eurasian plates. Nepal sits on the boundary of these giant tectonic plates making it highly susceptible to earthquakes. The country, on a regular interval, witnesses earthquakes along the major active faults in east-west alignment.

In 2005, seismic experts had estimated that at least four magnitude 8.6 events would need to occur in the Himalayas to release the tectonic strain accumulated by the plate collision over recent centuries. Even the major 2015 earthquake and accompanying aftershocks have not released all of

the accumulated energy in the plate boundary and the region may, therefore, experience further large magnitude earthquakes in the coming years or decades ([World Bank, 2015](#)).

3.1.3 Historical trends

The first documented earthquake in Nepal happened on 7 June 1255, with a magnitude of 7.8 on the Richter scale and that wiped out a third of Kathmandu's then population (6,600). Other major earthquakes were recorded in 1897, 1905, 1934, 1950, 1980, 1988 and 2011. During the 1934 Nepal-Bihar earthquake (of magnitude 8.4), which had an epicentre 175 km from Kathmandu, almost all buildings collapsed in Kathmandu, Bhaktapur and Patan and casualties were estimated to be as high as 12,000. Most of the infrastructure and major heritage sites had to be rebuilt.

On Saturday, 25 April 2015 at 11:56 local time, a 7.6 magnitude earthquake as recorded by Nepal's National Seismological Centre (NSC), struck Barpak in the historic district of Gorkha, about 76 km northwest of Kathmandu. The catastrophic earthquake was followed by more than 300 aftershocks greater than magnitude 4.0 (as of 7 June 2015). Four aftershocks were greater than magnitude 6.0, including one of magnitude 7.3, which struck 17 days after the first big one on May 12, 2015.

Thirty-one of the country's then 75 districts (now the number of districts is 77) have been affected, out of which 14 were declared 'crisis-hit'. A Post Disaster Needs Assessment ([PDNA Key Findings Vol A, 2015](#)) led by the National Planning Commission (GoN) completed on June 15, reported around 8790 deaths and 22,300 people injured – numbers that would have been substantially higher had the earthquake occurred in the night time. More than 500,000 homes were destroyed and more than 250,000 were damaged in the 14 worst-hit districts ([ibid](#)). The earthquake also triggered extensive landslides and avalanches causing further damage and disruption in essential services. It is estimated that the lives of eight million people, almost one-third of the population of Nepal, have been impacted by these earthquakes. The PDNA also found that total damages and losses resulting from the earthquake sequence amounted to about US\$7 billion, and reconstruction needs amounted to about US\$6.7 billion ([ibid](#)).

3.1.4 Exposure

Historical data and ongoing seismological studies indicate that the entire region of Nepal is prone to earthquake and it lies in the active seismic zone V. The seismic pattern can be geographically divided into three clusters of events; viz: western, central and eastern Nepal, with the Siwalik, lesser Himalaya and frontal part of the Higher Himalaya being the most vulnerable zones.

An integrated risk assessment study by Bhochhibhoya and Maharjan ([2022](#)) shows that Kathmandu Valley and the eastern Terai region have a high exposure both on the basis of seismic risk assessment and integrated risk results (figure 2).

Integrated Seismic Risk Assessment

Earthquake risk assessment is the combination of the exposure model, structural vulnerability and seismic hazard analysis. Generally, the exposure model represents assets like buildings and population, with the fundamental exposure data including building typologies and district-wide distribution of buildings. The structural vulnerability function resembles expected loss at a given ground motion intensity level which can be derived using empirical methods from past events. Based on these a seismic risk/ hazard analysis study is undertaken.

The Bhochhibhoya and Maharjan ([2022](#)) study assesses seismic risk by combining it with the human dimensions within the hazard zone. This approach is an integrated seismic risk assessment. As part of this approach, they have quantified the social and economic parameters in terms of social vulnerability indices and then integrated those indices with the results of classical probabilistic risk analysis. The social vulnerability index was calculated using data on over 45 variables from 2011 Census in Nepal.

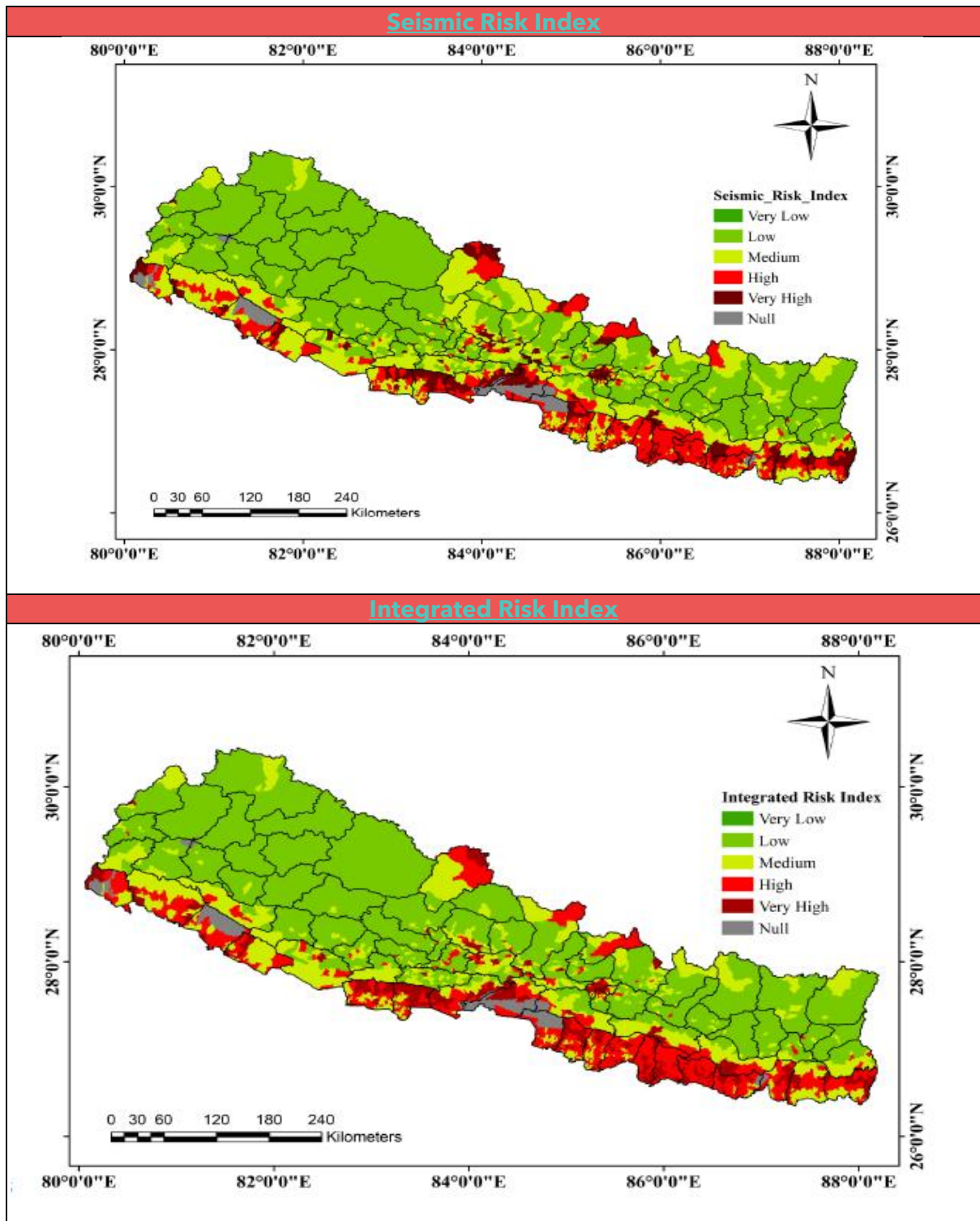


Figure 2: Nepal Seismic and Integrated Risk Index Maps³

The seismic risk assessment shows that the Terai region, especially the eastern and central Terai regions, lies in a higher seismic risk category. Kathmandu Valley also lies in a very high-risk category. The western part of Nepal lies in the lower AAL value region ([ibid](#)). The integrated risk is also higher in the Terai region in cities like Janakpur and Biratnagar. Kathmandu region also has high integrated risk index, although it has low social vulnerability. The far-western hills and the mountain region were

³ The boundaries and names shown and the designations used in these maps do not imply official endorsement or acceptance by the United Nations

determined to be the low-vulnerability region as per integrated risk maps even though they have a high social vulnerability ([ibid](#)). The study, however, points that these (far-western hills and the mountain) regions, should still be depicted as a major concern, as although they might have a smaller number of houses, but the houses are more often of low quality, which could suffer damage from even low-magnitude earthquakes. These regions are also considered to be less developed areas of Nepal in terms of infrastructure and development activities ([ibid](#)).

3.2 Vulnerability

Disasters do not discriminate, they hit the young, the old and the rich and the poor alike. However, their impacts are felt differently by different socio-economic groups. Poverty, inequalities, exclusion and discrimination shape the vulnerabilities of people to disasters. They also have a direct bearing on how survivors respond to the disaster and the extent of their resilience to such events in the future. Women, LGBTIQ+ communities, senior citizens, PWD, children, Dalits and other ethnic and caste-based minorities are the most disproportionately affected by earthquakes.

The combined impact of a disaster across social and economic sectors puts a huge strain on the ability of poor households to provide food and generate income from their livelihoods. This, combined with the loss of family support and desperation for alternate livelihoods, could promote negative coping strategies and exacerbate existing inequalities among poor households thereby increasing the risk of sexual and gender-based violence, human trafficking, child labour, and early marriage for girls and boys.

The Post Disaster Needs Assessment Report of the 2015 Earthquake (PDNA, 2015) showed that among the different marginalized groups, female headed households had sustained the largest damage and loss of approximately NPR 85.28 billion in the 14 most affected districts. The Adivasi Janajati households had suffered damage a loss of NPR 80.56 billion rupees, followed by senior citizens at NPR 75.01 billion, and the Dalits at NPR 53.16 billion rupees. Within female headed households, households headed by widows, divorced women, separated women and single (unmarried) women are at a greater risk of living in poverty.

People from marginalised communities have limited opportunities, ownership and access to economic resources to support their recovery. Competition for resources could further increase discrimination against them. Limited influence in public and community decision-making processes also means that they have limited ability to influence how the recovery and reconstruction resources are distributed and shared.

Reports like the Post-Disaster Needs Assessment ([PDNA Vol A](#) and [PDNA Vol B](#), 2015) and the study on the Impact of Nepal's Earthquake on Women's Livelihood, Housing, Land and Property Rights and Citizenship Rights undertaken by Nepal Development Research Institute ([NDRI, 2016](#)), have brought to light the specific vulnerabilities of women and other marginalised social groups to earthquakes.

The Inter Agency Common Feedback Project: Community Perception Report - Reconstruction, Food Security & Livelihood and Protection ([UNRC/HC, Nepal, 2018](#)) also highlighted the information gaps in the reconstruction and recovery processes. We have summarised these here as a reference base for gathering evidence which informed the development of the earthquake scenarios.

3.2.1 Deaths and injuries

8,792 people dead	55% Women	45% men
Source: PDNA Vol A, 2015		

More women and girls than men died in the earthquake. The higher mortality levels for women and girls has been attributed to a number of factors including higher likelihood of being inside the house,

delayed escape for rescuing their children, older family members and valuables and male migration from rural areas, Similarly, it is likely that more men and boys were injured than women and girls, because they were able to escape death.

3.2.2 Loss of Housing

498,852 houses were damaged	26% female-headed households	41% Dalits and Indigenous communities	23% senior citizens
Source: PDNA Vol A, 2015			

Around 79% of the homes of female headed households were damaged compared to 70% homes of male headed households, as they were generally of more poor quality ([NDRI, 2016](#)). The loss of homes not only made the women vulnerable to violence while living in shelter, but also constrained their ability to engage in home-based economies and income generation.

Further with limited ownership of land and housing- women, Dalits and other caste-based and ethnic minorities are also at the risk of being excluded from housing reconstruction programmes that are based on the Owner Driven Reconstruction (ODR) approach. Many of the female headed households, elderly, PWDs are also likely to have longer period of homelessness as they may not have the means or the labour to support home reconstruction.

3.2.3 Food Insecurity

Food Insecurity in affected districts	In the first month: 46%	After 4 months: 17.7%
Source: FAO, et al. 2015		

Food insecurity was at its peak in the immediate aftermath of the earthquake but reduced subsequently. Many of the families- around 35% reported limiting their food intake by reducing their meal portion or number of meals as a coping strategy ([PDNA, Vol B, 2015](#)). Before the earthquake, the main food sources for 84% of the households were own-production and purchased food. After the earthquake, own-production decreased by 4% and purchased food increased by 3% ([NDRI, 2016](#)). Due to damage of own-production, people were forced to rely on either food support from aid agencies and/or purchase food. The proportion of households with food security only up to 4-6 months increased by 7% after the earthquake which is reported to point to the decrease of food security level of those households who had more than 6 months food security before the earthquake ([ibid](#)).

This impact of the disaster on food security and nutrition - a combination of cultural norms such as women and girls eating last and expected to eat less would further be detrimental to women especially pregnant and lactating mothers ([PDNA, Vol B, 2015](#)). The report also observed that many of these women are suffering from reduced food intake and dietary diversity and the trauma caused by the earthquake, along with the attendant disruptions caused in their lives. This is likely to affect not only their own nutritional status but also impact their ability to continue to exclusively breastfeed their children ([ibid](#)).

This situation was worse for Dalit communities, whose food sufficiency level was already the lowest among all major caste and ethnic groups. Malnutrition among Dalit children was already high at 33.9% even before the earthquake ([ibid](#)). Post the earthquake, inadequate food consumption was highest amongst Dalit households, over a third of whom (33.6%) fell below the acceptable threshold for food consumption, making caste an important factor of food security status at household level ([FAO, et al. 2015](#)).

The earthquake has also led to changes in food consumption patterns which has implications on the nutritional status of individuals. Protein consumption is reported to have decreased in 10 out of 18 surveyed VDCs in Gorkha, Sindhupalchowk, Nuwakot, Dhading, Rasuwa and Dolakha, where people are eating less meat, milk and eggs due to loss of livestock and market disruption ([PDNA, Vol B, 2015](#)).

3.2.4 Loss of Livelihoods

NPR 25 billion agricultural losses	Women: NPR 15 billion	Men: NPR 10 billion
Source: PDNA, Vol B, 2015		

Agriculture, one of the most impacted sectors, is highly dominated by women, largely due to feminization of agriculture as men increasingly migrate to cities within Nepal and abroad. Agricultural labour is comprised of 60% women and 40% men. As a consequence, the disaster has had a disproportionate effect on women. The loss of seed stocks also meant that women struggled to find good seeds for planting, which would have affected subsequent yields. In addition, the combination of loss of home, food stocks and disruptions in essential services means that women face an increased work burden in household and agricultural work.

Women have an even larger share in the livestock sector, although they mainly own and control smaller livestock, particularly goats, pigs and chicken. These are most likely to be sold first, which thereby further erodes their livelihoods ([UN Women, 2017](#)). The expected increase in animal diseases due to lack of fodder and adequate shelter, combined with potential distress sale of assets, also affects women the most.

Caste-based and ethnic minorities depend primarily on the informal sector for income generation. Vast destruction of private housing indicates that a large number of informal home-based workplaces would have been destroyed, thereby affecting their ability to derive livelihoods. Women, who form a large proportion of home-based workers, would have been most impacted.

According to data from the tourism sector, 200,000 people employed in tourism were estimated to be laid off ([PDNA, Vol B, 2015](#)). The anticipated decrease in tourism is also likely to disproportionately affect Dalits-who are overrepresented in porter work, and Women-who are found more in less skilled jobs such as housekeeping and waitressing, as they are likely to be the first to be laid off. According to the Tourism Survey 2014, 57% of homestay owners were women. Women, therefore, would have incurred the largest loss within the homestay accommodation. Men, on the other hand, would have been most affected in the trekking sector and tour operations ([ibid](#)).

3.2.5 Infrastructure Disruption

446 public and 16 private health facilities completely destroyed	8,242 community (public) schools affected	5,233 water systems totally or partially damaged	220,000 toilets have been partially or totally destroyed
Source: PDNA, Vol B, 2015			

Health: The UN estimated an approximate 1,408,189 females of reproductive age in the 14 districts and approximate 138,367 of the female population to be or expected to be pregnant in the next 12 months post the 2015 earthquake. Of this, 18,600 needed obstetric care in the same period ([ibid](#)). Damage sustained by hospitals and health centres limited women's access to sexual and reproductive health services. It was noted in Nuwakot, for example, that all 27 birthing centres have been destroyed. The approaching monsoon rains, compounded by displaced people sleeping outdoors, put an increased risk of vector borne diseases such as malaria, which affects children and pregnant women more negatively. Additionally, potential disease outbreaks could add an additional work burden on women who are the normal caretakers of the sick. Moreover, as families divert money from paying for healthcare and food to restoring their homes and livelihoods, this may be done at the cost of the health of children, pregnant women and lactating mothers.

Education: With a large number of schools destroyed and complete closure of schools and colleges for more than a month (26 April-30 May) in the severely-affected districts, more than 1.4 million children (699,100 girls and 699,937 boys) were out of school post the earthquake ([ibid](#)). In severely affected areas such as Dhading, Dolakha, Gorkha, Kathmandu, Carve, Nuwakot and Sindhupalchowk, there was a further risk of children dropping out of school to support household

and income generating activities. Toilets in public schools had also been damaged leading to inadequate access to safe, hygienic and private sanitation facilities which can be a source of shame, physical discomfort and insecurity for school going adolescent girls. There is already a lower enrolment of girls in schools in comparison with boys; this gap could increase with the added risk of girls being pulled out of school to help with household work.

Water, Sanitation and Hygiene: Disruption in water supply and electricity also had a disproportionate negative effect on women and girls who are traditionally responsible for 75% of all household water management. For example, women in Dhadhing, Lamjung, and Gorkha reporting spending as much as three hours collecting water post the earthquake, which increased their work load considerably. Destruction of toilets compounded by lack of water and poor living conditions, which do not offer privacy for women and girls, have had a serious impact on the personal and menstrual hygiene of women and adolescent girls.

Community Infrastructure: Extensive destruction of community infrastructure and women's cooperatives also affected their access to social capital, microfinance and skills development. Further, disruptions in road networks hampered women's access to essential services and markets.

Increase in Unpaid Care and Domestic Work for Women and Girls Post Disasters			
In Asia and Pacific region, women carry out around four times the amount of unpaid care work that men do, much higher than the global average of 2.5 times (ILO, 2018). Across South Asia, women report doing more unpaid care and domestic work than men: nearly 6 times more in Nepal (ILO, 2020). The burden of care work especially increases during disasters.			
Women reporting increase in time spent	On child and elderly care- 69%	On fetching water- 51%	On cooking and cleaning-63%
Source: UNCT, Nepal, 2017			
In the aftermath of the earthquake, women in Kavre and Sindhupalchowk reported a high increase in working hours up to 4 to 5 hours additional, which included salvaging building materials from house rubble. Women in Kavre had to spend three hours longer per day drawing clean water due to the drying-up of the villages' wells due to shifts in geology after the earthquake. Loss of electricity and cooking utensils also meant that total cooking time was an hour longer than normal and women were spending about three hours per week fetching firewood.			
Women interviewed in Kavre indicated that their burden of work has increased now that they are compelled to allocate as much as three hours to fetch firewood in the absence of electricity. The longest time was spent in intensive childcare. The closure of schools and the condemnation of homes that were still standing meant that women had always to ensure that children did not go into the damaged houses. In some areas, women were spending as much as 12 hours per day doing emergency-related work and this resulted in a reduction in the time allocated for resting but also in the time spent on agricultural work (PDNA, Vol B, 2015).			

3.2.6 Gender-based Violence (GBV)

52% women felt increase in tension/risk of violence	65% women reported feeling "unsafe" while changing clothes	81% reported feeling "unsafe" when using toilets
Source: UNCT, Nepal, 2017		

The combined factors of poor living conditions, disruptions in economic activities and loss of income could compel families to adopt negative coping strategies such as child labour, early marriage and human trafficking, which would impact girls in particular. Global studies in disasters have also shown that women and girls are likely to face elevated levels of intimate partner violence and GBV after disasters.

Child Labour: Nepal already had a high incidence of child labour at 42% among the age-group 5 to 14 years, with females having higher incidence than males ([PDNA, Vol B, 2015](#)). The pressures of

poverty are likely to further increase the involvement of children especially adolescent boys and girls into income generation.

Child Marriage: An increased risk of child and early marriage for girls was perceived as it is still common in Nepal. Okhaldhunga, Dhading, Gorkha and Rasuwa had the highest risk of early marriage for girls as more than 70% marry before the age of 19 ([ibid](#)). Parents could resort to marrying their daughters young as a coping mechanism against the impacts of the disaster on household expenditure.

Trafficking: According to International Labour Organization (ILO), 12,000 women and children from Nepal are trafficked to the Middle East and India every year, mainly for exploitation in brothels or as forced labour and other forms of servitude. Girls aged over 14 to 16 years are more likely to enter sex trafficking through a route of fraudulent marriage. Some of the severely earthquake affected districts, particularly Sindhupalchowk, Nuwakot Dhading, and Kavre, historically known for high rates of trafficking of women and children, faced elevated risks of human trafficking([ibid](#)). There were reports of cases of 64 children being trafficking from Dolakha and Dhading districts, after the earthquakes, and other 11 from between the ages of 10 and 12 from Dolakha to Kathmandu, which seemed to rise with time ([ibid](#)).

Sexual Violence: Reports received through safe spaces created by various humanitarian agencies to address GBV show that there was a concern of increased sexual violence, especially against young girls, after the death of parents and other relatives who would normally look after them. For example, in Kavre the Women and Children Officer reported one rape and three attempted rape cases within one week in contrast with 26 cases per year or about two cases a month ([ibid](#)). Interviews with the affected women in both Kavre and Sindhupalchowk also indicated that female headed households were very worried for their safety, as they were sleeping under unsecured tarpaulins. In addition, poor lighting, lack of segregated toilets and wash facilities in temporary shelters could contribute to an increase in sexual violence against women and girls. Reports from the shelter cluster indicated that overcrowding was one of the key challenges facing communities staying in shelters and camps.

Intimate Partner Violence: Increased stress and feelings of powerlessness due to bereavement, loss of property and loss of livelihood, mental health problems such as post-traumatic stress disorder, the scarcity of basic provisions and other factors leading to hegemonic masculinity crises could also contribute to higher levels of intimate partner violence.

Other Harmful Practices: Prevalence of harmful practices deeply entrenched within social, cultural and religious norms and are often perceived as traditional or normal in communities which practice these also disproportionately affect the lives of women and girls, and people with multiple marginalised identities. Many such practices like (a) Caste-based Discrimination; (b) Menstrual restrictions and (c) Child marriage, manifest themselves in different forms after a disaster. Dalits in shelter facilities, often face cases of “untouchability”- being denied entry into the main shelter, asked to live and prepare their food separately. Menstrual restrictions including Chhaupadi could result in stress and fear of social stigma among women and girls. School closures clubbed with poverty, also results in increase probability of child marriage especially for girls ([HPWG, 2020](#)).

Disruption in Police and Judicial Systems: Added disruptions in policing, justice systems and loss of family protection also mean that vulnerable groups are at heightened risk of violence, abuse and exploitation. Access to courts and functioning of family protection units had been compromised by the earthquake. District courts are prioritizing serious crimes, which means cases of sexual and gender-based violence would not be a priority. All of the above could impact women’s access to justice, especially if they have to travel away from home.

3.2.7 Limited access to information and safe relief services

48% women felt then had received any support in staying safe	48% women reported they had not been able to access	10% women reported they have the complete information
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	information specific to their needs	needed to access housing reconstruction support
Source: UNCT, Nepal, 2017		

For rescue and relief, reaching out to the affected people was the first priority. However, for obvious reasons, the entire public communication system had almost crashed for hours after the quake. There was no electricity, no Wi-Fi and no telephone working for over a week in remote areas. Mobiles, which everyone had, were useless for the first few days. Radio and One-on-One interpersonal communication thus remained the major sources of information. However, most of the communication was targeted to households in general and messages important for women were not included. It is important to include messages that raise awareness of the services available to survivors of violence, including counselling and health care. It was only later on that radio messages emphasizing women's right to live free of violence and abuse were included.

Gender mainstreaming was also missing in shelters and camp settings. According to the displacement tracking round 5 (November 2015), in 83% of the 140 sites assessed, there were either no or inadequate lighting available in communal areas such as around WASH facilities and in public spaces ([ibid](#)). In 79% of the sites assessed, there were no gender segregated toilets causing major concerns for women and girls as well as third gender. The majority of the bathrooms/toilets had no lighting (85%) and almost half had no locks from inside (43%). 86% of sites did not have designated safe social spaces for women ([ibid](#)).

Further institutional participation and representation of women and discriminated social groups in recovery programmes was also limited. Measures to support and promote attainment of ownership rights, tenure rights, certification and registration essential to ensure that post disaster recovery programmes do not re-enforce the inequalities faced by women and vulnerable social groups, were limited.

3.2.8 Loss of Documents

Availability of citizenship certificates was also a challenge as 24% of population did not possess a citizenship certificate ([UNCT, Nepal, 2017](#)). However, women were found to experience even more difficulty in acquiring citizenship certificate after the earthquake, due to the loss of legal documents such as marriage certificates, citizenship certificate of husband or other family members and so on, which could be prerequisites to getting a citizen certificate ([NDRI, 2016](#)). Women of polygamous husbands were experiencing difficulty in getting citizenship certificate and property share ([ibid](#)). Other areas of concern are the loss of citizen identity cards, particularly for women and men supported by social assistance programmes, such as people with disabilities and senior citizens. Another dimension of the disaster impact is the loss of birth certificates for children and the registration of babies, whose parents died before they were registered.

3.2.9 Persons with disabilities (PWD)

About 2% of the total Nepali population are reported to have some kind of disability. Within the 14 districts with most affected communities, it was deduced that 322,111 have physical disability, 163,043 of which are women and girls. Unfortunately, data on intellectual disability is not available. However, it can be assumed that both these figures would have increased due to injuries sustained in the earthquake. There was expected to be an increase in the demand for physiotherapy, psychosocial counselling, trauma assistance etc., in the next 12 months, after the earthquake.

The earthquake also made mobility more difficult for PWDs. Presence of debris as a result of the earthquake created challenges for them to move around, as also in accessing relief items and accessing essential services. Access to temporary shelters, toilets, etc., could be another challenge which needs to be addressed in the design of community shelters. Many PWD were taken care of by their household members who are often female. Disasters can lead to loss of caretakers and or additional burden on the caretakers. In addition, women living with disabilities, especially those with intellectual disability, often experience multiple discriminations and are more exposed to GBV.

3.2.10 Caste Designation and Ethnicity

As a result of the earthquake, Dalits have faced discrimination and exclusion in the rescue and relief efforts as the services are highly concentrated in mainstream settlements. Dalits live in a different settlement away from the dominant habitants. Their social status further results in discrimination within shelters and in rehabilitation efforts.

3.2.11 LGBTIQ+ Groups

Many LGBTIQ+ persons lost their rented homes post the earthquake even when it was not damaged as the landlords increased the rent or asked them to leave because of their status. Further, they faced additional barriers in accessing relief due to the lack of identity documents, IDs not matching with gender identity, relief services being targeted as conventional families which most transgender and LGBTIQ+ persons are not living in. Lack of livelihood alternatives for LGBTIQ+ populations after the earthquake also drove many into sex work and due to limited supply of contraption in those times, they were put at enhanced risk of unsafe sexual practices ([UNCT, Nepal, 2017](#)).

4. Scenario 1: Earthquake Preparedness, Rescue and Relief

The earthquake scenario builds on the earthquake modelling by Durham University ([Robinson et al., 2018](#)), which defines the impact of a 7.8 magnitude earthquake occurring on a weekday afternoon, along the Main Frontal Thrust, with an epicentre in Rukum West of Karnali Province.

4.1 Context Setting

For the purposes of this scenario, the region is defined as Sudurpashchim province of Nepal. The primary setting of the scenario is rural, mainly hilly and mountainous terrain, with a few densely population urban centres. While the earthquake would have had an impact across the country, the scenario predicts the following impacts in Sudurpashchim province. The information has been further analysed using a GESI lens as part of the Earthquake Contingency Plan, Nepal ([UN, 2022](#)). Details have been summarised below:

No. of Fatalities:	2000	No. of people Injured:	600
Affected HHs:	500	Affected People:	2000
Affected Women:	1,235	Affected pregnant and lactating women:	128
Affected disabled people:	48	Affected children under-5:	240
Collapsed Building:	57	Completely Damaged:	448
Extensively Damaged:	7,114	Moderately Damaged:	69,906

The scenario describes the status during and immediately after the earthquake, focusing on the initial rescue and relief phase.

4.2 Scenario 1a: Baseline Situation

On the 27th of September, 2022, at around 1005 hrs. an earthquake measuring 7.8 in Richter scale occurred in western Nepal. The magnitude was so strong that the shaking occurred for fifty seconds. The effect was felt up to the Udaypur district in the East, Shimla (India) to the West, Ngari (Tibet) to the North, and Bhopal (India) to the South. All the nine districts of Sudurpashchim province were affected. The densely populated urban cities such as Dhangadhi, Nepalgunj, Dang, Amargadhi, Jaya Prithivi, Dipayal, and Surkhet were also affected.

In the first few hours, immediately after the earthquake, there was utter chaos. A large number of homes had been completely destroyed. Many people, especially women, small children, elderly and PWDs, were still trapped in the rubble, shouting for help. Their yelling and crying could be heard from a distance. The bellowing dust and smoke reflected a kind of war-like scenario.

People, who had managed to get out, were on the streets looking out for their loved ones. Men who were at work were rushing back home to check on their families. Women were trying to rescue small children, elderly and valuables from their homes. Mobile phones were not working, leaving people with no option but to rely on hearsay and physical verification. People were heard inquiring about the status of their homes as they tried to reach homes. As it was a school day, parents were rushing to the local school to gather their children. Rumours regarding the collapse of school building in many places had increased the panic. The situation of chaos, confusion, and commotion was prevalent dooming the whole province.

Some members of the District Disaster Management Committee (DMCs) and Palika Disaster Management Committee met and asked the security forces to start search and rescue operations. Nepal Army, Nepal Police and Armed Police Forces collected their search and rescue gears and form teams to mobilize in different sections of the province. The initial focus was in the municipality areas of Dhangadhi, Nepalgunj, Dang, Amargadhi, Jaya Prithivi, Dipayal, and Surkhet.

Local Palikas also mobilized their volunteers, to carry out search and rescue operations with limited resources. In rural areas, community members particularly youth were galvanized into action digging out neighbors from the rubble, and providing whatever assistance they could before the arrival of rescue and relief teams. The volunteers trying to rescue the trapped people did not have any equipment or tools. They were focusing on removing the slates and wooden beams from the fallen roof by hand as they recovered people. Those found alive and injured were being rushed to local clinics in vans.

Challenges of a person with disability to access the clinic

Rana Bahadur Bhandari, aged 31 years, a resident of Jaya Prithvi Municipality-9 in Bajhang district has both of his legs impaired from childhood. During the earthquake of 27 September, his house made of mud and stone got destroyed and he lost his parents and his wife in the same incident. Since he is a primary school teacher, he was in the school on that day and he survived. Right after the earthquake, one of his students from the village came with a message that his house fell down and his parents and wife were trapped in the house. He immediately went home on his tricycle and found that his house was completely destroyed and his neighbors were trying to remove the debris and rescue his parents and wife.

Those who were trying to rescue the trapped people did not have any equipment or tools. They somehow removed the slates and wooden beams from the fallen roof and took out the bodies. Since their bodies were still warm, they neighbors rushed them to a nearby clinic in a normal van. Rana Bahadur also went to the clinic on his tricycle. Since the clinic was on the first floor, he could not go up but the bodies of his parents and wife were carried by his neighbors to the first floor. After about an hour, the neighbors came down and informed him that the doctors tried hard but could not save their lives.

Rana Bahadur couldn't even bid farewell to his loved ones. *'Had there been a ramp, I could go up and see my parents and wife.'* Rana Bahadur lamented. He suggested that at least the health facilities and government buildings should be disabled-friendly.

In many places the local clinic was also damaged by the earthquake. Clinic staff were seen to have set up a makeshift tent for triaging of the dead and injured and for providing first aid. There was no electricity which further hindered the process. Proper treatment especially for those severely injured was not much possible at the clinic. People were seen trying to take the severely injured to district hospitals.

However, provincial police headquarters at Surkhet and Dhangadhi informed that many of the road networks have been disrupted. Mahakali Highway has been blocked in more than two dozen places due to the landslides triggered by the earthquake. The Surnaya bridge at Patan, Baitadi has been destroyed. Similarly, Seti Highway, Chhinchu-Jajarkot Highway, Karnali Highway, and Rapti Highway also remained non-operational. Fortunately, the Bajhang and Surkhet Airports had suffered only minor damages. The terminal building only bore some ruptures whereas the runway and tower have remained intact. The authority claimed that the helicopter can be operated from the airports. But the airports of Salle, Baitadi, Dipayal, and Bajura have been hugely damaged.

All telecommunication networks- public switched telephone network (PSTN), code-division multiple access (CDMA) and global system for mobile (GSM) services of Nepal Telecommunications, GSM services of Ncell and Hello mobile and CDMA services of United Telecom Limited (UTL), were disrupted, resulting in mobile and internet facilities also being down. The security forces' communication remained the only means of communication.

Local governments were also hamstrung, having been under-staffed and not much trained on how to deal with an earthquake of this magnitude. Many local officials had also lost family members and their houses were destroyed as well.

Security sources revealed that hundreds of concrete buildings, mud houses, schools, hospitals, government offices, and even security forces' barracks have been destroyed. Most of these houses and buildings were older than 50 years, constructed on uneven surfaces and without following earthquake-resistant parameters. Homes in poorer and rural areas were more damaged due to poor quality.

Hundreds of people had been killed under the collapsed houses, other hundreds been missing and thousands lost their homes. Dozens of dead bodies have been reported scattered in old settlements of Karnali and Sudurpashchim provinces. Dead bodies were collected on the nearby playgrounds, *Chautaras* (resting places) and school premises. Locals were being asked to ascertain the identity of the deceased ones.

As news of the earthquake spread, the federal government put into action an emergency relief and humanitarian assistance programme. Fixed wing and rotary aircrafts were engaged in carrying out numerous sorties to bring relief supplies into the country and to distribute them in remote areas.

The network of NGOs and local affiliates of INGOs based in Nepal swiftly rallied to support community rescue and relief efforts. Several volunteer groups, especially of youth and professionals like doctors and engineers, were active in treating the wounded, setting up temporary shelters, supplying food and attending to vital needs.

Transit shelters were established immediately with official support in designated public spaces. However, the supply of non-food items, particularly tarpaulins, proved inadequate as the fear of being trapped drove many families, including those whose houses had not been damaged, to seek temporary shelter in the open. The remoteness of several villages in the affected areas, coupled with poor weather, further hampered rescue and relief operations reaching out in those places.

It was believed that a huge loss of lives and material occurred mostly in Rukum, Jajarkot, Bajhang, and Bajura districts, according to the initial rapid assessment (IRA) carried out by the security forces and NGOs. The key findings⁴ included:

- Around 2,000 people have been reported to have died 52% of whom are women, 2% are PWD, 8% are elderly. Nearly 600 people including 437 women were injured.
- Around 7,619 houses have been either collapsed, completely damaged or extensively damaged displacing 41,371 persons. Around 41% of damaged houses belong to Dalits as they were built in substandard quality and were at sloping land.
- The affected people do not have food, shelter, clothes, drinking water, toilets, electricity and means of communication. Some 21,000 women do not have safe places to sleep and secure toilets and places for bathing.
- More than 839 schools and 417 health facilities, in the entire Sudurpashchim province, which were not built as per earthquake resistant norms, had been partially or fully damaged by the earthquake. In some district, almost all of the birthing centers were destroyed.
- The teams also estimated that around 160 pregnant women are stranded in remote locations without access to the hospitals or health care facilities. Similar number of lactating women do not have food to eat.
- Water and sanitation infrastructure were damaged in almost all affected settlements.
- Many district level offices providing public services were severely damaged or reduced to rubble, as a result of which many officials started functioning out of tents and temporary shelters.
- Almost all roads are blocked and bridges damaged in seven hilly and mountainous districts. In Kailali and Kanchanpur, the roads are normal, except minor damages in some bridges along the east-west highway.
- Airports in Bajura, Achham, Baitadi and Doti are damaged and only the airports in Bajhang and Dhangadhi are in operation.

⁴ All absolute figures are from Impact modelling for Sudurpashchim province undertaken by Durham University ([Robinson et al, 2018](#)).

Nepal Red Cross Society (NRCS) conducted a rapid assessment of the most affected families including female-headed households, and began distributing tents, 25 kgs of rice, 5 kgs of lentils, 2 liters of cooking oil, some dry food and some non-food items such as two pairs of slippers, 2 bathing soaps, cooking utensils, cooking stove, cooking gas, 2 blankets and a towel to nearly 1 thousand families. Several volunteer groups, especially of youth and professionals like doctors and engineers, were active in treating the wounded, setting up temporary shelters, supplying food and attending to vital needs.

The District Disaster Management Committee (DDMC) has asked all governmental, non-governmental and private sector contributors to pool their resources and channel them to needy peoples through a one-door mechanism. However, some regional and local NGOs and individuals are distributing food and non-food items in accessible locations. Furthermore, women and other vulnerable groups especially those living in remote settlements and without proper identity documents are often being left out.

Discrimination in relief distribution for Dalits and those in remote locations

Amrite Kami, 66 of Jagannath Rural Municipality-1, Dhadakot of Bajura district is one of many persons in the village who lost their homes. His thatch-roofed house was at an isolated place and it caught fire when the earthquake happened. No one was there to save his house from the fire as he and other members of the family had gone for work. The fire was made for making iron utensils.

After the earthquake, many organizations came with relief materials in the village but no one reached his house as it was a bit far off. One day, he heard news in the local radio that each household of Dhadakot received 25 Kgs. of rice, 10 Kgs. of lentils, 5 packets of cooking oil, 1 packet of salt, two blankets... However, his family had received nothing except some dry food. After hearing the news, he inquired with his relative Harikala BK, who was also a ward member. She told Amrite that most of relief distributing organizations concentrated in dense settlements due to logistical difficulties.

'Local government is our guardian. It should include us in relief distribution,' demands Amrite.

The UN estimates that there are approximately 138,367 women (4% of the female population) are or will be pregnant in the next 12 months. Of these, 18,600 will need obstetric care in the same period. Damage sustained by local hospitals and health centres has severely limited women's access to sexual and reproductive health services. It is also estimated that 10,327 babies are born every month who have been left without access to basic healthcare.

Fears of a pregnant woman

Champa Bohara, 26 from Purbichauki Rural Municipality-3, Gairagaun in Doti district is an expecting mother of 3 daughters. Her eldest daughter is 7 years old and she is pregnant for 7 months now. She is hoping to have a baby boy this time so that the lineage of her family is secured. Her husband, Hari Bohara, went to Kala Pahad last month to earn a living for his family.

Champa's 2-story house made from stone and mud has not fully collapsed in the earthquake but has sustained many diagonal cracks on all sides. The technicians from the Palika have suggested that the house cannot be used any longer. Therefore, Champa's 8-member family (her three daughters, her two sister-in-laws, mother-in-law and father-in-law) is staying in a temporary tent provided by the Red Cross. Luckily, they could bring out the clothes and foodstuff from the damaged house and they can use them. However, during the night, their clothes are not sufficient to keep them warm and they have to rely on fire.

In one month's time, Hari has sent ten thousand Rupees to Champa for her check-up and treatment. The road to Sanphebagar and Silgadhi is damaged at many places due to the recent earthquake.

Motorbikes hardly pass through the damaged road and ambulances cannot run on the road. Champa fears to use a motorbike and other vehicles are not available for a follow-up.

The doctor from Bayalpata hospital asked her to come for a regular check-up this month but she has no means to go. Her doctor has said that she will need to get admitted in January 2023 for delivery. Champa has fears that she might not be able to go to the hospital this time and may not survive.

Six months after the earthquake, around 40% of the displaced families were still living in temporary shelters. These shelters had very limited access to safe water, user friendly sanitation and hygiene (including menstrual hygiene) facilities. Problems for women and girls were particularly higher in areas where *Chhaupadi* (separation of women and girls during menstruation) was followed.

Female headed households and young girls, who have lost their parents are very worried for their safety, because they are now sleeping under unsecured tarpaulins. Lack of segregated toilets and wash facilities in temporary shelters has also contributed to an increase in sexual violence against women and girls. Absence of a steady power supply, further put women in fearful positions due to added risk of violence. A Women and Children Officer reported that in her district one rape and three attempted rape cases has occurred just within one week in contrast to about two cases a month earlier. There are reports indicating that traffickers are entering temporary shelters disguised as relief workers.

Even those having returned to their homes were fearful. Women reported that they are afraid to let their children out of sight, the main reason being that children are constantly wandering into condemned homes as they don't understand the dangers a damaged house presents. The women reported sleeping while holding their children to prevent separation should another earthquake occur in the middle of the night.

There is also a group of newly widowed males and grandparents who suddenly have had to take the sole responsibility of parenting and household work due to the death of the primary care giver in the family. These families are still struggling to cope with the new reality in their lives.

4.3 Reflection and Preparedness Measures with limited GESI lens

After the earthquake, the provincial planning commission put in place a team to assess the gaps in earthquake preparedness and prepare an action plan for improved readiness. The assessment team found that there were at least 9 laws and policies at the federal level⁵ that form the foundation of disaster risk reduction and management. The team also found that Sudurpashchim province itself has at least 9 policies⁶ relating to disaster risk reduction and management. The team also found that there was a Provincial Disaster Risk Framework (PDRF) developed for Sudurpashchim province. However, there were gaps in awareness building and implementation on the same:

- The provincial DRF was not thoroughly disseminated among the Municipal and District DMCs. It affected smooth coordination among the various levels of the government.
- The members of the District and Provincial DMCs were also not trained on responding to the earthquakes.

⁵ Disaster Risk Reduction and Management Act, 2017; Local Government Operation Act, 2017; Nepal Government (Work Division) Regulations, 2017; National Policy on Disaster Risk Reduction, 2018; Public Health Act, 2018; Disaster Risk Reduction National Strategic Plan of Action (2018-2030); Private Housing Rebuilding Grant for the Flood and Landslide Victims, 2017; Public Housing Program Implementation Sample Guidelines, 2018; and Guidelines for the Relocation and Rehabilitation of High Risked Settlements, 2018.

⁶ Provincial disaster management and relief distribution guidelines, 2019; Relief distribution standards for harms caused by natural disasters in agriculture and livestock enterprises, 2019; Provincial emergency fund act, 2018; Sudurpashchim forest act, 2019; Air evacuation guidelines, 2019; Provincial disaster management plan, 2020; Sudurpashchim environment conservation act, 2020 and Monsoon preparedness and response action plan, 2021.

- The DMCs had identified 'safe zones' and 'concentration points' in cases of communication breakdowns during the earthquakes. However, most people- men and women, were not aware of the same.
- There was no official evacuation plan that the community and first responders could put in place.
- The DMCs also did not have search and rescue manual, basic tools, stretchers, ambulances, etc.
- The DMCs had not arranged for any emergency shelters with water supply, alternative power and toilets.
- The DMCs also did not have warehouses to securely store supplies for earthquake affected people.
- The communities were not aware about the preparation they needed to do (see box). There was no community trainings or earthquake drills conducted in the area before.

It was recommended that communities in earthquake prone areas are prepared for easy storing of water and food for three days, nonperishable food, can opener, first aid kits, clothes, go-bags, flashlight or headlamp, whistle, radio set, dust mask, plastic sheets, duct tapes, towels, garbage bags, wrench or pliers, local map, mobile phone, spare battery, cash, medicines, fire extinguisher, sleeping bag, extra clothes, napkins, paper cups, plates, cooking utensils, etc.

Following the report, the provincial government undertook critical actions for improving earthquake readiness. These included:

- A number of workshops, seminars and online meetings with DMC members on provincial DRF and earthquake preparedness measures required were conducted.
- With support from NRCS, a Community Action for Disaster Response (CADRE) Volunteers and Community DMC volunteers were selected and trained on evacuation management, search and rescue operations, first aid, etc.
- Public service announcements (PSAs) in local radio stations, TV, social media, and other communication tools were deployed to increase the knowledge of general population on safety tips and evacuation plans.
- Regular earthquake drills in schools, colleges, public buildings, and hospitals were conducted.
- A taskforce to give early information on earthquake and provide instruction for immediate search and rescue and mobilize security force for rescue operation was put in place.
- Unobstructed access to the pre-assigned open grounds and facilities for temporary health camps were created and the community was oriented regarding the same. The CADRE and Community DMC volunteers were specifically trained on enabling people to reach the ground and health facilities. They were also provided printed maps for the same.
- The DMCs has identified 'safe zones' and 'concentration points' in cases of communication breakdowns during the earthquakes. The same was well communicated to the people through setting up of boards at the site and well as through regular PSAs, SMS and social media messaging.
- Within each village/neighborhood and evacuation plan was developed with community involvement and the community and first responders were trained on the same through drills. The DMCs also provided battery operated walkie talkies at local level to the volunteers to enable communication during search and rescue.
- The DMCs also put in place a search and rescue manual and basic tools -axes, shovels, brooms, ropes, sturdy shoes, gloves, face masks, drill machines, human detection systems, hammers, levers, stretchers, etc.
- Designated warehouses for provision of the store supplies securely were created. The warehouses also stored immediate relief material including blankets, mattresses, tarpaulins for tents, water and food supply for three days, first aid kits, solar/battery operated lamps and flash lights, etc.
- The DMCs set up temporary emergency shelters in the pre-determined safe and open/evacuation sites for displaced families, with water supply, alternative power and toilets.

- Local government had improved the availability of ambulance services, readily available emergency medical supplies, first responders, paramedics, and expert medical health teams.
- Back-up water supply and electricity services were made available to hospitals, health and medical centres.
- Systems for evacuation for treatment to severely injured victims were put in place.
- Local engineers were trained to evaluate and red-tag unsafe buildings and infrastructure in the affected areas immediately after the earthquake, so that people could move back into their homes.
- Distribution of immediate lifesaving relief materials in coordination with NRCS to the survivors was made a top priority, along with distribution of non-food items such as cooking utensils, fuel, clothes, blanket, family kits, baby kits, hygiene kits.
- A community-led beneficiary estimation system was introduced to the exact needs and number of beneficiaries, transportation, storage and distribution of food and non-food items. For those who did not have any documents, a system of local reference was developed which enabled everyone to get access to relief.
- Systems for proper management of dead body including cremation and issuance of death certificates was put in place.
- Awareness and training programmes on quality construction practices; building codes and the need for earthquake resistant construction were conducted.
- The building code was strictly implemented. All new homes were constructed according to the norms and most of the older ones were retrofitted to meet the standards.
- A wide area radio Digital Mobile Radio (DMR) system was built which enables public institutions communicate to each other through radios without the need for any telecommunications infrastructure.

4.4 Scenario 1b: Improved Readiness with limited GESI lens

On the 15th of November, 2027, at around 11.35 hrs. another earthquake measuring 8.4 in Richter scale occurred in Bajhang district. Although the magnitude was higher this time, the number of houses and building destroyed was not so much due to the strict adhering of earthquake resistant building construction norms. Furthermore, the people having been well trained on immediate response moved out immediately and those who could not, used the “drop, cover and hold” method. This led to lower number of deaths and injuries. However, more women than men were dead or injured.

The evacuation plans were set in place as soon as the siren for the earthquake alert was sounded, with volunteers guiding people to move from homes, schools and workplaces to the pre-set open ground. While there was some chaos in urban areas, this was better managed in smaller rural communities. Rumours were put to rest, through open communication via radio available with DMC members and volunteers.

The Community DMC members guided and lead the search and rescue operations locally, through trained volunteers, before security teams arrived. The search operations were made easy, as most of these trapped, elderly and PWDs, were trained to use whistles and other sounds to draw attention. The injured were provided first aid and taken to the make shift hospital set up at the local clinic/ health center. The severely injured were taken in the local ambulance to nearby hospitals. The DMC also coordinated with local authorities to enable airlifting of patients when required. Dead bodies were triaged for possible identification and taken to a local school. Locals were being asked to ascertain the identity of the deceased ones.

Transit shelters were established immediately by the DMC in designated public spaces. The District DMC coordinated the relief mechanism and channelled all relief using the one-door mechanism. It was difficult to estimate the exact needs and number of beneficiaries, transportation, storage and distribution of food and non-food items. For the receivers, it was difficult to contact the right person and produce official documents as such documents were misplaced or lost. Community-leaders

were asked to take lead and manage the estimation and distribution processes. For people who did not have identity documents, the community leaders were brought in to enable relief provision. Almost 80% of the families received the relief package- with the first 3 days being managed by the DMC through its own supplies, until external aid was available.

The supply of non-food items, particularly tarpaulins, proved inadequate as the fear of being trapped drove many families, including those whose houses had not been damaged, to seek temporary shelter in the open for the first week before the safety evaluation of the buildings could be conducted. Once the safety evaluations were completed, people were encouraged to move back into homes designated safe. They were assured of food supplies and cash relief as per entitlement at select camp sites set up within the neighbourhoods where most people had returned. This reduced the number of people in transit shelters.

Another NGO (Woman care) was also distributing a dignity kit to families with pregnant and lactating women. They were able to cover only 1000 households. The demand for these items was high and the supply was not sufficient, triggering criticism of the NGO from the beneficiaries.

Discrimination against dalits and single women continued. Most of the people unable to get relief were from these communities. They were also the ones whose homes were most damaged as they did not have the money to bring them up to building codes. The poor quality of their homes made them vulnerable to continue staying even if the same had not completely collapsed. They continued to live in the transit camps.

Sexual violence and discrimination faced by a Dalit widow and her divorced daughter

Kikari Damai, 57 from Thalara-9, Malumela in Bajhang district has become homeless from the earthquake. She is a widow and both of her sons have moved to Dhangadhi to run their own tailoring businesses. Her only daughter, Pampha, 24, got divorced with her husband and is staying with her mother Kikari.

After the earthquake, Kikari and her daughter did not have anything to eat, nor did they have clothes to change. They took a shelter in a nearby school building but the people from so-called 'upper class' pushed them to a narrow corner of the building.

On the fourth night after the earthquake, a middle-aged man, who was taking shelter in the same school building next to them came to their place and tried to abuse Pampha. There was no electricity in the school and he took advantage of the darkness and came to their place. Pampha shouted and the man moved back to his place. Other villagers who were taking shelter in the same building blamed Pampha and her mother of disturbing their sleep. They threatened Pampha and her mother to kick out from the shelter if they continued to make noises any further.

The next day, Pampha and Kikari went to the nearest police station to complain about the incident from the last night. The police officer, Mr. Naresh Bhatta did not register the case. Instead, he asked them not to divert the attention of the police and government administration from providing relief to the earthquake-affected people. Pampha and her mother returned helpless from the police station.

On the way back to the shelter, they happened to meet with Sunita BK, an NGO person who is also in the quick response team for disasters and shared their story. Sunita assured them to help for getting their case registered at the police station. In addition, she provided them with a set of solar lamps and a mobile phone so that they could use the lamp at night and call her in case of emergency. Pampha and Kikari requested to get a separate dedicated shelter for women and girls. They also mentioned that provision of women security guards or adequate lighting could mitigate the risks of gender-based violence.

4.5 Gender Responsive Interventions

The provincial government also put in place an Inter Cluster Gender Task Force (ICGTF) for undertaking a gap assessment and recommending actions for addressing the concerns of women and girls in the earthquake preparedness programme. The key recommendations of the ICGTF were:

- There is very limited awareness and involvement of women members in the DMC. It was important to increase their participation in DMC through targeted trainings and exposure visits.
- Women and girls were also not included in the volunteer groups, which focused on young men. It is equally important to have female volunteers to manage the evacuations process as well as include them in the search and rescue operations. The volunteers also have a major role in community awareness building- keeping women out of this loop also meant less flow of information to women. There was the need for specific training and promotion of female volunteers as well as other women on preparedness and rescue operations.
- Engagement of women and vulnerable groups in the formulation of local DRM plans was lacking with hardly 10 to 15 women participating in the same. It is important to include women's perception in DRM planning. Women's groups need to be engaged in the DRM planning exercise to facilitate this process. Training of women and girls of preparedness, recovery and rehabilitation measures was also important for informed contribution and decision making.
- Map existing community groups to be engaged in including women's groups and disability networks. Identify specific platforms to engage with marginalized groups such as migrant workers and people living with HIV.
- All people need access to information and communication about earthquake preparedness. The existing ways of building public awareness was not reaching out to women and girls. The focus on PSA through radio, TV and mobile phones was limiting as a smaller number of women and girls had access to these. It is important to create systems which can enable increased access of women to PSAs via radio and TV. Mobile messages should also be in local language and voice enabled for improved access.
- Further only reliance on PSAs is not enough to build awareness and capacities of women and girls especially from marginalised groups- dalits, adivasis and PWDs. There was the need to incorporate more one on one and group-based interactions for building their awareness.
- The earthquake drills were limited to offices and schools, women who were mostly at home and out-of-school girls were thus getting excluded from these mock exercises. Moreover, the timing of these exercises was not suitable for women as it was mostly between 9 to 11, when women were busy with household work.
- Information about relief and other support should be provided in local dialects also as far as possible.
- Pregnant and lactating women need to have better access to health services. There is the need to create makeshift birthing centers immediately post-earthquakes. This requires pre-training of local midwives and traditional birth attendants. Space for the same also needs to be pre-determined and allocated for the same. Ensure distribution of clean delivery kits, razor blades or scissors to cut an umbilical cord, string to tie it essential drugs for post-partum hemorrhaging, birthing supplies, intrauterine devices, drugs for miscarriage management and other equipment. Pregnant women with complications also need to have access to ambulance services.

- Pregnant and lactating women also require nutritious supplements, iron and vitamin A tablets, and loose cloth pieces for small babies. These need to be included in the relief packages.
- Dignity kits need to be provided to all women and girls. They should not be limited to one per family and only for those with pregnant and lactating women. Also, an option of cash and voucher assistance (CVA) to the affected women may be considered as it offers the affected families a choice to select the most essential items for them, which differ from one family to another.
- To address the minimum Water, Sanitation and Hygiene (WASH) needs in emergencies, it is necessary to support the construction/installation of safe water supply facilities, user friendly latrines with hand washing facilities, and menstrual hygiene management facilities, as well as conducting hygiene promotion activities throughout the affected catchment. Construct separate private space with enough sunlight and water facilities for the washing and drying of reusable pads.
- Women and girls in shelter, are vulnerable to gender-based violence. For their safety it is important to have segregated toilets and bathing facilities at the shelters. Portable toilets and bathing places (as shown in the picture) for females are essential and lacking in existing relief packages provided by the GoN as also civil society organisations. Female headed households in particular should also be provided mobile phones/radio sets and solar lamps.
- Development and distribution of IEC on sexual and gender-based violence. All volunteers and staff should be provided with a pocket card with the Red Cross Hotline number and updated community-based GBV.
- Provision of safe shelter awareness through women's group formation, orientation and monitoring activities should be done. Relief teams should work closely with the mothers' group and women's group to promote community-based initiatives on SGBV and protection.
- Phone messages (in Nepali languages) should be provided to community beneficiaries about awareness, on GBV and issues affecting women, girls, elderly people and children.
- Counseling and legal aid services for those affected by the earthquake and for those suffering from gender-based and sexual violence cases should be provided. Psychosocial counselling in different local languages over the phone should be made available.
- Ensure distribution of reproductive health kits, including post-rape treatment kits, contraceptives, drugs for the management of sexually transmitted infections.
- Conduct orientation on PGI, SGBV, and PSEA among officials and volunteers involved in the operations.

Dignity kit comprises of 3 packets of reusable sanitary napkins, a pair of underwear for females, two pieces of petti coats (free size), a gown (free size), a t-shirt, a cotton saree, a sweater (free size), a shawl, a towel, a torch light, a comb, a nail cutter, a tooth brush, a tooth paste, a mosquito net, a thermos, 3 pieces of bathing soaps, 2 pieces of laundry soaps, detergent power, 500 ml. of handwash, a packet of medical mask, 500 ml. of sanitizer, 5 pouches of shampoo and a bag for all the given items.



4.6 Scenario 1c: Gender Responsive Readiness

Before the ICGTF team submitted its recommendations, they visited Khori village in Chhabis Pathibhera Municipality of Bajhang district. Known as one of the most remote villages, the team had learnt about the women user group in the village and the leadership taken by them to ensure gender and social inclusion in disaster preparedness, rescue and relief operations.

When the team visited the village, they were welcomed by the DMC members. The team was surprised to find that not only half of the DMC members were women, they had also been very active

in the development of the village DRM plan. When the team inquired, they learnt that when initially formed the DMC only had one-third women and they too were no paper only. *"We are never told of what's being done. The male representatives call us for meetings only to inform us of decisions they have already made and to have us sign them,"* said Damai a DMC member, informing that she and other women executive members became more active once the woman vice-chairperson, Sarita Upadhayay, took charge.

As a vice-chairperson, she participated in the district level training programmes on disaster management and realised the importance of involving women in the process. *"It was only then that the DMC began to consult the women members on the decisions,"* shares Sarita. *"We had a meeting with the village women prior to the DRM planning meeting and discussed their learnings and concerns from the handling on the 2022 earthquake. The women raised some key points like the need for information on how to respond during earthquake, what type of homes to be built, what challenges single women were facing in accessing relief material, water and sanitation situation in the temporary shelter, and most importantly, the fear of violence that they had to live with there."*

Sarita and the other women executive members then shared these concerns with the full DMC and asked for these issues to be included in the DRM plan. *"It took a while for the men to get used to the idea of women making suggestions,"* says Belu Devi Bohara, another DMC member. But gradually they understood. *"We told the men that women are more affected by these issues and have more knowledge, so their views should be considered. When the men started talking about our lack of technical knowledge, we told them to provide us the necessary trainings"* said Belu.

The DMC then identified women volunteers for earthquake trainings and conducted earthquake drills in neighbourhoods where women were more able to participate. It was ensured that information related to "safe places" and "evacuation plans" was available to all men and women by conducted door to door campaigns through trained volunteers in local dialects.

The DMC members, both men and women, also participated in a training programme on GESI and DRR organised by the provincial government with the help of an NGO. This increased their understanding on the issue. The DMCs own stock pile was then expanded to include a budget for basic dignity kits (soaps, underwear and sanitary pads), solar lamps and portable toilets in the DRM plan. The DMC also identified a few local midwives and arranged for their training on running makeshift birthing centres in case of disaster.

With the help of a local NGO the DMC also arranged for providing technical training to women on earthquake resilient homes and trained a few women masons on the same. These masons worked specifically with female headed households to improve the quality of their homes.

"The first impact we saw when the earthquake struck the second time was that the number of casualties, especially women and children dead was much lower. The second was that the not many homes were completely destroyed and partial destruction was also lower," shared the DMC chairperson Lok Bahadur Saud. *"This was mainly as we were able to ensure rescue information reached everyone in the village-men and women. Also, the campaign led by the women DMC members to strengthen the homes of female headed households was very useful."*

The mid-wives' trainings also paid off. The ICGTF team learnt about how the DMC with the help of these mid-wives' was able to set up a temporary birthing centre. *"We had around 7 pregnant women when the earthquake occurred. Around three of them had deliveries within the next 15 days, under proper supervision and care. We also arranged for a visit from the district gynaecologist to come for a weekly check of all pregnant women after the first fortnight."* Sarita informed the team.

Most critical was managing the first week, until safety evaluations were complete as most families were staying outside. The DMC arranged for female headed households, elderly, PWDs and those with pregnant and lactating women to stay at the school campus temporarily. The school was rebuilt on earthquake resistant norms after the 2022 earthquake and hence had not been destroyed.

A higher number of trained men and women volunteers meant that the safety evaluations were completed quickly and most people were able to return home. Since there were only a few families which could not return home, the DMC was also able to manage a good quality of shelter homes for them. Within 2 weeks, temporary shelters were constructed in an open playground with proper highlighting and WASH facilities. *"We ensured that the shelter had separate toilets and bathing facilities for women and girls with proper lighting and water. These were located in places that secure and not very isolated for ease to use at night,"* shared the DMC chairperson.

The DMC also provided food materials to all families for the first 3 days from its own supplies. They ensured that 100% families irrespective of the availability of documentation were provided the food. A group of volunteers did a door step check of the reach of food to elderly and PWDs. Additional food supplements and IFA tablets are being provided for families with pregnant women and lactating mothers.

The DMC also involved the female volunteers and local women's SHG to undertake the need assessment for non-food items. The distribution process was monitored by these SHGs who were responsible for ensuring that all women, elderly and PWDs, get adequate relief. Basic dignity kits, were also provided to all women by the DMC and they arranged for all the women to get the full dignity kit in collaboration with a local NGO and provincial government. The DMC also arranged for provision of solar lamps and mobile phones to female headed households who had shifted back to their homes to ensure their safety.

The most important action was the setting up of a **"Safe place"**. As part of the GESI workshop, the DMC members were also sensitised on the issue of gender-based violence. The DMC created a women's sub-group for monitoring cases of GBV and keeping track of adolescent girls to prevent them from any attempt of trafficking.

"After the previous earthquake, we had seen an increase in trafficking and rape cases in our province. We did not want the women and girls of our village to fall prey to this. So, we set up a system of safe place- where any women could contact a trained women volunteer if she was fearful or faced any such instance, shares Uma devi, the GBV volunteer. "I have access to the GBV hotline number and the legal aid services set up by the government and can guide the women on what action to take. But what has helped most is that people now that our village has a zero tolerance on GBV and help is available, so there is a restraint on such practices."

4.7 Costing of Gender Responsive Interventions

Implementation of these recommendations of the ICGTF requires both policy and budgetary actions. The provincial government thus need to put in place a mechanism for GRB in DRM. This would need to look at two aspects (a) ensuring targeted allocations for women and girls in general programmes as well as (b) stand-alone gender responsive interventions. A critical step towards this would be proper estimation and costing of the stand-alone gender responsive services. A costing framework (Table 1) is thus being proposed to support the provincial governments' budget for the same.

Table 1: Costing of Gender Responsive Interventions for Earthquake Preparedness, Rescue and Relief Operations

Sr. No.	Description of Activity	Target	Unit Costs (in NPR)	Basis of Calculation
Disaster Risk Management				
1.	Training of DMC members on GESI aspects	100% of DMC members (approx. 120 members per municipality)	1,07,419 per municipality	Unit cost of 895 per person derived from 33.3 million per year for Strengthening local institutions for DRM (Sector Projection 2019) divided by 310

					(31 districts with average 10 municipalities)
2.	Training of women DMC members on earthquake preparedness and rescue	30% of DMC members	32,226 per municipality	30% of above	
3	Mobilization and training of female volunteers	30% of total volunteers (approx. 1000 persons per municipality)	8,95,161 per Municipality	Unit cost of 895 per person multiplied by 1000	
4	Facilitating women's engagement in DRM planning (including mock drills)	100% of Rural and Urban Municipalities	4,91,290 per Municipality	9.8 million per year for Develop Disaster Risk Reduction Plan plus 5.43 million for stimulation exercise (Sector Projection 2019) divided by 31 districts	
5	Risk and communication targeted awareness building for women on preparedness	100% of Rural and Urban Municipalities	1,80,645 per Municipality	56 million per year for Risk information dissemination, public education and awareness (Sector Projection 2019) divided by 310 (31 districts with average 10 municipalities)	
6	Targeted awareness building and communication to women on relief measures	At least 5 radio PSA	54,000 per PSA	WOREC cost for radio messaging in C19 Nepal: Preparedness and Response Plan (CPRP)	
Health Cluster					
7	Mobilization and training of birth attendants	20 Community Health workers per ward (approx. 200 persons)	1,79,000 per Municipality	Unit cost of 895 per person multiplied by 200	
8	Makeshift birthing centres for pregnant women (prefabricated structures)	One centre each in 100% of Rural and Urban Municipalities	39,64,912 per centre	226 million for Temporary Structure Reconstruction of 57 Health Facilities in 18 Districts (Sector Projection 2019)	
9	Provision for quality new born, child, maternal, sexual and reproductive health services	100% of Rural and Urban Municipalities	66,710 per Municipality	20.68 million for Provision for quality new born, child, maternal, sexual and reproductive health services (Sector Projection 2019) divided by 310 (31 districts with average 10 municipalities)	
Nutrition Cluster					
10	Special nutrition supplements for pregnant and lactating women	4% of female population in reproductive age-group	524 per person	225 million for Micro-nutrients for Children and Women (Sector Projection 2019) divided by 428,986 target beneficiaries	
WASH Cluster					

11	Dignity kits/ CVA	100% of women, adolescent girls and trans persons	1,043 per kit		1.77 million for 1700 Hygiene Kits proposed by DanChurch Aid in C19 Nepal: Preparedness and Response Plan (CPRP)
12	Portable Toilets and Bathing Facilities	100% of transit shelters	107,500 toilet box	per	Based on units cost for the same used in Pashupatinath premises (https://kathmandupost.com/valley/2019/05/17/trust-to-install-23-portable-toilets-on-pashupati-premises)
13	Lock and Lighting facilities at Shelters	100% of shelters	XXX shelter	per	TBD
14	Menstrual Hygiene Measures at Shelters	100% of shelters	XXX shelter	per	TBD
Protection Cluster					
15	Training and awareness building on SGBV and Protection issues (including trafficking and clinical management of rape)	100% of DMC Members and 20% of Health workers and Police (approx. 1000 persons per municipality)	8,95,161	per Municipality	Unit cost of 895 per person multiplied by 1000
16	Targeted awareness building and communication to women on SGBV and Protection Measures	At least 5 radio PSA	54,000 PSA	per	WOREC cost for radio messaging in C19 Nepal: Preparedness and Response Plan (CPRP)
17	Phone messages to community leaders on GBV	100% of Rural and Urban Municipalities	10,00,000	per province	ActionAid cost for Phone messages (in Nepali languages) to community beneficiaries about awareness, on GBV and issues affecting women, girls, elderly people and children in C19 Nepal: Preparedness and Response Plan (CPRP)
18	Counseling and legal aid services (including for shelter support)	100% of Rural and Urban Municipalities	21,00,000	per province	CVICT/UNFPA cost for Shelter support, including psychosocial and legal support in C19 Nepal: Preparedness and Response Plan (CPRP)
19	Phone-based Psychosocial Counselling	100% of Rural and Urban Municipalities	3,50,000	per province	VSO cost for Psychosocial counselling in C19 Nepal: Preparedness and Response Plan (CPRP)
20	Safe Spaces for women	100% of Rural and Urban Municipalities	4,83,871	per district	15 million for Female Friendly Spaces (Sector Projection 2016) divided by 31 districts
Early Recovery Cluster					
21	Insurance assessment services for female headed households and PWDs	28% of affected population	XXX household	per	TBD

5. Scenario 2: Earthquake Recovery and Rehabilitation

The earthquake scenario builds on the earthquake modelling by Durham University ([Robinson, 2018](#)), which defines the impact of a 7.8 magnitude earthquake occurring on a weekday afternoon, along the Main Frontal Thrust, with an epicentre in Rukum West of Karnali Province.

5.1 Context Setting

The scenario is set in Karnali province located in the higher mountains land of north and mid-hills of Nepal. The province has the lowest population in the country, with a population density of only 56 people per square kilometre (census, 2011). While the earthquake would have had an impact across the country, the scenario predicts the following impacts in Karnali province. The information has been further analysed using a GESI lens as part of the Earthquake Contingency Plan, Nepal ([UN, 2022](#)). Details have been summarised below:

No. of Fatalities:	400	No. of people Injured:	4,000
Affected HHs:	28,000	Affected People:	100,000
Affected Women:	69,239	Affected pregnant and lactating women:	7,156
Affected disabled people:	2,689	Affected children under-5:	13,431
Collapsed Buildings:	4,238	Completely Damaged:	24,066
Extensively Damaged:	51,577	Moderately Damaged:	106,824

The scenario describes the status six (6) months after the earthquake, beyond the initial rescue and relief actions, highlighting the recovery and rehabilitation phase.

5.2 Scenario 2a: Baseline Situation

On the 27th of September, 2022, at around 1005 hrs. an earthquake measuring 7.8 in Richter scale occurred in western Nepal. The magnitude was so strong that the shaking occurred for fifty seconds. The effect was felt up to the Udaypur district in the East, Shimla (India) to the West, Ngari (Tibet) to the North, and Bhopal (India) to the South. The ten districts of Karnali province, including the densely populated Birendranagar city, were most affected.

Immediately after the earthquake, most people sought temporary shelter due to the fear of aftershocks. Many families, especially in rural areas, sought refuge close to their homes in open spaces⁷ or on “spontaneous sites⁸”, while others shifted to government established transit shelters.

After the first two weeks, families whose homes had been only slightly or moderately damaged began to move back. Only families whose homes were completely destroyed or tagged as “unsafe” after inspection remained in the shelters. Some people, however, continued to use their old homes for toilet and bathing facilities.

Two (2) months after the earthquake, the National Planning Commission released a Post-Disaster Needs Assessment (PDNA) report. It was found that the earthquake sequence had destroyed or rendered uninhabitable about 28,304 houses—mostly traditional mud-brick and mud-stone structures built and occupied by the rural poor. Another 51,577 homes were extensively damaged and needed repair and seismic retrofitting for making them safe for residence. Housing and human settlements was the largest single need identified in the PDNA, accounting for almost half of the total needs.

⁷ Called ‘scattered sites’ these varies in size from individual tents next to damaged houses to smaller but still unsupported groups of 5000 families. They use salvaged materials or non-food items distributed by aid organizations and consecutively replace if more durable materials become available less than five households on the land of their damaged house or nearby in open spaces (UNOCHA, 2015).

⁸ Consisting of five to fifty households on public or privately owned land without official support (UNOCHA, 2015).

The pressing concern for most people was arranging finances for repairing or rebuilding their homes. During the PDNA exercise, only around 30 to 40% people felt that they would be able to return to permanent housing within 2 years even without financial assistance, others were apprehensive that it would take them more than 10 years to do so without help.

"The current situation is that many households have little money to rebuild or recover, as a large majority of households had experienced a severe impact on their ability to generate income. Many also have nowhere to go as homes were destroyed, and for some, their land has been wiped out by landslides." shared a respondent.

People thus kept seeking information about landslide risk, and demanded that experts assess their area to confirm it is safe to live. Many also wanted to know about how to build back better, in order to withstand future earthquakes.

Within a month of the earthquake, the National Reconstruction Authority (NRA) had announced the revival of the owner driven housing reconstruction program.

Six months after the earthquake, however, the displacement tracking matrix ([DTM](#)) survey revealed that 48% displaced families were still living in temporary shelters. In terms of individuals, the number of males living in the shelters was declining as compared to the number of females. Those living in shelters on private lands were also vulnerable to forced evacuations by the land owners.

The NRA committed to provide assistance of NPRs 300,000 in three tranches to each houseowner whose house had fully collapsed or was damaged beyond repair. These tranches were provided through bank transfer at the stages of i) participation agreement with NRA, ii) completion of plinth level, and iii) roof construction.

Certification by NRA engineers indicating compliance with technical norms and building codes was made mandatory at the time of the release of second and third tranches and finally after completion (to issue completion certificate).

Woes of a deserted woman

Saraswati Maharjan is a 50-year-old resident of Harisiddhi. She is left by her husband and lives with her daughter and son, who study on class 9 and 5 respectively. Her husband married the second wife long time ago and don't care her anymore. Few years ago, her husband gave her 4 lakhs as an ancestral property right and kept the record about it. Due to this reason her husband and the step wife keeps torturing her to leave the household. The household in which she has been living is destroyed by the earthquake the household is legally in her husband's name. So, the earthquake survivor card is also issued in the name of her husband. She hasn't got any reliefs or fund from government or any other agencies. She said that she is in great trouble.

After the destruction of the household, her husband is in the process of constructing a new household. But now he is denying giving any of the shares of the new household to her saying that "I have already given the share of your part now you'll not get anything more". She has no household to stay now. In the support of the local community, she is given a job at local school from where she is making living out of it. Currently she is staying in temporary shelter along with her two children.

Observing her condition, the local has made a referral to 'Sikshyama Sahayog ko Lagi Sathi' organization as well as the organization called SAATHI is willing to provide education to her daughter, but she wants her son to get the education instead of her daughter. The traditional mindsets on son preference is thus further denying her daughter a chance to progress.

Source: [NDRI, 2016](#)

The NRA grant of NPR 3,00,000 was seen insufficient to build a house, especially if the family was to hire the labour to construct it. Labour costs for a typical two room stone masonry house with attic floor was an average of NRs. 1,75,000 when built by a contractor. Adding the cost of construction materials and transportation the total cost increased to around NPR 5,75,000. This was more than what most families were capable of financing. Communities were also concerned about the high cost

of building materials, which resulted in negotiating the standard of safer building practices and delays in the reconstruction process.

The NRA had also formulated a scheme to provide loan up to NPR 3,00,000, through commercial banks, at with 5% subsidy on interest, for providing additional financing. However, less than 200 people across the country had been able to receive the loan, due to lack of information and complicated procedures, coupled by the unwillingness of banks.

Majority of the people thus had to borrow from informal sources at high interest rates. *"On average, it will take five to seven lakh Nepalese Rupees to construct a house with only two rooms. Many people from our community have taken loans from banks, microfinance and individual sources with different interest rates. For instance, 12% from government bank, 18% from private bank and 24 to 30% from individual sources."* shares Dhading, from Birendranagar whose home was completely destroyed.

Despite NRA providing a catalogue of vetted designs, NRA engineers only gave approval for one or two-room houses. These were highly insufficient for local lifestyles, but people were constructing them so that they could get the government tranche. Most people continued using their old house for storage of food and grains or as a kitchen.

"We are farmers, we need space to store grains, space for praying/worshiping we need extra rooms for incoming relatives during festivals. But we don't have that space", shares Manthali from Barahatal, a local farmer. *"We have constructed according to the NRA housing model. But now it is very difficult to adjust",* adds his wife.

Further engineers from the NRA often get transferred from one district to other and contrasting information from engineers resulted in a critical barrier to access the government tranche. There were also cases of harassment of local women and girls by engineers reported. In one ward, an engineer deployed to oversee safe reconstruction physically assaulted a woman. The community members tried to bring him to justice for this attack, but he ran away from the village and has not returned.

Some social groups, particularly the elderly, PWDs and female-headed households, also faced additional difficulties in rebuilding their homes with limited resources, and capabilities to do the construction themselves. A policy was also adopted to provide financial assistance of NRs 100,000 towards retrofitting of the partially damaged but repairable houses. However, two years down the line, nearly 30% of damaged houses continued to be used after the earthquake with or without repairs.

The earthquake had also directly damaged livelihood investments destroying shop buildings, agricultural crops and killing livestock. In addition, the indirect impact of the earthquake to livelihoods was severe. Many households were unable to focus on their work in order to respond to the earthquake. For example, one farmer reported leaving his tomatoes to rot in the field while building his temporary shelter. The impact was higher in rural districts which are heavily dependent on agriculture and allied activities. A large number of women, who engage in income-generating activities from their homes, incurred additional losses of home-based economic resources and assets essential for their livelihood and well-being.

Assessments of crops and livestock destroyed was undertaken by municipal officials. However, the documentation was poor and most people were not able to claim compensation for the damage even when they had insurance.

Undue demands from an elderly couple

Afilal Joshi, 73 of Talkot-3, from Surkhet district lost three cows in the earthquake as the temporary cowshed fell down during the tremor. These cattle were the only source of income for his family. All three cows used to give Afilal seven liters of milk per day which he could sell in the local market. Afilal and his wife Jaikala had bought these cows with a loan from a local branch of a microfinance.

They wanted to stay independent from their two sons who were also staying in separate houses for the last six years.

Afilal was very active even at that age and would start his daily routine at 4.00 am in the morning. He would milk the cows, clean the cowshed, feed them, go to collect fodder and take the milk to the market by 7.00 am. In the meantime, his wife Jaikala would clean the house, do morning prayer, bring water from the nearby tap, make fire and prepare food. During the day, they would spend their time with the cows and goats they had raised.

After the cows died, Afilal became so sad. With the advice of the microfinance, he had insured his cows but he did not know what formalities he had to fulfill to get the compensation after the incident. When the people from the Palika came to his village for initial assessment, he explained the situation to them, who assured him of help.

Few days later, people from the insurance company came and told him that it was not possible to pay him compensation since there was no adequate evidence of the incident was collected. They said that they needed the pictures, police report and application. Afilal became hopeless.

The next day, one of his neighbors came and said that he could help him out if he could give him 50% of the amount, he got from the insurance company. Thinking that 'something is better than nothing', Afilal agreed to the offer and requested him for help. Later he reported this case to the local government's Judicial Committee and got his money back from the broker.

Nearly 90% of the subsistence farmers had returned to work after the initial 4 to 6 weeks. However, loss of agricultural inputs is expected to lead to a severe decline in agricultural productivity in the coming season. Female farmers who are dependent on agriculture may take longer to recover than their male counterparts, as they have very less access to extension services and also bear the additional responsibilities of unpaid domestic and care work along with rebuilding activities. Collapse of women cooperative buildings and displacement of members to new places have also disrupted the limited source of information and credit access that the women had.

Senior citizens, single women, dalits, marginalized ethnic minorities and people living in remote geographical regions are further suffering due to gap in access to social protection. Most people have lost identification documents are not able to access to entitled cash transfers. The PDRF had identified adoption and expansion of social protection, particularly cash transfer or cash-for-work schemes, as a means to support the poor and vulnerable groups. However, no such policy provisions were instituted or implemented after the earthquake.

The pace of reconstruction of the damaged infrastructure such as water facilities, toilets, healthcare, and education facilities, has also been slow. The delays have increased the drudgery for women and girls. *"We are spending up to three hours daily just to fetch water. Due to the shortage of safe drinking water, children are forced to drink river water due to which they are falling prey to diarrhoea,"* shares Uma Devi, a local school teacher. She further adds, *"Toilets have been destroyed. All women, especially young girls are facing problems of menstrual hygiene. It is even more difficult in traditional communities where menstrual taboos still exist."*

Many damaged government hospitals and health centres have still not been revived after two years. This has severely limited people access to health care especially for the elderly, PWDs and pregnant women. Services like immunization, family planning, etc are yet to be resumed to full pace. Families are diverting money from healthcare to restoring their homes and livelihoods, this is being done at the cost of the health of children, pregnant women and lactating mothers.

Immediately after the earthquake, schools were closed for two months. Education facilities were resumed after two months with damaged schools running in temporary locations. However, the actual physical damage to schools, compounded by the psychological trauma, is still affecting

students. Children feel that they have lost the motivation and confidence to study as their learning habits have been disrupted.

The return to schools for girls has been lower than boys as girls are being pulled out of school to help with household work. Slow rebuilding or damaged school toilets and their lack in temporary learning centres has resulted in shame, physical discomfort and insecurity for adolescent girls. Another imminent risk to girls is child and early marriage, which is still common in Nepal. NGOs are expressing fears that parents could resort to marrying their daughters young as a coping mechanism against the impacts of the disaster on household expenditure.

Push factor of child marriage

Sarita Saud, 15 of Mellekh Rural Municipality-7, Nandegada of Achham district is a 5th grader of Durgadevi Secondary School. She is comparatively older than her peers in her class. She started her school late only when an enrolment campaign was organized by a local organization in her area. Ms. Pashupati Kunwar of the campaigning organization persuaded Sarita's parents to enroll her in the school. As an incentive for sending their daughter to the school, Sarita's parents received some cooking oil, sugar and lentils every month.

After the spread of COVID-19, the school was closed, online classes started on mobile devices and the distribution of cooking oil, sugar and lentils was halted. After the earthquake, the chances of resuming the distribution of those incentives became more unlikely. On the other hand, Sarita's house was damaged and her school building was being used as a quarantine for a year during COVID-19 and as a shelter after the earthquake.

Sarita was growing and she had problems during her menstruation cycle in the temporary shelter. She felt embarrassed to take a bath in an open space and to dispose sanitary pads during her monthly menstrual cycle. When Pashupati Kunwar visited the settlement after the earthquake, Sarita's parents complained that her daughter was addicted to the use of a mobile phone and she talked to boys. They also expressed concerns about their prestige that if she elopes with someone from an 'outcast' person, they will be ashamed. Therefore, the parents proposed that she should be married off. 'After all, she has to go to her husband's house. Why should we delay this if she has to do it one day?' her parents stated. Pashupati said that it's unlawful to marry a girl before she turns 20. The parents have found a solution to that - to get her birth registered with an early date. Sarita is at risk of child marriage.

One year after the earthquake most affected families had received the first tranche following the partnership agreement. Throughout the second year there has been progress on reconstruction. Nevertheless, more than half had yet to finish the reconstruction process. However, two years down the line, nearly 30% of damaged houses continued to be used after the earthquake with or without repairs.

5.3 Gap Assessment and Rehabilitation Planning with limited GESI considerations

Two years after the earthquake the Planning Commission conducted another survey to assess the status of recovery and rehabilitation. The study found that:

- One year after the earthquake most affected families had received the first tranche following the partnership agreement. Throughout the second year there has been progress on reconstruction. Nevertheless, more than half had yet to finish the reconstruction process. At this pace it was estimated that, it will take almost 5 years to complete the reconstruction process.
 - Much of this was due to the lower amount of the grant, lack of technical information regarding the grant, untimely release of tranches and lack of supplementary finance.

- The rebuilding was not happening as per the required specification for earthquake resistant housing both due to lack of technical information, limited number of trained masons, and high cost of building material.
 - Vulnerable groups including dalits, single women, elderly, PWD, etc, were not only facing financial constraints but also facing challenges in getting the grant due to lack of land ownership and documentation.
 - Elderly, PWD and single women were also facing challenges related to building of the homes due to shortage of labour and masons.
- Food security was being recovered for half of the families, but around 10 to 12% families were still facing problems. Around 33% children under-5 were identified as severely malnourished.
- More than half of the affected families felt that damage from the earthquake had impacted their livelihood. Although the consumption expenditure for affected households had increased to NPR 9923 within a year from the baseline of NPR 8963, the coping strategies were rather negative:
 - Remittance was most used coping strategy with the households receiving remittances having doubled after the earthquake.
 - Borrowing had increased in earthquake-affected areas. Nearly 44% of the surveyed HHs were coping with relief support, while 31% had acquired new debt.
 - Sale of assets was another important coping strategy. The number of households having sold their livestock increased three times since before the earthquake.
 - Among those facing constraints to recover, the top three reasons are a lack of jobs (50%), no skills (31 %) and a lack of resources to start a livelihood (27%).
- Reconstruction of only 20% of earthquake-damaged infrastructure was completed. Restoring water supply was a top community reconstruction concern.
- Access to health and education services was still a matter of concern.
 - Health care was still provided in tents, which were vulnerable to heavy rains and stormy weather. Although some prefabricated buildings were provided for health posts, it will still take time to provide all health facilities with more durable and proper structures
 - Children were still in temporary learning centres. There are in need of repair and upgrade into more durable transitional structures before permanent buildings are finally constructed.

The findings of the Planning Commission study led the provincial government to review its rehabilitation programme. The government set up a committee of International and domestic nongovernmental organizations (NGOs) for inputs on strengthening the reconstruction and revival process.

The key recommendations included:

- Providing an additional grant assistance of NPRs 50,000 as top-up to the NRA grant for vulnerable families.
- Enabling access to institutional finance for homeowners, through stronger engagement with banks and creation of a revolving fund at municipal level.
- Running mass media campaigns for providing information related to the grant as well as technical specifications.
- Trainings for safer construction practices based on the National Building Code on a mass scale for engineers and masons.
- Support social capital development at a local level. Create systems for communities to come together in planning and implementing the housing reconstruction programmes.
- Announcing a livelihood recovery programme with focus on cash for work programme and support for farmers, livestock owners, small businesses and those involved in tourism.
- Focus on reconstruction of community-based water supply, sanitation, health and school infrastructure as part of the cash for work programme.

5.4 Scenario 2b: Strengthening rehabilitation with limited GESI considerations

The Karnali Provincial Government worked with local municipal governments to implement the recommendations of the committee. A mass media campaign with local radio stations was initiated to provide information to the communities about the NRA schemes. Clarifications were issued putting an end to harmful rumours that are leading homeowners to build a house that is insufficient for their family's needs. The NRA building catalogue with multiple designs was widely disseminated within the municipalities. Orientation trainings on NRA scheme and designs, earthquake resistant specifications were provided to all DMC members.

Trainings for safer construction practices was conducted for all engineers and masons. Engineers were also trained on soft skills including sensitization on understanding community needs in home designing and prevention of violence against women and girls.

In urban municipalities where safety certification was made mandatory, camps were set up for homeowners who had already constructed their homes to get the certificate or address retrofitting concerns. The camps also supported new construction to be more compliant.

To increase the availability of masons in the province training programmes for youth on basic masonry and construction of seismic resistant buildings were organised by the provincial government across all municipalities.

Information about the reconstruction had started reaching communities, however it did not reach as many women as it does men. People has also started to consult the engineers and masons for their housing reconstruction needs. A grievance redress forum was set up at the local level, which allowed people to lodge their complaints formally and get a satisfying response and redress.

A workshop commercial bank officials in the province was organised to orient them on the NRA scheme and discuss systems for enabling easy access to funds for the homeowners. Home loan camps with support from local banks were arranged to orient beneficiaries and facilitate the home loan application process.

To enable the homeowners with required finance, the Chaukune municipality set up *ghoomti kosh* (revolving fund). Through this fund, interest-free loan of NPR 50000 to 100000 was provided to the homeowners on the condition of repayment when the next tranche was released. In Simta, the municipality assisted with the supply of essential building materials for the families whose housing reconstruction was stuck due to financial constraints.

The NRA was already promoting *Aarma Parmah*, the practice of labour exchange for agricultural purposes, as a key strategy for housing reconstruction. The Barahatal municipality took lead in working with a local NGO partner Jan Vikas, for designing and implementing an *Aarma Parmah* project for housing reconstruction. The process began with PASSA (Participatory Approach for Safe Shelter Awareness) training sessions at ward level and trust building within the local community. The municipality was then divided into small clusters consisting of six to fifteen earthquake affected households depending upon the geographical location. The role of the cluster was to exchange labour within the group, assisting each other with the demolition of damaged houses and construction of new ones. For each cluster one person from each house participated in the group. The clusters were instructed on the project goals and approach.

Each cluster selected one team leader who was responsible for conducting regular meetings within their cluster, preparing a schedule of house construction of their clusters, and solving any disputes raised while working together within their clusters. Regular cluster meetings were held to discuss the need of each of the houses to be constructed, and to establish the construction order.

Tool kits were distributed to each cluster and training was provided on the use of the tools. These tool kits enabled safe and efficient demolition of damaged homes, allowing salvaged materials to

be used in new house construction as well. As clusters began to understand the owner-driven house reconstruction that they would be engaged in, they selected masons from their wards to participate in training provided as part of the project. Activities such as demolition, transportation of materials and reconstruction of the houses to the plinth phase were initiated under the direct supervision of technical personnel.

The work force constructed the house of every people in the cluster, including that of those members being physically unable to work. Houses which consisted of elderly people or people who couldn't do physical work did not participate in the working team but could volunteer in preparing lunch or serving water to the workforce.

Working in clusters reduced the overall costs of demolition and reconstruction. This saved families an average of NPR 90,000, allowing most families to finish their reconstruction with the grant provided by the government. Many persons also benefitted in other ways such as the masons' training. The cluster system also helped in formulating the owner driven approach, giving authority and plenty of discussion time to determine whose houses to build first and which house model from the pre-approved government catalogue had been chosen by the families. This had led to construction of seismic resistant homes.

Within one year, reconstruction of 64% of total houses in the province had been completed and another 23% were under construction. By this period, more than 74% of homeowners had received the third tranche. However vulnerable households were slower in reconstruction of their houses as compared to the others. Even with the targeted socio-technical support, the gap between completion rate by the vulnerable and non-vulnerable households remained.

Water supply systems were rehabilitated on a priority basis, followed by roads. Durable transitional structures were constructed for temporary learning centres. Multiple prefabricated birthing units and health centres were constructed across all municipalities.

Cash for work programme was designed for supporting paid work availability along with reconstruction of community infrastructure. One member from each household was provided with a wage labour of around 20 days a month.

An earthquake livelihood restoration programme was implemented at a large scale. This involved providing skill trainings for the youth on construction related technologies as well as other emerging sectors. A special package for farmers was launched to provide agriculture seeds and tools. A subsidy cum loan scheme was introduced for purchase of large and small livestock. Technical and financial support was provided for construction of livestock shelters. Financial assistance was also provided for resumption of small businesses and tourism. Mountain trekkers, in particular, were provided training on assessment of safe areas before starting work again. It was realized that many small business, home-stay and livestock owners had insurance. However due to lack of proper evidence they did not get their claims. To address this, a system for alternative evidence gathering and technical assessment for insurance verification of claims was implemented.

5.5 Gender Responsive Interventions

The PDNA and PDRF documents had tried to mainstream gender concerns while assessing the impact of the disaster and the steps to be taken for reconstruction. Each sector analysis deliberated on gender concerns, and a separate chapter on Gender Equality and Social Inclusion (GESI) was included. This included sex, age and disability disaggregated data analysed to identify the specific target numbers and concerns of women, children, elderly and PWDs.

This had led to the development of a special assistance package for the vulnerable households to ensure they were not left behind. An additional grant assistance of NPR 50,000 was designed as top-up to the housing grant assistance for vulnerable households such as single women, people with disabilities, children at risk and senior citizens.

The vulnerable households were identified through analysis of data from the socioeconomic survey conducted concurrently with the damage assessment. NRA had considered gender, age, and disability for identification of the vulnerable. Landless were identified through a separate process and a separate policy provision to support their access to land was formulated.

However, many gaps remained. The provincial government also put in place an Inter Cluster Gender Task Force (ICGTF) for undertaking a gap assessment and recommending actions for addressing the concerns of women and girls in the earthquake preparedness programme. The ICGTF report highlighted the following gap areas for intervention:

- The operational guidelines for identifying the eligible vulnerable for the top-up housing assistance was so detailed and complicated that only 2.4% were finally designated as vulnerable. It was important to have a more broad-based assessment for identification of vulnerable households. Furthermore, due to completed process, most of the vulnerable homeowners identified by NRA were not able to receive top-up grant assistance.
- Even though first priority in home reconstruction was given to the families that were still staying at temporary shelters, over a period of time the proportion of females in the shelters was increasing indicating that they were not being covered.
- Elderly, PWD and single women were also facing challenges related to building of the homes due to shortage of labour and masons. Invest in assisting those who have been left behind by a blanket approach to reconstruction targeting them with appropriate support to catch up. Single women especially were facing problems, including harassment, in securing building permits and completion certificates from engineers.
- The Aarma Parmah approach helped vulnerable families to get the necessary support for house construction. However, it was also costly to provide lunch to all members for these families. There could have been alternative provisions.
- The owner-driven construction scheme was based on homestead ownership depriving dalits and women, who have limited land ownership from benefitting from the scheme. While the landless were being facilitated for access to land through a separate policy, the complicated documentation process was leaving single women and widows out of the process.
- Many women and those from vulnerable groups got their grants sanctioned very late due to these complications and hence could not participate in Aarma Parmah initially. Later almost all the houses of their area had been completed. Thus, they had no other option but to hire labour to complete their house.
- Houses in the NRA catalogue had been designed considering local materials and using engineering features to increase the seismic safety. However, they had failed to include the needs and concerns of women. The designs needed to be more women friendly looking into aspects of ventilated kitchens, grain storage, privacy and work space for home-based workers.
- A limited number of women have completed mason training programmes, yet many women are working as labourers in housing reconstruction. There is also discrimination against women in wage rates for construction labour. Where male labourers are receiving NPR. 1,000 per day, women on the same site are earning only NPR 700.
- Senior citizens, single women, dalits, marginalized ethnic minorities and people living in remote geographical regions are further suffering due to gap in access to social protection. Most people have lost identification documents are not able to access to entitled cash transfers. A system to enable them for continuing cash assistance should be in place.
- Cash assistance has proved to be an affective mode to support the most vulnerable households. The temporary benefits top-up in social assistance allowances for senior citizens, single women, and PWDs was also a welcome move. However, targeting errors especially due to lack of documentation and complicated process, resulted in exclusion on many deserving women. Technical support for the same needs to be provided.

- The access of women in cash for work is also less as only one member per household is permitted. There needs to be a provision of 40% of the jobs being provided to women as part of the cash for work programme.
- Sustained support on food supplements and nutrition for children and pregnant women is essential. Targeted nutrition programmes for dalit children, pregnant and lactating mothers and senior citizens important. The food distribution programmes should be continued for older people who have specific food requirements.
- Community-based child care needs to be introduced to help women engage in livelihood services. Tracking enrolment of children, especially girls in schools is important. A system for child protection needs to be put in place.
- Information about the reconstruction and other relief is reaching communities, however it does not reach as many women as it does men. Interpersonal communication, whether through an engineer, NGO worker, community member, family member or palika surpasses any other form of communication when it comes to information on how to build. Door to door interaction is most preferred as women feel they can easily understand information related to reconstruction and get their questions and confusions addressed on the spot.

The ICGTF recommended inclusion of key strategies from the women-led disaster recovery and rehabilitation model adopted by the Gurbhakot municipality as part of the PDRF to make it more gender responsive.

5.6 Scenario 1c: Gender Responsive Readiness

Gurbhakot municipality has a demographic skewed towards females and adolescents. The palika thus felt the need to specifically involve women in the planning process. In collaboration with a local NGO, they conducted a participatory need assessment study parallel to the PDNA by the planning commission. In fact it was their study that had provided major insights on GESI for the PDNA. The assessment included undertaken focused groups discussions with men and women, as well as boys and girls.

Committees from across different genders and age groups was formed at the ward level in all 14 wards. A representative federation from these committees with equal number of men and women, and representation of various social groups including elderly and children was formed at the municipal level, to inform the rehabilitation process. Two separate committees one for PWDs with women living with disabilities also on board and one for LGBTIQ+ individuals were also formed. The ward committee members were provided an orientation training on disaster resistant participatory needs assessment and habitat designing processes. They then went back to their wards and facilitated the need assessment and ward-level plan development.

The committee members also conducted a door-to-door campaign to provide all women and PWDs information on the need for earthquake resilient recovery measures, technical aspects of home and habitat construction and the relief measures being provided by the government. They introduced the home-owners to the NRA catalogue and supported them in finalising of a home design.

Some innovative designs that were only adopted in Gurbhakot included (a) making the new house accessible for disabled by introducing ramps and railing especially in toilets and wash rooms; (b) providing for construction of livestock shed; (c) focusing for flood resistant plinth levels; (d) focusing on ventilated kitchens; and (e) providing work space for women home-based workers.

The ward committees also facilitated the formation of Aarma Parmah clusters, keeping in mind the needs of vulnerable families. While geographical location was a key parameter, they also ensured that at least 40% of the members in each cluster were from vulnerable families- elderly, single women and PWDs. The same principle was applied while recommending masons and other persons for training on earthquake resistant construction. In some instances, vulnerable people were also empowered from this approach. As an example, one blindman who helped to complete the reconstruction of his house within his clusters later on started working as a mason in his community.

This meant that he was involved in income generation activities and that the community accepted him as a construction worker.

They also mobilised the whole community to provide water, food and/or labour when the construction of these homes was in progress to avoid a higher burden on the families. In the initial period itself, a technical and legal camp was set up to help the vulnerable families apply for the government tranche, the top-up grant, in land regularization and/or to get the grant assistance of NPR 200,000 to purchase a new plot of land. They also facilitated and monitored the joint ownership criteria of NRA for all new homes rebuild with government grant.

The municipality has also created a revolving fund for housing finance. Recognising that the NRA list of vulnerable families was not fully correct, they had developed their own list of vulnerable families, who were entitled to the interest free loan for the home construction. The municipality also provided rent support for female headed households and PWDs whose homes have been completely destroyed until they were rebuilt. Priority was given to rebuilding their homes as part of the Aarma Parmah.

Support to single women through Aarma Parmah

It has been more than eleven years that the husband of Sita moved to India. He has not returned back, neither communicated once he left to India. She looks after her four children and their education. Like her other neighbours, the earthquake left her homeless. She recalls having to stay with her small children in cattle shed for more than one year after her house collapsed.

For building the house, once the Government of Nepal announced the financial grant aid, other people in nearby villages were searching for masons to reconstruct their house but she did not face that problem. She had enough manpower from Aarma Parmah as she was associated with a cluster. To return her fair share (parmah) of the work from the masons, she worked providing mud and stone. Now she owns a beautiful two-room earthquake resilient house.

With technical support from Medair, her cluster constructed 10 earthquake resilient houses and did not pay any wages to hire extra masons. Members of the cluster explained how they constructed their earthquake resilient houses by helping each other, and how project field engineers supervised and guided the construction as per government norms. This allowed the cluster to save labour cost and thus was easier for them to reconstruct their houses within the cash grants provided.

Source: [Cortés and Devraj, 2021](#)

The municipality also realised that there were homes, which were not being included in the Aarma Parmah as their grants were not yet approved by NRA or because their key earners were living away. To facilitate such home construction, the municipality created a Women Construction Workers Cooperative, which was providing quality home construction services at a subsidised rate. The Cooperative was set up by the municipality in collaboration with a local NGO. All women members were provided with Mason trainings and the Cooperative was provided with a seed capital grant. Later on, this cooperative became active in its own way and was supporting homes in seismic resistant retrofitting and repair. The women's cooperative in support with the municipal engineers and the NGO also conducted regular camps for supporting home owners in securing building permits.

The impact was so high, that it motivated many women and girls to participate in mason training programmes organised by the provincial government. The municipality also used local radio to create awareness on how to apply for masonry and other skill development programmes. There was a specific focus on encouraging women and girls to apply for these programmes.

One of the main reasons for lack of women's participation in trainings and paid construction work was that they also had to take care of young children at home. Realising this, the municipality put in place a community-based child care programme. A group of 5 to 6 women in each ward were

identified for training on child care services and supported through seed grant as part of the livelihood recovery programme to set up a day-care centre. The centre was run on a business model. For those who could not afford the cost, mainly dalit women, the municipality linked them with the emergency top-up grant for children under-5.

These centres gradually became the key point of delivery for the nutrition and child health care cluster activities. Children under-5 were directly supported for one free meal (supported by the food security cluster of the provincial government), and with supply of Multiple Micronutrient Powder (MNP), Vitamin A and Iron Folic Supplements (supported by the nutrition and health clusters of the provincial government). The response was good and a large number of children under-5 were placed in these centres. It also became easy to monitor the children's nutrition status and provide Outpatient Therapeutic Services to the severely malnourished.

For older children, the temporary learning centres (TLCs) set up in the first year, were upgraded into more durable transitional structures. In secondary schools, there was a specific focus on constructed on pre-fabricated toilet blocks for girls. The municipality also took up rebuilding of school buildings on a priority basis. The municipality also effectively implemented the system of data collection for tracking the enrolment and attendance of children, especially girls in schools. Teachers were instructed to regularly collect and update the data on the platform. Parents whose children had dropped out were being counselled by the school authorities along with ward committee members for re-enrolment. Teachers were also trained to provide psychosocial counselling to help children get back to normal.

For back-up they could use the phone-based psychosocial counselling service which was set up by the provincial government for women and girls, LGBTIQ+, men and boys and grandparent care givers. The ward committee members along with local women's groups were also trained on child protection services especially for tracking of child labour, early marriages and trafficking. The municipality strictly implemented the national law preventing transfer of children from one district to another without permission. A child protection task force was created at the municipal level. Safe places for women and children created immediately after the earthquake were extended for a period of 5 more years.

Within the infrastructure sector, rehabilitation of water supply schemes was taken up on an urgent basis as it would ease the burden of work on women and girls and also act as a disease prevention measure. Construction of public and community toilets with proper lighting was introduced as part of the habitat/ housing programme.

"For as long as I can remember, I have been walking miles every morning before school to fetch water for my family. Water shortage has always been one of the biggest problems of my village. After the earthquake of, all the spouts in my village started mysteriously drying up, and the need for a solution was more urgent", shares Sita Shrestha, from the Multi-purpose Women Centre at Sindhupalchowk, "It was during these difficult times that I got a chance to attend a training on leadership provided by UN Women's local partner organization SAATHI. There and then I realised I had to find a solution for the water shortage problem in our village.

The only natural spout functional in my village was chaotic; there was dirt everywhere, the floor was slippery and people had to wait hours for their turn. Therefore, we fundraised in the village, took a small loan and bought cement, sand, concrete to be carried all the way down from the main road to construct a proper tap. We even brought in a tank from the town to store water. We also built a little canal so that the used water can be recycled for irrigation. Now no water goes to waste here.

Sita further shares, *"In the next phase I want to build a few rooms near the tap so villagers can take a bath in privacy. But most importantly, I want to supply water to more households in the village. Nobody, especially not women and school-going children, should have to walk for hours for water. We can take the water to more homes - and that is what we will do next."*

The training received from SAATHI has been a life-altering experience. I have become more confident, have started thinking about how else I can help my community, and plan for the future. I

am graduating from high school this year. I want to study social work. There is a lot of satisfaction in helping others, I want to be able to continue to do that in the future.

Source: [UN Women, 2017](#)

A special livelihood package for women was introduced as part of a grant received by the municipality from an international aid agency. This included (a) targeted investment on women farmers (land owners and female headed households who depend on farming) through provision of extension services, farm inputs, technology support and credit access; (b) facilitating access to soft credit and low interest rates for female owners of shops and hospitality establishments, especially home-stay owners; (c) provide skill development trainings to young girls and women; (d) supporting women's cooperative development especially for marketing support; and (e) mandating that 40% of the labour force under cash-for-work programmes should be women.

5.7 Costing of Gender Responsive Interventions

Achieving the above, however, requires proper estimation and costing of the gender responsive services. The provincial government has thus put in place a mechanism for gender responsive budgeting in DRM. This looks at two aspects, stand-alone gender responsive interventions as well as ensuring targeted allocations for women and girls in general programmes. A costing framework (Table 2) was thus developed by the ICFTF to support the provincial governments budget for the same.

Table 2: Costing of Gender Responsive Interventions for Earthquake Recovery and Rehabilitation Programmes

Sr. No.	Description of Activity	Target	Unit (in NPR)	Costs	Basis of Calculation
Disaster Risk Management					
1	GESI Focal Point at district level	100% districts	6,00,000 per district	per person	One person @50,000 per person
2	GESI Post Disaster Need Assessment	100% of Rural and Urban Municipalities	XXX per Municipality		TBD
Food Security Cluster					
3	Extended Food Support for Vulnerable families	12% of affected population	1624 per HH		0.885 million for 545 HHS proposed by DanChurch Aid in C19 Nepal: Preparedness and Response Plan (CPRP)
Housing Cluster					
4	Facilitating women's engagement in recovery planning (including needs assessment and participatory habitat designing)	100% of Rural and Urban Municipalities	3,96,774 per Municipality		12.3 million per year for Develop Disaster Risk Reduction Plan including contingency plans for the sub-sectors (Sector Projection 2016) divided by 31 districts
5	Targeted awareness building and communication to women on recovery measures	At least 12 radio PSA	54,000 per PSA		WOREC cost for radio messaging in C19 Nepal: Preparedness and Response Plan (CPRP)

6	Door to Door Information campaigns	100% of Rural and Urban Municipalities	9,67,742 per Municipality	300 million for VDC planning, community planning, mobilisation, technical assistance, advice (Sector Projection 2016) divided by 310 (31 districts with average 10 municipalities)
7	Technical counseling and legal aid services	100% of Rural and Urban Municipalities	21,00,000 per Municipality	CVICT/UNFPA cost for Shelter support, including psychosocial and legal support in C19 Nepal: Preparedness and Response Plan (CPRP)
8	Mason and carpentry skill trainings for women	30% of masons trained to be women	3,91,935 per Municipality	30% of 40.5 million for VDC planning, community mobilisation, technical assistance, advice (Sector Projection 2016) divided by 31 districts
9	Vulnerability top-up support for female headed households and PWDs for home reconstruction/repair	28% of affected population	50,000 per Household	NRA scheme for top up grant
10	Soft loans for female headed households and PWDs for home reconstruction/repair	28% of affected population	50% Interest rebate	
11	Rent support in urban areas for female headed households and PWDs whose homes have been completely destroyed	28% of homes destroyed in urban areas	XXX per month for 18 months	TBD
Livelihood Cluster				
12	Special agriculture package for women farmers (land owners and female headed households who depend on farming)	36% of affected population	8,12,903 per municipality	36% of 700 million for seed production, extension services and replacement of inputs and tools (Sector Projection 2016) divided by 310 (31 districts with average 10 municipalities)
13	Seed Capital Grant Women Construction Workers Cooperative	100% of Rural and Urban Municipalities	5,00,000 per cooperative	
14	Loans for female entrepreneurs especially home-stay owners	80% of total home stay owners	XXX per entrepreneur	TBD
15	Extended Multipurpose Value (MCV) Cash for	TBD	13,500 per month per HH	

	female home-based workers				
Health Cluster					
16	Provision for quality new born, child, maternal, sexual and reproductive health services	100% of Rural and Urban Municipalities	66,710 per Municipality		20.68 million for Provision for quality new born, child, maternal, sexual and reproductive health services (Sector Projection 2019) divided by 310 (31 districts with average 10 municipalities)
Nutrition Cluster					
17	Special nutrition supplements for pregnant and lactating women	4% of female population in reproductive age-group	524 per person		225 million for Micro-nutrients for Children and Women (Sector Projection 2019) divided by 428,986 target beneficiaries
Education Cluster					
18	Community-based Child Care programme	100% of Rural and Urban Municipalities	5,500 child	per	Current ECD Costs
19	Tracking of child attendance in schools (sex and age disaggregated database)	TBD	XXX district	per	TBD
Protection Cluster					
20	Training and awareness building for prevention of Child Trafficking and Child Marriage	100% of Community DMC Members and 20% of NGO workers and Police (approx. 1000 persons per municipality)	8,95,161 per Municipality		Unit cost of 895 per person multiplied by 1000
21	Child Protection Taskforce with emergency child protection funds	100% of Rural and Urban Municipalities	10,00,000 per Municipality		UNICEF cost for provision of Emergency Child Protection Fund in C19 Nepal: Preparedness and Response Plan (CPRP)
22	Phone-based psychosocial counselling	100% of Rural and Urban Municipalities	3,50,000 per province		VSO cost for Psychosocial counselling in C19 Nepal: Preparedness and Response Plan (CPRP)

6. Urban Flood Risks in Nepal

6.1 Background

Flooding during the rainy season, has been frequent, highly damaging and wide spread natural hazard-induced disaster in Nepal. The country faces floods and landslides due to extreme rainfall, normally from June till September every year. Unplanned urbanization is further increasing the exposure in cities and towns to flooding, causing massive disruption of lives and livelihoods.

Developing urban flooding scenarios can specifically help urban planners, developers and communities to understand the plausible risk of floods in correlation to rainfall patterns, but more importantly in mapping the complexities associated with unplanned settlements, encroachment of water bodies, lack of storm water drainage, etc. This could typically help in better urban land use planning. The purpose of urban floods scenario development is to highlight the impact of the floods on the daily lives of the urban marginalized communities-women, children, elderly, PWDs, informal sector workers and urban poor, especially those in slums and informal settlements, bringing to light the need for building their capacities and understanding on flood risks preparation and management.

6.1.1 Urbanisation trends

Nepal is one of the top ten fastest urbanising countries. In 2014, the level of urbanisation was 18.2%, with an urban population of 5,130,000, and a rate of urbanisation of 3 per cent (UN DESA, 2014). The urban population growth rate in Nepal almost doubled from 3.6% in 1991 to 6.5% in 2001, and the number of urban centers increased from 58 in 2013 to 293 in 2017. As per the latest Census (2021) about 66.2% of the country's 29 million inhabitants were living in urban municipalities. For the period 2014-2050, Nepal will remain amongst the top ten fastest urbanising countries in the world with a projected annual urbanisation rate of 1.9% (UN DESA, 2014).

The urban population distribution is uneven across the country. The Bagmati Province has the highest proportion of the urban population, followed by the Koshi and Gandaki Provinces. The distribution of the urban population is relatively low in the Mid-Western (Karnali Province and Far Western Development (Far Western Province) Regions (MoUD, 2017). High urban growth is occurring in the Kathmandu Valley, the Pokhara Valley, the Inner Tarai valleys, and in market and border towns located on highway junctures between the east-west highway and the five main north-south corridors.

Urban areas in Nepal also suffer from critical municipal infrastructure deficits, further exacerbating women's time poverty in undertaking socially determined roles of fetching water, cooking, etc. Critical municipal deficits include (i) limited access and poor quality of drinking water supply; (ii) inadequate and poor drainage systems that have worsened the impact of floods; (iii) inadequate, unsafe, and poor-quality municipal road networks; (iv) high septic tank dependency for wastewater management without proper design and maintenance, which is leading to widespread ground water pollution; and (v) inadequate infrastructure for solid waste treatment and safe disposal, often resulting in open dumping alongside roads and rivers.

Due to a legacy of weak local government systems and heavy reliance on community-based User Committees (UCs) for infrastructure development, Nepalese cities and towns suffer from a relative deficiency of urban service networks, and for some key urban services, vital aspects of the overall service delivery chain have never been adequately tackled. Haphazard and unplanned urbanization has degraded the urban environment, increased urban poverty, and exposed the growing urban population to multi-hazard risk.

Urban women in Nepal are better off than their rural counterparts, however, their condition is still precarious on the development ladder ([Karki and Thapa, 2022](#)). The study based on the review of the Nepal Demographic and Health Survey-2016, found that agriculture is the main profession among women with only 26.4% urban women are engaged in non-agricultural professions.

Women's involvement in unpaid work seems still prevalent with 46.6% women being involved in unpaid work and only 43.3% of women getting paid in cash. Women's property owned related to land and house in urban areas was found to be only 15% and 11% respectively. The male-dominated position is clearly observed in earnings. More than three fourth (75.5%) of women earn less than their husbands among urban women. It can be clear from the presented data that 70% of women were paid less than men in the same work in urban areas ([ibid](#)).

6.1.2 Susceptibility

It is estimated that more than 6,000 rivers and rivulets are in Nepal flowing from north to south. Among these, snow fed rivers, such as the Koshi, Narayani, Karnali, and Mahakali, are perennial rivers. They originate from the Himalayas and snow-capped mountains and pass through the hills to the Terai plains. Nepal's annual rainfall is highly variable, with the monsoon bringing 80% of Nepal's rainfall in less than three months during the summer. The combination of this geography and climate makes Nepal extremely vulnerable to water-related hazards. During the monsoon (June-September), these rivers swell and cause damage to the villages, crops lands, and people and livestock that remain within the river basins. Nepal's lowland Terai districts routinely suffer from devastating floods affecting large, poor populations.

The susceptibility to urban flooding in Kathmandu, Pokharal, and smaller cities and towns has been increasing in recent years. The impervious area in Kathmandu has increased from 9.5 sqkm in 1980 to 37.4sqkm in 2010³, however this huge rate of urbanization has not been matched by similar levels of investment into drainage infrastructure. Accordingly, heavy rainfall in Kathmandu often overwhelms sewer capacity and causes flooding. The story is similar in other towns across Nepal. In some urban areas, natural drains called Kholas are at risk of building encroachment and lack of solid waste management can lead to garbage dumping and associated loss of conveyance and storage of runoff. Additionally, due to pressure on existing land for development, areas that previously acted as natural floodplain storage are being encroached upon in urban areas ([ADB, 2019](#)).

6.1.3 Historical trends

Historical data has shown that Nepal witnessed major flood events in the last century in Tinao basin (1978), Koshi River (1980), Tadi River Basin (1985), Sunkoshi Basin (1987) and the devastating cloud burst in Kulekhani area (1993) which alone claimed the lives of 1336 people. The trend has continued with the country seeing more frequent and more devastating floods in the current century.

- ⇒ The July 2007 Terai flooding, affected around 260,000 people, killed at least 69 people and displaced nearly 10,000 families. In addition, waterborne diseases were particularly prevalent after the flooding.
- ⇒ In August 2008, the embankment 12.6 km upstream of barrage of the Koshi River breached, causing displacement of more than 107,200 people with a death toll of eight in Nepal. Low intensity rains for several days during monsoon season and scouring of the embankment caused the embankment to collapse.
- ⇒ In September 2008, the Mid-and-Far Western Tarai region of Nepal witnessed the worst flooding in 25 years due to heavy late monsoon rains (229 mm of rainfall within 24 hrs, and over 400 mm of rainfall within 48 hrs). Several flash floods and landslides affected 23,660 households, killing 15 people in Kailali District. The damages caused by these devastating floods to infrastructure, private property and livelihoods were severe.
- ⇒ In August 2014, there was widespread flooding in the Tarai areas of Babai and Karnali rivers triggered by heavy rainfall in the foothills of the Babai and Karnali catchments. In 24 hours, nearly 500 mm of rain fell across the plains and foothills. A total of 34,760 families (173,800 people) have been affected, of which 5,936 families (29,680 people) are displaced. 53 people confirmed dead. The floods and landslides have damaged roads, bridges, local markets, transport vehicles as well as livestock, crops and daily consumables. More than 1,240 houses destroyed and 435 houses damaged.
- ⇒ Heavy monsoon floods and landslides in 2020 caused hundreds of deaths, displaced thousands of people, and damaged many roads.

- ⇒ During monsoon season of 2021 (June-September), floods and landslides affected 72 districts across the country mainly in Terai and hilly regions. The subsequent impact on lives and livelihood of the people, on agricultural products, physical properties and infrastructure was tremendous which was further exacerbated by the sudden outpour of rainfall in late October.

6.1.4 Exposure

Nepal is the tenth highest country in the world in terms of relative physical exposure to fluvial flooding. Frequency and intensity of extreme flood events is said to be increasing with the impact of climate change. The number of flood events in Nepal has doubled in recent years. Mountains are warming faster than the plains, triggering melting of ice and permafrost and an increase in the risk of landslides. Incidences of dry spells, droughts, forest fires, heatwaves, flash floods, and disease outbreaks are increasing along with slow-onset risk.

The region is also seeing increased frequency of extreme precipitation (IMD). Mean annual temperatures throughout Nepal are projected to increase between 0.5°C and 2.0°C by the 2030s, while projections show a three-fold increase in monsoon rainfall and more frequent summer floods. The risk of flooding in the river basins of the non-Himalayan region due to higher monsoon precipitation is projected to increase by as much as 14 to 40% by the 2030s.

Nepal also faces a growing hazard from glacier lake outburst floods (GLOFs). Nepal is believed to contain well over 1,000 glacier lakes, with more forming rapidly as a result of glacier melting. Although most do not represent a threat to Nepalese communities, lakes such as Phoksundo Tal, Tsho Rolpa, Chamlang North Tsho, Chamlang South Tsho, and Lumding Tsho glacier lakes, could pose significant disaster risk. When a moraine that holds back the meltwater is breached, either as a result of climate or geological processes, significant flood surges can result, causing major damage to downstream communities.

Table 3 provides a summary of sources, receptors and importance of different types of flood risk in Nepal ([ADB, 2019](#)).

Table 3: Different types of flood risk in Nepal

Type of flood risk	Source	Receptor	Importance
River (fluvial) flooding during the monsoon season	As mentioned in Section 2.1.2, the monsoon rains account for 78% of the annual total rainfall and can cause widespread large floods once river capacity is overwhelmed. These floods always coincide during the monsoon season of June to September.	The Terai region is the main receptor for these floods including large swaths of agricultural land, low-lying urban areas and infrastructure crossing the Terai.	This is the largest source of flooding to Nepal and causes the greatest loss of life and economic damage.
Flash flooding from heavy rainfall (mountainous areas)	Flash flooding in mountainous areas and the mid-hills can occur when intense rainfall falls in a short period of time leading to high surface water runoff into existing rivers and channels.	These events can happen in any of the Himalayan or middle hills regions. Due to the large volumes of water generated by surface water runoff the floods can breach existing river channels and are a risk to nearby population centers and existing infrastructure such as bridges.	Events such as the 1993 flash flooding event in the mid-hills leading to over a thousand deaths demonstrate that this type of flooding can be extremely impacting.
Glacial Lake Outburst Flooding (GLOF)	Lakes that form from meltwater at the front of the glacier can sometimes fail leading to a rapid, sudden release of water down an existing meltwater river.	These events happen downstream of the glaciated areas of the Himalayas. Due to the large volumes of water rapidly released GLOF can breach existing river channels and are a risk to nearby population centers and existing infrastructure such as bridges.	As the locations for potential GLOF events can be closely monitored the risk in general is lower. However, when they occur they can result in catastrophic downstream flooding.
Landslide induced flooding	Similar to GLOF, landslides (usually triggered by earthquakes or the loosening of soil through precipitation and/or weathering) can create a dam across a river leading to a lake building behind it. Although these events can create permanent features, they are prone to collapse with similar effects to GLOF.	These events can happen in any of the Himalayan or middle hills regions. Due to the large volumes of water rapidly released the floods can breach existing river channels and are a risk to nearby population centers and existing infrastructure such as bridges.	With Nepal's remote mountainous terrain, landslides can be hard to monitor and therefore risks associated with landslide dam breaks are not always known. Although rare, when they occur these events can be devastating.
Infrastructural flooding (rural)	Embankment breach or bridge/culvert blockages can cause flooding.	In the cases of breaches, rapid inundation can occur with significant danger to life. Blockages can lead in the worst cases to bridge collapses.	The Koshi River embankment failure of 2008 highlights the need for regular maintenance. These events can be extremely serious.
Infrastructural flooding (urban)	Increasing urbanization is increasing impervious area and leading to the overwhelming of the sewer network.	Urban: Surrounding housing / infrastructure, transport systems, traffic congestion, health impacts due to stagnant water and contamination of storm water with sewage, people along footpaths (death and injury due to falling into open drains and manholes)	Increasing economic, social and human losses.

The Terai regions of Nepal are particularly susceptible to river flooding during the monsoon season as they are natural floodplains; while the Himalayan or middle hills regions are more prone to other types of flood risks. Based on previous events, generalized flood risk map⁹ of Nepal

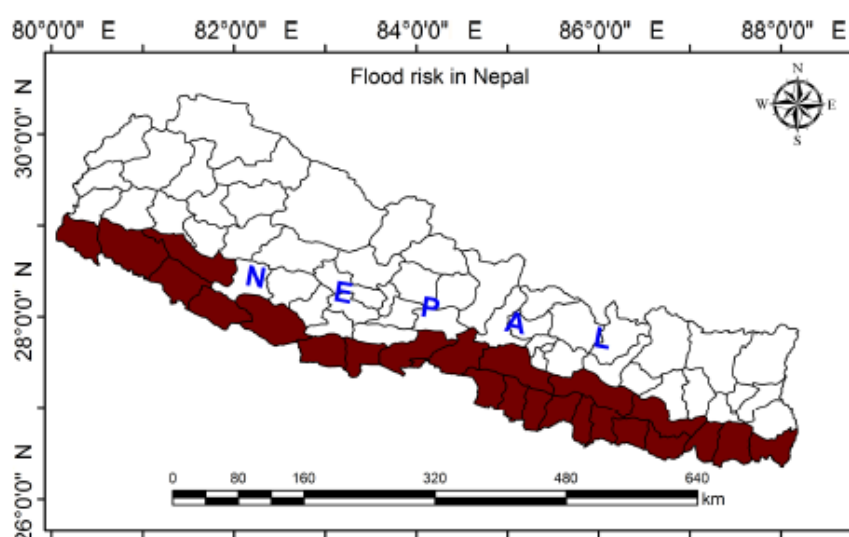


Figure 3: Generalised Flood Risk Map of Nepal

⁹ The boundaries and names shown and the designations used in these maps do not imply official endorsement or acceptance by the United Nations.

has been developed by D. Gautam (2017). The figure 3 brings to light the higher exposure of districts like Kailali, Surkhet, Kanchanpur, Bardiya, Banke, Dang, Kapilvastu, Rupandehy, Nawalparasi, Chitwan, Makwanpur, Sindhuli, Bara, Rautahat, Parsa, Siraha, Dhanusha, Mahottari, Sarlahito, Udaypur, Saptari, Morang, Sunsari, and Jhapa, to floods. Furthermore, in recent times urban areas of Dhangadhi, Kathmandu, Bhaktapur, and Lalitpur have also been facing flooding and water logging during extreme precipitation events.

6.2 Vulnerability

Rainfall does not discriminate across different population groups but floods do. Swelling rivers or inundated flood water affects those living in low lying areas more than others. The poor informal urban dwellers mostly living in slums are thus most affected. Furthermore, while loss of houses affects everyone, it affects the poor disproportionately, especially informal and home-based workers. However, measuring the impact of urban flooding on poor in Nepal is very difficult.

First data in remote areas is poor with significant differences even in the record of mortalities. Secondly, the Government records "storms", "landslides", "drowning" and "heavy rainfall" separately to "flooding", even though these items may be interlinked or not. Thirdly, valuing the impact of flooding remains difficult given Nepal's varying land and agricultural uses which may have a different value according to topography and access to employment or markets. Fourthly, most data is not disaggregated by residence (urban/rural), gender (male/female/other), age (children/young/elderly) and disability (physical/intellectual). Finally, most assessments are limited to estimation of loss to life and property, the coverage of other forms of losses for example loss of informal sector employment, increase in time poverty of women, health impacts, loss of education days for children, etc. is very limited. Together all the above makes vulnerability assessment even more difficult, especially when the focus is not urban areas.

The study has mainly mapped the general impacts of flooding in Nepal by reviewing the status of the 2008 Koshi floods (UNICEF, 2008); the Post Flood Recovery Needs Assessment (PFNA, NPC, 2017); and the more recent 2021/22 floods (NDRRMA, July, 2021; IFRC, 2022). To address data gaps assumptions related to urban complexities and gender and social inclusion parameters from other disasters in Nepal and urban flooding in South Asia has been applied. The information thus collated has been used as a base for gathering evidence which can inform the development of the urban flooding scenarios.

6.2.1 Deaths, Injuries and Affected Population

In comparison to the past floods in 2001 and 2008, which killed 1,673 people, the 2017 floods saw reduced mortality and injuries. The number of people who died in the 18 most affected districts was 134 of which 44 were female. The number of recorded injuries caused by the floods was only 22.

In the severely affected 18 districts, the floods affected a total of around 1.07 million people, including 821,480 (50%) females. The riverine communities located downstream of the large Karnali River host the majority of the poor, marginalized, and indigenous population, who were particularly exposed and vulnerable to floods. An analysis by UN Women (2017) in 10 most affected districts reported a total of 10,736 PWDs being affected including 6656 women living with disabilities.

6.2.2 Housing

It was estimated that some 41,626 houses were completely destroyed and 150,510 houses damaged by the flooding, displacing tens of thousands of people and rendering many homeless (PFNA, 2017). Household assets and food grains were damaged and the affected communities faced shortage of food, water and non-food items.

5.3.3 Water and sanitation

Damage to drinking water supplies and sanitation facilities was estimated at USD 8.5 million, with a reconstruction cost of USD 20.9 million, including resilience (ibid). In many areas, the families also coped with disrupted water supplies and poor sanitation facilities. Providing for safe drinking water

and household toilets were among the most important priorities. Many suffered infections from contaminated water.

5.3.4 Health

The 2017 floods caused five health facilities (with associated drugs and equipment) to be destroyed and a further 94 were damaged. The damage included losses of essential drugs, equipment and non-consumables leading to a damage cost of approximately USD 6 million. An UNFPA estimation shows that some 268,404 women were of reproductive age, of which around 21,000 were pregnant. It was estimated that in three months following the floods, 6,700 pregnant women would experience complications requiring emergency obstetric care ([UN Women, 2017](#)).

5.3.5 Nutrition

There was an already estimated shortfall of food to treat 15,000 cases of severe acute malnutrition (SAM) children. Districts also required supplementary food for management of moderate acute malnutrition (MAM) in children and nutrition supplementation for pregnant and lactating women. This situation was expected to be exacerbated in post flood conditions.

5.3.6 Education

The majority of damage to schools was in the form of direct structural damage to buildings including drinking water and sanitation facilities. However, flood-related damages also included loss of teaching materials, text books, furniture, etc. An NIDR (2022) study reported that more than half of the children could be out of school following a flood.

5.3.7 Agriculture and livestock

Flooding puts the agricultural sector at high risk with potential losses and damage relating to crops. With agriculture being the mainstay for the livelihoods of more than 65% of the Nepalese population, a vast majority of the population is affected economically. Over 126,282 ha of paddy were damaged during the flooding, with higher value crops such as vegetables and aquaculture also suffering significantly. Over 812,000 poultry, 9,400 cattle and 74,000 sheds were affected by the flooding.

5.3.8 Transport and Electricity

Roads, bridges, culverts and the airport at Biratnagar were all damaged during the following leading to costs of USD 28.3 million, with 85% associated with the road network. The flood damage in the electricity sector included transmission lines, substations, poles, transformers and conductors. The supply systems were severely hit during the floods with power generation being slashed by 100 MW as debris swept by swollen rivers choked water intake and reduced water flow into the turbines.

5.3.9 Slum dwellers

In 2018 it was reported that approximately half of Nepal's urban population lives in slums. The Ministry of Urban Development reports an increase in slum settlements in Kathmandu, Pokhara and as well as in other popular migrant destinations such as Dharan, Birganj, Bharatpur and Mechinagar. Internal migrants resettling in available lands, often in floodplains, are most often at greatest risk from flood hazards. Spatial analysis techniques have revealed that the urban poor who tend to live in low lying informal settlements are highly vulnerable to disasters such as floods (Pillai et al 2010; Hoffman 2009; Lall and Deichmann, 2009).¹⁰

Apart from floods, there is also the frequent inundation caused by heavy rainfall days, resulting in most slum dwellers facing loss of livelihood and assets due to inland flooding ([Chatterjee 2010](#)). Self-employed slum dweller typically do not have warehousing facilities or insurance against their assets. Floods and inundation can easily destroy the physical assets (machines, raw materials, etc) of these businesses as well as homes, leaving residents destitute. Women dominated sectors are more likely to be impacted by these and are often worst hit by climate related disasters.

¹⁰ Referenced from Climate Change, Disaster Risk and the Urban Poor. Judy L. Baker, Editor. The International Bank for Reconstruction and Development / The World Bank. 2012.

The situation gets worse with mixing of sewage water with the flood water, which not only is a breeding ground for diseases in the short term, but also has long term health impacts if it infiltrates the water supply systems or upper shallow aquifers (if existent). This occurs because the sanitation situation is often bad in slums due to insufficient sewage canals, missing toilets and lack of storm water drainage systems.

The plight of slum dwellers

It's hard for 54-year-old Sher Bahadur Shrestha to come to terms with the loss of his home. The house he built atop a small hillside six years ago in Dhapakhel, of Lalitpur Metropolitan City tumbled down when the land where his house stood slid down following heavy rains last month. *"It was a beautiful place, and we never had any problem with monsoon before. I never imagined something like this would ever happen to me,"* said Shrestha. Aware that his house may be damaged, no one was inside that afternoon. Nearly a dozen other houses near his are at risk and several of them have been severely damaged with cracks. According to the Dinesh Karki, ward chair of Lalitpur-24, several places in the area suffered from flash floods and about 31 places in the area were pulled down by landslides after incessant rain in the third week of July. *"Who would have thought this could happen inside the Valley itself,"* said Shrestha.

But according to urban planning and land development experts, the event is not the first of its kind. Instead, it is another incident revealing the haphazard use of land for urban settlement that doesn't reckon risk-sensitive planning of land. The Valley since the early 1990s has undergone rapid changes, and according to a study conducted by GSDRC Helpdesk Research, a US-based research institute, the Kathmandu Valley is one of the fastest-growing urban agglomerations in South Asia that has seen an increase in new homes and buildings.

However, many of these settlements and buildings use land inappropriately without any risk management. And so every year in monsoon Kathmandu Valley suffers from several floods and landslides. The unchecked and reckless land use in the Valley has increased the severity of the monsoon disasters.

On the same day Shrestha lost his house in Dhapakhel, another landslide was reported at a construction site for a commercial complex at Tashi Danda in Tokha Municipality, Kathmandu. Two minors were killed when the inclined slope subsided burying a temporary workshop. *"The landslide probably would not have occurred if they had not plotted the land in the area. The heavy rain pushed down the area because they meddled with the soil and unfortunately two lives were lost,"* said Gyan Maya Dangol, deputy chief at Tokha Municipality.

People living in the valley slums of Kathmandu face tremendous hardships to make ends meet. *"Being a single mother, with no formal education, the only job I have is that of a construction worker. The income is very irregular and there is no guarantee when there won't be a job for me. This makes it difficult for me to pay the school fees and expenses for my daughter,"* says Sunita, 35, living in the slum settlement near Bagmati river in the capital of Nepal. Surviving the current monsoon season is also very challenging for the people living in makeshift huts in the cities, with constant risk of leakage and destruction from the heavy rainfall. The 2015 study, 'Urban Poverty in Nepal' mentions why slum and squatter settlements are vulnerable to natural hazards. They are often located in 'ecologically sensitive' areas like riverbeds, low beds and flood prone areas.

Source: [GSDRC Helpdesk Research, 2015](#)

5.3.10 Women and Girls

There is documented evidence that women and girls die exponentially more than men during disasters due to socio-economic disadvantages ([Neumayer & Pluemper, 2007](#))¹¹ and that they are

¹¹ Of the 140,000 who died from the 1991 cyclone disasters in Bangladesh, 90% were women. Reasons for the disparity include women not having been taught to swim, clothing restricting mobility and cultural norms regarding the preservation of female honour causing many women

likely to suffer more in the aftermath of disasters, e.g. adolescent girls facing sexual harassment (Bartlett, 2008). A community perception study on floods, landslide and heavy rains was conducted in Nepal by NIDR (2022). The majority of the respondents felt that whether it was heavy rains, flooding or landslide, all disasters create particular difficulties for women in their community. Women, especially those with children and elderly at home, struggled more while evacuating to the safe area. Similar results have also been reported elsewhere in South Asia wherein women and girls have been known to face specific difficulties during floods due to their clothing pattern, lack of swimming skills and often social barriers to going out alone. Women are also less likely to have access to weather-related early warning systems or be informed about oncoming rains and floods (UN Women, 2021).

Critical facilities during and post flooding are not yet catering to the needs of women, and children, as they are often not involved in the discussion of evacuation shelters and emergency housing facilities, and water and sanitation. Women also lack role in the management of refugee camps, such as the layout of refugee camps, making the barriers of separation between men and women such as barriers in the hospital room, or separate toilet for men and women. Disrupted access to food (43%), unavailability of health care (37%) and lack of toilets and sanitation facilities (32%) in evacuation locations were thus the specific challenges that are faced more by women (NIDR, 2022). Menstrual hygiene needs of women and girls, is another critical issue often not addressed in flood response strategies.

Given the societal gender roles, especially domestic responsibilities like water fetching, food security and care giving, women are even more vulnerable and bear the dual burden of these flooding events (UN Women Watch, n.d). In a study by Home Net South Asia (C. Dharmistha, 2022) 18% of the women reported an increase in domestic work in the last 3 years due to shifting of household material to safe place and home maintenance during monsoons due to water logging/flooding while 22% reported increase in time spent on managing food stocks. Another 16% reported an increase in time spent on caring for family members suffering from water and vector borne diseases.

The study also revealed that women are home based workers face a greater loss of livelihoods along with homes as they not only lose their place of work, but also raw materials and finished goods. Among the Nepalese women covered in the survey, around 46% have reported that their homes get flooded during monsoons, with 31% reporting that their homes were flooded and damaged during the floods.

The impact of urban floods is even more on poor women in urban areas especially those living in slums and informal settlements. Table 4 brings together the combined impacts of urban vulnerability drivers, its impact on slum communities and additional burden on women.

Table 4: Specifics of flood-related impacts and increased vulnerability of urban slum communities and women

Impact	Urban drivers	Vulnerability	Impact on communities	on slum	Additional burden on women
Flooding and inundation	Settlement in Low lying areas	Loss of life and assets during floods	Higher risk to life		
	Flood prone construction (below road level)	Temporary relocation can lead to eviction	Sexual harassment and lack of privacy at shelters		
	No storm water drainage	Loss of assets- home, businesses and documents	Increased drudgery of accessing safe water		
	No sewage lines or blocked/ broken drainage	Loss of Livelihood	Increased child protection role		
	Insecure Land Tenure	Increased health risk due to water contamination			

to leave their homes too late because they waited for a male escort. The mortality factor even holds true for heat waves. During the 2003 European heat wave, the excess mortality for women was 75% higher than that for men of all ages.

Water scarcity and contamination	Less access to reliable water supply Dependence on groundwater (often shallow aquifer) No knowledge of quality parameters	Compromised water usage Use of unsafe water Incidence of water related diseases Financial burden	Increased drudgery of accessing safe water Sometimes girls may drop from school Loss of Productive hours
Vector Breeding	Open water bodies/nallas Unhygienic water storage practices Low access to health care services	Increased morbidity and mortality Loss of wages Health expenditure	Increased care giving role Loss of Productive hours

Source: Mahila Housing SEWA Trust, 2015

5.3.11 Climate Change

Nepal's high vulnerability to climate change adds mounting pressure to its already strained urban infrastructure, which highlights the importance of focusing on strengthening urban resilience to climate change. Of the three climate shocks projected for Nepal, flood damage on infrastructure is projected to have the largest impact on the macroeconomy ([World Bank, 2022](#)). By damaging infrastructure such as roads and buildings, flooding is projected to reduce the capital stock, potential output and production. Relative to the baseline, GDP is projected to shrink by between 1 and 1.1 percent through 2030 across warming scenarios. Larger differences are projected to emerge by 2100, with impacts projected to range between 4.5 and 12.9 percent of GDP. The estimated number of people exposed to extreme floods between 2030-2044 is estimated to go up to 400,498 (83.3 percentile) ([ibid](#)).

The World Resources Institute's AQUEDUCT Global Flood Analyzer³⁶ can be used to establish a baseline level of flood exposure. As of 2010, assuming protection for up to a 1 in 10-year event, the population annually affected by river flooding in Nepal is estimated at 157,000 people and the expected annual impact on GDP is estimated at \$218 million. By 2030, climate change alone is expected to increase the annually affected population by 199,000 people, and the annual impact on GDP by \$574 million under the RCP8.5 emissions pathway (AQUEDUCT Scenario B). In both cases, the impact more than doubles over the 20-year reference period.

6. Scenario 3: Early Warning, Rescue and Relief from Urban Floods

The urban floods scenario builds on the previous experiences of river flooding in Nepal, resulting from intensive monsoon rains. The scenario envisages a state of heavy incessant rains for three consecutive days in the month of October after a more than average rainfall between June to August in the year. With around 169 mm of rain recorded just in last 24 hours, the river water rises to danger levels of 5.23 mts. The embankment is breached at around 13.00 hour on the third day.

6.1 Context Setting

The primary location of the scenario is Birendranagar municipality of Surkhet district, the capital of Karnali province. The municipality is located in Dun valley, surrounded by Mahabharat and Chure hills. With a population of 1,54,886 ([Census, 2021](#)), it is the 17th largest urban area in Nepal, having witnessed rapid urbanisation since 2001 due to high rates of in-migration for employment. Around 34% of the economically active people in the municipality are involved in manufacturing, while another 15.7%, 13.3%, 11.3% and 10.6% are involved in education, finance, accommodation and whole sale trade respectively. The city is also home to more than a thousand families displaced due to the 2014 floods. Much of the urban area expansion in Birendranagar has come through a parallel decline in cultivated and forest areas.

Birendranagar is drained by several north-south flowing river canals, namely Bhureli Khola, Karke Khola, Itram Khola and Geru Nadi. These join each other to form Nikash Khola, which is the tributary of Bheri River.

The region receives heavy monsoon precipitation with the highest average monthly rainfall between 2000 to 2015 for the months of July and August being 488.77 mm and 428.64 mm.

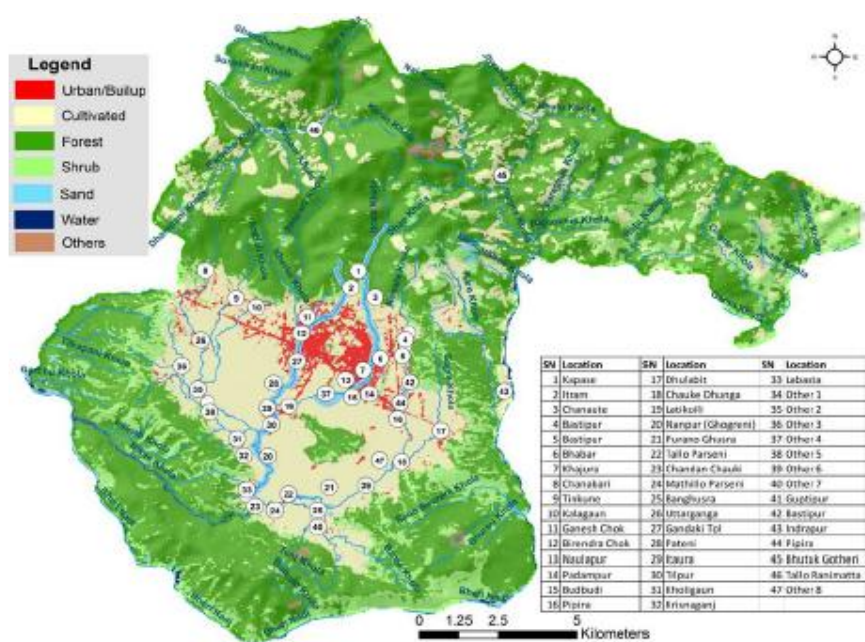


Figure 4: Flood Hazard Map of Birendranagar City

Every year the Bheri River rises to an 'annual flood level'; every 2-3 years to a 'periodic flood level'; and on average every 10 years it rises to an 'extreme flood level'. Birendranagar is thus affected annually by floods at a medium level, but is at risk of heavy flood every 2-3 years. Figure 4¹², shows that monsoonal flood areas covering a large part of the city. This scenario describes the state of monsoon preparedness and response in Birendranagar municipality.

6.2 Scenario 3a: Baseline Situation

On the 12th of October, 2022, heavy unseasonal rainfall started in the western region of Nepal. The Department of Hydrology and Meteorology (DHM) published a special weather bulletin at 15.00 hours, forecasting increase in rainfall activities for the next three days. A special alert was issued at

¹² The boundaries and names shown and the designations used in these maps do not imply official endorsement or acceptance by the United Nations.

18.00 hours forecasting a likelihood of rise in levels of the Karnali river with possibility of flash floods in the nearby small rivers/tributaries. Two days later at 07.00 hours, Bheri crossed the warning level of 4.5 mts and by afternoon (around 13.00 hours) the embankment was breached as water level rose to 5 and 5.23 mts.

The low-lying areas of Birendranagar Municipality, were completely inundated. The urban built up areas around Bhabar, Khajura, Naulapur, Padampu and Gandaki Tol were also water logged. The Palika DMC had asked the residents to evacuate earlier. A tractor was also sent to the area requesting people to move to a school (pre-identified as a safe place). However, the communities did not evacuate until the water started entering their houses. The unseasonal nature of the rainfall led them to believe that there was no risk of flooding.

No deaths have been reported, although many people were injured and a few are reported missing. This was possible only due to a timely and active search and rescue operation carried out by the Police and Security Forces. According to the Palika DMC, a large number people were displaced from urban built-up areas and settlements close to river banks, including many women, people with disability and elderly.

Durga Shah, married woman with three young children, eastern Nepal

Durga Shah is a married mother of three young children with responsibility for an elderly mother-in-law. She lives in eastern Nepal. Durga was asleep when a commotion outside woke her. It had been raining heavily all night and she could hear the river roaring. She woke her husband and they moved their children and elderly mother-in-law to the highest bed in the house. Her husband then left to investigate. Durga started packing clothes, food, and important documents. She quickly freed the livestock before joining her family on the bed and waiting, but he did not return even after the water had started entering their house. When the water was already knee high, the government-deployed rescue team arrived and helped them to safety. 'My husband goes to meetings, he has more time, is worldlier and more educated. I am mostly too busy with housework and the children. If it was specifically said that women need to be there, we might have been forced to rethink. If I was told attending meetings would help me keep my children safer, I definitely would have gone.' Durga and her husband were later reunited when he tracked them down at the school where they were taking shelter. He had been trapped when the flood reached him before he could return.

'When I told my husband I could not swim to get help because of the clothes I was wearing, he seemed surprised. He had never considered it. Also, generally we aren't encouraged to swim, so we never get a chance to become strong swimmers. I don't know how to explain this to a man, even to my own husband.'

Source: Brown et al. (2019)

The displaced people were moved to a local English High School and Police High School for temporary shelter. Most of the displaced population had to shelter under tarpaulin-made temporary shelters, or stayed with relatives.

Five people with disability and 10 elderly people had mobility challenges in the multi-story school buildings, a local NGO person mentioned. The women and girls said that they did not have safe places to sleep. They tried to use the school benches but they were not convenient to use. Women did also have challenges to use the crowded toilets, lactating and pregnant women expressed that they did not have nutritious food. Since the displaced people were kept in the school buildings, they said that it was not possible to prepare warm meals for them. Instead, they had to rely on the dry food provided by some local NGOs and DMCs. During the night, 40% of them managed to use the benches to sleep on but 60% of them were forced to sleep on the cold and dirty floor, according to a 10th grader girl. Women and girls felt uncomfortable to sleep on the messy floor and some incidents of bullying and gender-based violence were also reported.

There were immediate needs for lifesaving support, such as tarpaulins for emergency shelter, safe drinking water and ready-to-eat food. The District DMC and Palika DMC met and asked the civil society organizations working in the area to provide immediate food and drinking water as the displaced households lost their food grains in the flood. Stored grains were a major loss for the families especially where communications were slower and families did not have time to relocate their grain reserves to higher platforms.

The water supply in the valley has also been cut off after landslides occurred in Juparkhola, Kharikhora and Borikhola mouths. Surkhet Valley Drinking Water Consumer Organization, which is distributing drinking water in Birendranagar, said that drinking water supply has come to a standstill due to water filling in all drinking water sources. The organization's president, said that, *"it would not be possible to leave the Khonpani in the valley for a few days due to sewage mixed with the water, apart from entering the Khonpani source for the first time. Landslides have occurred in all the waterfalls. The details of where and how much damage has been caused due to incessant rains are not available. Till the rain does not stop, water supply will not be possible."*

The rains also triggered landslides towards Bheri Bridge along the Karnali Highway. Three (3) more crossings at Katle, Bame and Chandanichauki Khola were also inundated. Road network, power supply and internet services had been disrupted in almost all wards. Hospitals and private clinics have also been affected and remained closed.

The Karnali provincial government mobilised security personnel from the Nepal Army, Nepal Police and Armed Police Force for rescue and relief operations in the affected area. However, with more than 90 landslides on the Surkhet-Jumla section of Karnali Highway, vehicular movement and rescue operations were disrupted. The Chief District Officer informed the media that efforts are under way to clear the debris and restore infrastructure. *"It will take at least one week to resume transportation, electricity and communication"* he said.

The provincial and district chapters of the NRCS also mobilised into action and convened emergency meetings immediately after the flood, mobilized staff/volunteers, including district disaster response teams (DDRT), community action for disaster response in emergency (CADRE), and first aid teams, for evacuations, rapid assessments, relief distributions, and logistics management in the affected areas. NRCS distributed emergency shelter and non-food items, including tarpaulins, blankets, mattresses, kitchen utensils, and buckets.

More than half of the children were not able to go to school even after the flood water receded, as their schools were being used as evacuation centres. There was an increase in water and vector-borne diseases immediately after the floods, as the flood water took time in receding and many homes were still covered in filth.

The rains not only caused damages to physical infrastructure but also to livelihoods. Heavy rains and flood had also destroyed harvest-ready paddy crops leaving farmers worried. *"The crops are submerged in rainwaters. They will start germinating if it continues to rain. The rains have ruined everything,"* said Saud, a local farmer. Many farmers had left the freshly cut crops out in their fields before threshing them. These were also destroyed in the floods. Many women who work as vegetable farmers, manage small fishery units or other home-based work lost their finished goods and raw materials. There was also a group of farmers who were facing loss of land which was left sand covered after the floods.

Three months down the line, however, flood recovery efforts by the Government were limited to restoring water supply, electric and telecommunication systems, rebuilding roads and bridges, repairing and upgrading river control and irrigation systems. People were left to recover on their own.

Pyari Tharu, elderly widow, far-west Nepal

Pyari is in her late 60s. She lost her husband over a decade ago. Pyari's children have all left home and she lives on her own. Pyari Tharu has lived on her own since the death of her husband. Before floods reached her in 2017, she had received early warning through a local radio station. 'I had a mobile phone but because of poor eyesight I could not read the [early warning] messages. It also did not help that they were in English.' After barricading her house with sand and stones as well as she could, she left with a few of her belongings before the water reached her. She knew she had to move quickly as there would be nobody to help her and she is not very strong.

Living in the shelter for a short period was uncomfortable but bearable for Pyari. However, the biggest challenge presented itself in clearing her house of debris left by the flood. Her neighbours offered help only after they had cleared their own homes, so it was a few months before her house was liveable again. A recent fall has limited her mobility, so she is anxious about floods this year. Even with early warning, she fears she might not be able to get far without help and she isn't sure people are even aware of her existence to think to reach out to her with help. Sumeera further highlighted how widows face restriction and discrimination in every aspect of their lives.

Source: Brown et al. (2019)

The only livelihood relief was for paddy farmers announced by the National Government. However, that was also not sufficient to meet the losses, especially for those whose crops were not insured. Most households had to rely on support from friends and relatives or on remittances. Many had to resort to debt or selling of assets.

On 28 October 2021, the Office of the Prime Minister and Council of Ministers had made a decision to provide a relief package of 65% of cost of production, determined by the government while ascertaining the minimum price of rice, to small farmers with less than 10 Kattha (1,264 square meter) of land and who have suffered complete damage of paddy field by the flood. For those with more than 10-60 Kattha of land and with complete damage, the relief package amounts to 30% of the total estimated cost of production. If the damage is partial or if the land size is above 60 Kattha, the relief package amounts to 20% of the estimated cost of production.

Fate of a poor farmer

Nandalal Joshi, a migrant farmer from Doti lost all his paddy field in the 13 July flood. He had rented one bigha of land for vegetable farming and had taken a loan from a local cooperative. Last year, he earned 50 thousand Rupees by home-delivering the vegetables during the COVID-19 pandemic. This year, he estimated to make as much as 100 thousand from the sale of vegetables but his estimate failed due to the flood.

Back in Doti, he used to live in a remote hilly village, which was also at risk of landslides. During the rainy season, he and other seven members of his family used to stay on high alert all night. He recalls, 'We had to stay awake all night for the fear of landslide in my native village during the monsoon. We wanted to escape the landslides, make a happy living but are again in trouble. *Berma gayo karma sangai* (Wherever you go, your (bad) luck follows you).'

He calculated the principal and interest of the loan amount taken from the cooperative and concluded that the relief package of 35% of the total cost of production was way low. He regretted for not insuring his crops despite the advice given by a local insurance agent.

He is now planning to go back to his village, sell out his ancestral land and pay back the principal and interest amount of the cooperative.

Many men migrated to look for work and fend for the families after floods and this left women having to assume all the family responsibilities and this put an extra burden on women. It was noted that

most women are then expected to ensure food security and this leads to additional burden. This problem was even worse in women headed households. Women had additional responsibilities for safety, privacy and security of the family during and after flood periods. The safety and security include the safety of children and other members, and safety of properties left after floods.

During the months of August and September, dengue cases and mosquito breeding were observed in certain areas. During and immediately following the monsoon season, people living in the southern belt of the country demanded additional mosquito nets. Similarly, snakebites and vector-borne diseases (i.e., Malaria and Dengue) posed grave threats to the displaced population; children, the elderly, and pregnant women are particularly vulnerable to infection.

6.3 Response Assessment and Systematic Preparedness with limited GESI lens

After the floods, the Karnali provincial government along with development partners conducted a flood response assessment study including community perception survey. The key findings were:

- No human casualty was reported due to early warning about flood and inundation. However, only 32% of respondents received an early warning message and of these only 62% received in less than 24-hours in advance of the disaster.
- People who didn't receive the early warning did not have access to mass communication mediums such as radio or social media platforms. Many could not read and understand the SMS as they were in English. Also, people rely more on community leaders, neighbours, community-based organisations and networks for information.
- Communities did not understand the importance of early action. The affected people thus did not evacuate on time and could not protect their assets. There is a need to create reliable forecasting system, with sufficient time to respond and also build community trust towards weather forecasts and anticipatory action.
- Knowledge of pre-identified safe shelters was also low. Many people, especially women and elderly, were not informed of the safe shelters and evacuation routes. The existing evacuation routes towards higher ground were inadequate. In some cases, the evacuation routes and safe shelters were also inundated.
- Local response systems provided more effective but they were active only in limited areas. In most places, there were no DMC members, community leaders, to guide the evacuation process. It was learnt that women had to struggle more while evacuating to the safe area particularly women with elderly members and small children in the house.
- Search and rescue operations were totally dependent on Police and Security Personnel. Involvement of local volunteers was low. Most volunteers were not trained on evacuation measures or first aid. Most volunteers did not even have the required equipments for rescue.
- Pre-identified early action was not undertaken by most DMCs. The DMCs also did not have the necessary relief supplies or a warehouse to store the emergency items. They were also at a loss getting vendors to supply the relief materials as the whole province was affected.
- Further even though a disaster action plan was prepared, DMCs were not trained on urban flood management aspects. The strategies being pursued were more suited to rural and peri-urban areas and not urban areas. It was found that the DMCs had not arranged for any emergency shelters with water supply, alternative power and toilets. The DMCs also did not have warehouses to securely store supplies for flood affected people.
- It was estimated that up to 35% of crops were lost in some areas, representing a massive loss to food supplies in affected areas. Loss of stored food grains further added to the vulnerability of the poor. It was not surprising thus that in the community survey, 68% of respondents stated food was an immediate top priority need.
- Disrupted access to food aid was cited as a major difficulty for women (43%). Other than that, unavailability of mobile health care services (37%) and lack of toilets or sanitation facilities in evacuation locations (32%) was shared as the major challenges faced by women.

- Access to clean water was cited as a major need by 20% of the respondents, however the figure was higher at 32% for those with children.
- Around 85% of the respondents stated that loss of crops has been the biggest impact of the recent rains, followed by homes damaged or destroyed (57 %) and damage to land (52%).
- While some relief for paddy farmers was announced, it was not so adequate and there was a high demand for livelihood support and long-term shelter post the floods.

Following the report, the provincial government and Birendranagar municipality put in place a series of measures to improve flood preparedness.

Flood forecasting models: The Karnali provincial government put in place a stronger flood forecasting model. A focal point system for getting updated information, during heavy rainfall periods, from both DHM and critical gauge stations upstream was created. A threshold and trigger mechanisms based on water-level in the rivers and precipitation was put in place in collaboration with national research agencies. A real time monitoring system using HYCOS modelling for put in place as part of the Karnali River Corridor Management Framework.

Early Warning System (EWS): An EWS was put in place, which included multiple forms of communication. Public service announcements (PSAs) in local radio stations, TV, social media, through SMS, and other communication tools were deployed to increase the knowledge of general population on safety tips and evacuation plans. The warnings were made in local language and with clear and concise content to be easily understandable by communities to take action while not causing unnecessary panic.

Disaster Management and Response System: A disaster management system was put in place to alert key action groups, such as civil protection authorities and media for dissemination of targeted information, encouraging people to take action and evacuate if necessary; police and fire brigade for assisting vulnerable groups such as the elderly and the handicapped in flood-proofing their houses, evacuation procedures, and so on; volunteers and CSO groups for assisting the injured, those requiring reallocation and in case of specific circumstances the military for preparing sandbags, constructing temporary structures.

Capacity Building of DMC and Municipal Staff: A number of workshops, seminars and online meetings with DMC members and municipal staff on flood preparedness measures were conducted. They were specifically trained for preparation of flood response action plans, undertaking preparedness measures, working with communities for creating awareness on early action and preparedness, evacuation planning, search and rescue and relief management.

Awareness building on early action and preparedness:

Programmes were conducted to help people understand the warnings. Communities were trained comprehensively on preparedness, evacuation and response aspects. Pre-preparedness was especially focused upon- what to keep handy, what to take with you at shelters, aspects to keep in mind while leaving behind your home, etc. A weather-based crop insurance system was promoted.

A flood rescue tool kit can include a tarpaulin, flash light with panel, steel torch light with extra cell, rain coat, gum boot, yellow d-safety helmet, life jacket, spectacle, megaphone, knife, sash cord (flag rope), durable water bottle, red blanket and kit bag.

Evacuation Planning: DMC volunteers selected and trained on evacuation management, search and rescue operations, first aid, etc. Within each village/neighborhood and evacuation plan was developed with community involvement and the community and first responders were trained on the same through drills. Unobstructed access to the pre-assigned open grounds and facilities for temporary health camps were created and the community was oriented regarding the same. Mock evacuation drills in schools, colleges, public buildings, and hospitals were conducted. Community DMC volunteers were specifically trained on

enabling people to reach the ground and health facilities. They were also provided printed maps for the same. DMC members were also provided battery operated walkie talkies at local level to the volunteers to enable communication during search and rescue. The DMCs also put in place a search and rescue manual and basic tools -axes, shovels, brooms, ropes, sturdy shoes, gloves, face masks, drill machines, human detection systems, hammers, levers, stretchers, etc.

Ensuring Pre-identified Action: The municipality had pre-identified vendors with standby agreements and systems to notify them with request for ready to eat food, safe drinking water and emergency shelter equipment's, were in place. A warehouse for storage of emergency material for the first two days was also constructed on a safe ground and was well stocked in the month of June itself. The warehouse stored immediate relief material including blankets, mattresses, tarpaulins for tents, water and food supply for three days, first aid kits, solar/battery operated lamps and flash lights, etc.

Setting up of evacuation shelters and relief camps: The DMCs also set up temporary emergency shelters in the pre-determined safe and open/evacuation sites for displaced families, with water supply, alternative power and toilets.

Need Assessment and Relief Management: A system for initial rapid assessment post the floods and guidelines for distribution of food and non-food items was put in place. A community-led beneficiary estimation system was introduced to the exact needs and number of beneficiaries, transportation, storage and distribution of food and non-food items. For those who did not have any documents, a system of local reference was developed which enabled everyone to get access to relief. Distribution of immediate lifesaving relief materials in coordination with local NGOs to the survivors was made a top priority, along with distribution of non-food items such as cooking utensils, fuel, clothes, blanket, family kits, baby kits, hygiene kits. Rapid response teams were formed by the health cluster to enable organising of health camps to minimize spread of diseases. DMC members were trained on facilitating these camps.

Recovery and Rehabilitation: A recovery and rehabilitation plan focusing on built back better principles- like raising plinth level of homes, flood safe handpumps, raised toilets, etc was put in place. A livelihood component was also introduced as part of the flood recovery programme. This included training people on alternative livelihoods and flood resistant agriculture practices so as to minimize the impact of future floods. There was specific focus on goat rearing and poultry farming, cultivation of sand covered lands, flood resistance farming practices as possible ways to supplement the loss of their monsoon crops to flooding.

Alternative livelihood helps cope with the flood impact

"My name is Sawari Tharu. I am 32 and live in Suryapatuwa in Nepal. We are freed Kamaiyas (landless bonded labourers) and we were given a small piece of land by the government. We are 10 people in my family and when we first came, we used to work for other people. But with the support from neighbours and relatives we started cultivating vegetables like potato, cauliflower, tomato and onion. The floods destroyed all the vegetables this year. We would have suffered a lot with these floods if we had not thought of setting fisheries recently. We started with 1,000 fingerlings of Mangur fish in our pond. The flood took away some of them but I managed to rescue the majority. But during floods the muddy road that takes me to Taratal and Sanoshree market is blocked so I cannot sell the fish in the market. If I had been able to go to the district headquarter for training I think I could have done a great job with both vegetables and the fishery. My husband goes to India for seasonal labour work so I have more responsibilities looking after my children and taking care of the vegetable farm and fisheries. It would be good to have small cottage industries in our village, so that it could provide many jobs for many men like my husband. To scale up the vegetable farm and fisheries, we would

need more skills and markets. If we could be sure that we had a market to sell our products, we could extend this business.”

Source: Tom et al. (2007)

Watershed management: The rehabilitation plan also focused on watershed management activities. These were based on a number of basic principles related to runoff and erosion including soil, topography, land cover and use, and farming practices. Agricultural measures like contouring and terracing of upland farms to minimise the generation of runoff and sediment were put in place. Agricultural practices that increase organic matter in the soil were promoted.

6.4 Scenario 3b: Improved Response with limited GESI lens

In June 2024, a flood awareness week was organised in Birendranagar municipal area. As part of the campaign meetings were conducted to training communities on the risk assessment, pre-preparedness measures, EWS, need for early response and timely evacuation. Mock drills for flood evacuation, first aid and search and rescue operations were conducted with conducted for DMC members, volunteers, local community leaders, and at-risk communities. Distribution of emergency kits comprising of drinking water, eatables, candles, mosquito repellents, medicines and other essentials were completed in June itself.

On the 17th of September, 2024, once again heavy unseasonal rainfall started in the western region of Nepal. DHM published a special weather bulletin forecasting a likelihood of flash floods. The Karnali provincial government flood forecasting and EWS focal point immediately began real-time monitoring of the situation in collaboration with provincial DMC members.

The palika flood forecasting and EWS focal point was informed, who immediately circulated the information to all DMC members including palika and CDMC members and community volunteers through SMS. PSAs on local radio over the possibility of floods were made.

People were asked to put in place a flood readiness kit in case evacuation was required. Most families had already constructed protected platforms and were able to shift their grain reserves to higher places.

“We received text messages informing that there is possibility of a flood. The ward chair, ward executive members and Badhghadhs - community leaders held a meeting and decided to send a tractor to evacuate the people. They were taken to the school (pre-identified as a safe space). Due to this, we are safe and alive.” Lalta Prasad Tharu, resident of the Municipality. “We were constantly providing weather updates to all the departments within the municipal office, as well as all the ward offices. Based on this information, one of the ward offices immediately mobilized tractors for early evacuation. They didn’t have to wait for a decision from the municipal office.” Shares Netra Prasad Jaisi, Disaster focal person for the municipality

On 18th September, the HYCOS modelling provided a forecast of possibility of flood within the next 24 hours. A task force and help desk was set-up at the municipal office for coordination and communication between various agencies. A notification was sent to pre-identified vendors for arranging food and non-food item supplies.

Local administration and community volunteers were mobilized at the area from the morning at 07.00 hours on 19th September, with rescue materials to minimize damages caused by flooding and inundation. At 11.00 hours, evacuation orders were issued. PSAs and SMS were sent requesting at-risk communities for evacuation, along with information regarding embankment status, safe evacuation sites. The safe sites had already been predetermined and communication on the same along with the evacuation routes was already shared during the mock evacuation drills.

A young couple with visual impairment

Hira is married to a man with a visual impairment. They have a toddler together and live with Hira's husband's family. Hiradevi shares, *"My mother-in-law alerted me and my husband just before the flood reached us. She then arranged for us to be taken to the shelter. It was very scary, the flood swept away everything we owned soon after. I am certain my husband [also blind] and I would have died had we not had help. I know my way to school and, even in the midst of such chaos, might have been able to make my way there, but not with my daughter and belongings. I would be too worried for her safety."*

During uncertain and chaotic times such as a flood, people are, rightly, focused on saving themselves. In such settings, people like us [blind and disabled] who cannot see, cannot hear and therefore cannot move around with ease and confidence, become even more vulnerable. We are left with no choice but to wait until somebody gets around to thinking of us. Until somebody is willing to help us. Along with us, I think women who are pregnant and women with new born children are the most vulnerable.

The biggest challenge at the shelter was keeping my toddler safe and out of people's way. Being so little, she knew nothing about personal boundaries, and because she would relieve herself whenever she felt the need to, and because of course I could not always see, people shunned us. Also, we were on the second floor and along with having no railings, there were also no toilets there. Overall it was a very difficult and uncomfortable experience ... It was not far from being traumatic as I felt shunned by people around, even though there was little else I could do to help myself.

Source: Brown et al. (2019)

Sirens were sounded in at-risk areas and tractors sent to evacuate people. The CDMC took charge of the evacuation convincing people to move to safety as soon as possible. Local volunteers actively disseminated flood and landslide alert messages, allowing communities to evacuate in a timely manner. By the time the riverbank was breached at around 13.00 hours, most people had been evacuated to shelters.

A single woman with young child (husband missing)

Rama Devi Mukhiya, is in her mid-20s. She is a single mother of three children; the oldest is 11 and youngest just under 2. Rama's husband has mental health problems and has been missing for some time. She only realized water had entered our home at three in the morning as she had no phone or radio to receive early warning. When water reached her ankles and kept rising, she placed all her children on a bed, along with some clothes, blankets, and food. She quickly stepped out to free the livestock before joining her family on the bed. As she shares, "I am not a very good swimmer, but I think I would have risked trying to find a safe place had I been on my own. But I could not put my children's lives at risk. So even when the water level kept rising, I chose to wait for help." Soon, the government deployed a rescue team which helped the family reach a safe place within temple premises. They had to take a different path than the one they were used to as a lot of it was now underwater or covered so deeply by sand, it would have been impossible to walk through. The flood swept away their home and land soon afterwards. She knew where the safe place was, as the temple grounds is the only elevated place in the entire village. But she shares, "Even if I had received early warning, I would have perhaps chosen to wait for help. I would be too worried about risking the lives of my children. As long as the house stands, it feels like the safest of all places."

Source: Brown et al. (2019)

As the palika DMC had already identified schools as emergency shelter sites and measures to set up camps were immediately put in place. People were accommodated well within the shelters. The palika DMC in coordination with CDMC, distributed tarpaulins, drinking water and ready to eat food at night.

The plight of a transgender woman

Champa Kali Musalman is in her early 50s. She has never married, and lives with and supports her family of nine, including her elderly mother and widowed sister-in-law. "I led my family to a safe place. We only left after water started entering our house. We just about saved our lives. There was nothing else left. We didn't expect floods to be worse than in previous years; had we known better, I definitely would have prepared better and made sure we left earlier." she shares.

However, as she started heading to higher ground with the rest of her family, the name-calling started almost immediately. "People pointed to us and said, Oh look, the chakka [pejorative term] family is coming too." She shares how she is used to being jeered at and called derogatory names, but to be treated like this even during such a precarious time felt terrible. Nobody thought to offer any help, even though my mother is very old and my nieces and nephews are young. Instead they tried to avoid us. When the jeering and taunts continued for days even where we were taking shelter and people did their best to seclude us, I sometimes thought about jumping into the water and ending it all once and for all. On top of everything, there was nowhere private to clean, wash, and change, and this made things worse.

Source: Brown et al. (2019)

The taskforce initiated initial need assessment (IRA) to understand the food and non-food items needs of the affected population. By the next day orders for supplies was placed and distribution of relief material was initiated. Since the existing water sources were contaminated and some water supply systems were damaged in the affected areas, there was a need for clean drinking water. Water purification tablets to purify water and keep drinking water safe in homes was provided. Considering the likelihood of an outbreak of waterborne diseases in certain affected areas, hygiene promotion activities were promoted. Rapid Response Team (RRT) formed by the health Ministry organised special outreach of health services to stem likely health-related epidemics, offered counseling and re-enforced the provisioning of basic health care.

The NRCS also provided emergency shelter supplies (tarpaulin, rope, and tool kits) to families who had lost their homes and were living in open areas, enabling them to construct temporary shelters. In addition to household items, some families received an additional NPR 2,000 to purchase shelter construction materials such as rope, wire, and nail. NRCS also provided NPR 13,500 in multipurpose unconditional cash assistance to the most vulnerable families.

However, many residents had lost important documents, which made it difficult for them to access the cash assistance. The elderly were more vulnerable as they did not realise the loss of documents until they were actually required to produce it for continuation of social security allowance.

No citizenship, no relief

Mansuwa Gurung, 67, was married at the age of 21 to Bal Bahadur Gurung, who was serving in Indian Army. She has two sons and six daughters. Both of her sons have married and are staying with their families. Three of her daughters have also married and three are staying with her. None of them went to a school.

She lives in a tent on the banks of Mohana river and breaks stones to make gravel. She sells one sack of gravel for 60 Rupees and in the latest season, she sold 60 sacks of gravel. Three of her daughters also help her at times but most often, they don't want to work with her mom. They go to the market for other works, such as working as a helper at construction sites and carrying loads for travellers in the bus park.

One of her daughter even tried to sell maize, peanuts, masks and sanitizers in the street with the money collected from selling the gravel. Unfortunately, none of them thrived as the hooligans would snatch these items from her for free. At times, the municipal officials also chase them away.

Her husband Bal Bahadur left Mansuwa and the family more than 10 years ago. She does not know where he has gone. 'This bloody guy must have married another woman and settled somewhere', says Mansuwa in a hoarse voice. The main problem for her is the absence of a citizenship. She was born in Dailekh and moved to many places including Surkhet, Nepalgunj and finally Dhangadhi. She didn't know she needed a citizenship when she was young. Later on, she was not given one because of her inability to furnish sufficient proof. Without a citizenship, she is deprived of any services, including relief provided by the Municipality and other agencies.

6.5 Gender Responsive Interventions

The provincial government had also put in place an Inter Cluster Gender Task Force (ICGTF) for undertaking a gap assessment and recommending actions for addressing the concerns of women and girls in the urban flooding Early Warning, Rescue and Relief programme. The key recommendations of the ICGTF were:

- All women and marginalised groups need to be empowered as decision makers in the home and in CDMCs so that they are not dependent on men to undertake preparedness activities or to evacuate, and so that their needs for more time and prompt evacuation are recognised and fully accommodated.
- Targeted awareness generation programmes for women, girls, other sexual identities, elderly, and those with disabilities need to be conducted. Women should be trained on preparedness, early warning systems and evacuation aspects so that they are not left behind when men are not around. A flood preparedness game was developed to reach information to them and regular training programmes and mock drills should be conducted specially to reach out to vulnerable groups.
- Pre-preparedness should especially focus upon: a) Grain and Documentation management; b) Teaching swimming to women and girls; c) Training women volunteers in response and evacuation facilitation; d) How to carry and rescue children.
- EWS should not rely on only one form of communication such as SMS messages, but should ensure that warnings are shared in easily accessible and understood ways for all sections of the community. Create a multi-layered EWS to ensure that women and vulnerable communities are also reached. For this using of text and diagrams in web-messaging, voice messages in local languages need to be developed. A hub-and-spoke communication model needs to be created involving local leaders, community-based organisations, networks and support groups for rapid communication of information within the community.
- CDMC leaders should be trained to keep a track of all vulnerable homes in their locality and inform them of the status to ensure timely evacuation. A helpline number needs to be announced for those who required support for evacuation. Local volunteers together with security personnel and ward officers should support the evacuation process for the vulnerable.
- A critical strategy to build resilience of flood affected low-income communities especially women, is to organise them. Supporting separate committees and/or SHGs of women and other genders trained to work in rescue, relief, and rehabilitation is very important.
- The evacuation shelters and relief camps should be gender responsive and socially inclusive. Ensure shelters have provisions for women, in particular for pregnant and lactating women, women with disabilities, adolescent girls, as well as gender minorities. Locks, lighting, accessibility, and sex-segregation must be integral to their design. Provide for additional privacy and security measures in shelters, including during menstruation.
- Ensure gender parity and diversity in distribution teams, social mobilisers, trainers, and enumerators and provide adequate training and capacity strengthening including gender sensitization.
- Prepare and distribute dignity kits including reusable sanitary pads (including instructions on proper disposal in local language), masks, underwear, two sets of clothing in accordance with the local context, toiletries, water purifier tablets, umbrella, mosquito net, batteries,

shampoo, nail cutter, five meters of fabric, sewing kit, soap for bathing and washing, towel, whistle, as well as a flashlight/solar lantern and solar radio. Note that dignity kits may be required also by trans-persons.

- Additional items should be added into the NFI kits for specific groups: visually impaired persons: a white cane. Pregnant women: razor blade or scissors to cut an umbilical cord, string to tie it, plastic gloves, sheeting for hygiene, and brief with photo-based instructions for how to safely deliver a baby. Women with infants: five meters of fabric. Women with disabilities: other assistive devices as required.
- Ensure women, including from excluded and vulnerable groups, are represented in all decision-making and consultation forums, as well as in leadership positions. Women also need to be involved in committees dealing with evacuation shelter, housing and housing facilities. Female-sub DMCs need to be promoted to increase women's participation in flood management.
- Rapid Gender Analysis needs to be part of the Need assessment process. Equally consult with women, girls and excluded and vulnerable groups, during need's assessments.
- Health camps beyond disease management to address sexual and reproductive health needs and immunization needs conducted.
- Train staff and volunteers (ensuring gender parity) for routine spot checks and community consultations as part of efforts to prevent SGBV and provide them with information of available services including hotline numbers of the National Women's Commission (1145) for reporting of SGBV. Deploy women police to patrol shelters to promote safety and security of women in the post-lockdown context.
- Ensure that psycho-social support as well as first aid and trauma counselling is available for survivors of violence, women separated from families and children, and children separated from parents.

6.6 Scenario 3c: Gender Responsive Preparedness

Sama devi, is a single woman, living in the low lands of Birendranagar municipality. The communities living in this area are suffering from increasing and more severe flooding. She lives in a thatched house near the riverbank, so every year she is badly affected by the floods. She has to spend most of my earnings to make my house safe, to repair it after the floods every year. In 2022, Sama was one of hundreds of people displaced by the floods. Her crops were either damaged or completely lost to the waters. Months after the rains stopped, she had still not recovered their livelihoods. Furthermore, while staying at the camp, she was sexually harassed multiple times and had left the camp early due to the perpetual fear of sexual assault.

But 2024 was different. The women CDMC members in her community, had conducted a specific programme for women and girls on flood management, As a result of a training received, she had started to change the way she prepares the seedbed so that we don't lose all our crops. She uses a local variety of paddy to cultivate her three kattha of land (three kattha is equivalent to approximately 1.000 square metres) and also grow mustard and masuro (lentil) as winter crops. To keep her crops safe, she has raised her homestead.

She was also aware of the EWS system and kept an eye out for the PSA which included a special alert for low lying areas and slum locations which were more prone to inundation and identified as high-risk zones. The CDMCs in these areas had immediately mounted to action being in constant communication with the palika DMC focal point. The CDMC members also visited the homes of single women, elderly and persons living with disabilities to share information and assure them of necessary support for evacuation. Sama was assured of all support for evacuation and also advised to prepare the evacuation kit.

At the shelter site, there was a pre-identified local women's group to ensure support for safety and priority of women. The group facilitated the rapid gender analysis in collaboration with district disaster response teams. The focus was on identification of the number and status of women,

children, elderly, pregnant and lactating mothers, adolescent girls, persons with disability and LGBTIQ+ persons. Sama, along with a number of other vulnerable people were part of this list and hence had priority access to relief material and dignity and hygiene kits. There were also separate lines for women and men during distribution of relief material, which made it easy for single women like her to access the material, without fear of being harassed. She also received fuel wood for cooking after 3 days.

Her camp included a safe space created for women and trans-persons. These were designed to provide specific services such as for pregnant women and lactating mothers to take rest, for breastfeeding and get the needful support (food and healthcare), for special needs such as sanitary pads, undergarments, wipes, blankets, etc. Sexual and reproductive health services were provided along with individual and group counselling and information on safety and security precautions for women and trans-persons. Psychosocial counselling was provided to women and trans-persons who were affected by the trauma of floods and major loss of assets and livelihoods.

Orientation on GBV, legal rights and relief measures available was also conducted at these centres. Sama participated in one of these trainings and now feel more comfortable for her safety in the camp. She also knows who to contact in case she is harassed.

6.7 Costing of Gender Responsive Interventions

Achieving the above, however, requires proper estimation and costing of the gender responsive services. The provincial government had put in place a mechanism for gender responsive budgeting in DRM. This looks at two aspects, stand-alone gender responsive interventions as well as ensuring targeted allocations for women and girls in general programmes. A costing framework (Table 5) was thus developed by the ICFTF to support the provincial governments budget for the same.

Table 5: Costing of Gender Responsive Interventions for Early Warning, Rescue and Relief during urban floods

Sr. No.	Description of Activity	Target	Unit (in NPR)	Costs	Basis of Calculation
1.	Targeted awareness building and communication to women early warning systems (EWS)	100% of Urban Municipalities	1,80,645 per Municipality		56 million per year for Risk information dissemination, public education and awareness (Sector Projection 2019) divided by 310 (31 districts with average 10 municipalities)
2.	GESI customization of EWS	100% of Urban Municipalities	XXX per Municipality		TBD
3.	Mobilization and training of female volunteers and women CBOs/SHGs	30% of total volunteers (approximately 1000 persons per municipality)	8,95,161 per Municipality		Unit cost of 895 per person multiplied by 1000
4.	Recovery kits for female headed households and PWDs	28% of affected population	500 per household		
5.	Rapid Gender Analysis	100% of affected communities	XXX per Community		TBD
6.	Insurance assessment services for female headed households and PWDs	28% of affected population	XXX per household		TBD

7.	Special nutrition supplements for pregnant and lactating women	4% of female population in reproductive age-group	524 per person	225 million for Micro-nutrients for Children and Women (Sector Projection 2019) divided by 428,986 target beneficiaries
8.	Dignity kits/ CVA	100% of women, adolescent girls and trans persons	1,043 per kit	1.77 million for 1700 Hygiene Kits proposed by DanChurch Aid in C19 Nepal: Preparedness and Response Plan (CPRP)
9.	NFI Kit/CVA for pregnant women and those with infants	4% of female population in reproductive age-group	500 per household	
10.	NFI Kit/CVA for women with disabilities	2% of affected population	1000 per person	
11.	Fuel (wood) for most poor	5% of affected households	500 per household	
12.	Portable Toilets and Bathing Facilities at Shelters	100% of shelters	107,500 per toilet box	Based on units cost for the same used in Pashupatinath premises (https://kathmandupost.com/valley/2019/05/17/trust-to-install-23-portable-toilets-on-pashupati-premises)
13.	Lock and Lighting facilities at Shelters	100% of shelters	XXX shelter per	TBD
14.	Menstrual Hygiene Measures at Shelters	100% of shelters	XXX shelter per	TBD
15.	Ramps and Disability friendly toilets at shelters	100% of shelters	XXX shelter per	TBD
16.	Targeted awareness building and communication to women on SGBV and Protection Measures	At least 5 radio PSA	54,000 per PSA	WOREC cost for radio messaging in C19 Nepal: Preparedness and Response Plan (CPRP)
17.	Female staff and volunteers for spots checks on SGBVs in shelters	100% of Urban Municipalities	XXX per Municipality	TBD
18.	Women Police Patrol in shelters	100% of Urban Municipalities	XXX per Municipality	TBD
19.	Phone-based Psychosocial Counselling	100% of Urban Municipalities	3,50,000 per province	VSO cost for Psychosocial counselling in C19 Nepal: Preparedness and Response Plan (CPRP)

7. Scenario 4: Urban Flood Planning and Preparedness

The urban floods scenario builds on the previous experiences of river flooding in Nepal, resulting from intensive monsoon rains in September. The scenario envisages around 90 mm of rain recorded just in last 24 hours, the river water crosses the danger level at around mid-night. The embankment is breached and flood water gushes into the municipal area causing around 15-30% of the built-up area to be inundated.

7.1 Context Setting

The scenario is based in Dhangadhi sub-metropolitan city, with an area of 271.74 square kilometres has a population of 204,788 (102,454 female and 102,334 male), according to the population [census of 2021](#). The city hosts the provincial headquarters of Sudurpashchim province and is a commercial and educational hub for 7 hill districts of the province. According to the e-profile of the sub-metropolitan city, 42% of people here speak Nepali, 19.5% speak Doteli, 18.5% speak Chaudhary and 10% speak Rana Tharu languages. Fifteen percent of the total population are children, 3% are single women and men. Sixteen percent households are women-headed.

According to a [report](#) published by Dhangadhi sub-metropolitan city, 71 villages and settlements in all 19 wards have been facing inundation and waterlogging for the last 39 years¹³. According to the statistics, there have been 50 small and big floods in the sub-metropolis in the last 39 years. The Mohana River, Ghuraha, Ghurhi River, Sukuti, Kailali Nala, Ratopul Nala, Behdi-Jyoti School Nala, Zipraka Nala, Setopul Nala and other rivers and streams have inundated villages and settlements in Dhangadhi.



Figure 5: [Regular inundation and water logging at Dhangadhi](#)

Given the annual frequency, there is the need for sustainable urban planning practices which improves resilience and preparedness against such floods. The scenario describes the state of urban flood risk and its management in Dhangadhi sub-metropolitan city.

7.2 Scenario 4a: Baseline Situation

On the 19th of July, 2022, at around 01.00 hours the Mohana river water rose and flooded the Bhajani Municipality Ward No. 7 Himmatpur in Dhangadhi sub-metropolitan city. Seventeen families had to be immediately evacuated by the Police. The flooded river collapsed six houses near the bank. The level of water gradually extended and the lower part of the city was soon under water.

The flood was felt by the residents of wards 2, 3, 4 and 13 between 03.00 to 05.00 hours. The water level reached upto 2 to 5 feet in many houses and lasted for around a week.

¹³ <https://myrepublica.nagariknetwork.com/news/dhangadhi-has-been-facing-inundation-for-39-years/>

Subina Chaudhary, young woman with a disability

Subina is in her late 20s. She is unmarried, lives with extended family made up of parents, married siblings, and their families, and a few unmarried siblings. Subina was born with a physical impediment that has seriously limited her movement all her life. In 2017, having recently undergone surgery, she was completely immobile when floods hit her village.

Subina and her family were aware that severe flooding was likely as they had received warnings through the local radio station as well as phone messages. It had also been raining heavily and they could hear the river from their home. When her family members responded by packing and surrounding their house with bags of sand, instead of evacuating immediately, Subina began to get nervous about being left behind and asked to be moved to higher ground straight away, before water reached them. Subina knew of one or two dedicated shelters, and also that they were not big enough to accommodate everybody likely to be displaced. Yet, she had to wait until everybody in her family felt ready to evacuate. She was carried to the nearest shelter by her brother, where they stayed for four days. She felt grateful for having sisters as they helped her relieve herself in a bucket while ensuring some privacy. She was also glad to not have had her period at the time as things were hard and uncomfortable enough, having to share space with hundreds of people in an open hall, without additional worries about personal hygiene and the stigma around menstruation.

At night, most women, not only disabled ones, remained alert for fear of rape and unwanted attention. You never know who is who, there so many people around, and many men drank at night. Especially as a disabled person, already reliant on others for everything, if anybody was to behave badly with me, I know I would hesitate to complain, for two reasons. First, I did not want to cause any more trouble for my family. And second, when disabled women have been abused in the past, people have been dismissive when complaints were made. It was as if having a disability meant her life and feelings didn't matter as much. All these things made me feel very vulnerable.

I hardly ever attend meetings or workshops. Apart from it being difficult for me to get to them, I also feel able people actively avoid people like me as they consider us more of a nuisance than useful as they think we cannot do anything without help. Not only do people think we are incompetent and simple-minded just because we are disabled, but also that we would only create more trouble for them as we may not always be able to make it to events on time and might need assistance. So they think it's best to stay clear of us. The biggest barrier for me to attend preparedness meetings is my family's attitude. Unless they give me permission and offer support, I simply won't be able to. At the same time, if they really understood what the meetings are about and how I would benefit from them, I don't think they would try and stop me too often. The other thing to remember also is to give plenty of notice so alternative chaperones can be organized. My immediate family may not always be able to come with me. And then, there is of course money. Very few disabled people are financially independent. Even affording basic bus fare can be a challenge at times.

Source: Brown et al. (2019)

The Palika-level DMC along with NRCS and other local NGOs have been distributing relief to the affected people and collecting data on the loss of life and properties. According to them, a total of 793 people were displaced, among which 412 were women, 9 were people with disability and 63 were elderly. It is also estimated that 1,065 bighas of cultivable land in the Dhangadhi area have been eroded by the floods.

The District DMC and Palika DMC met and asked the civil society organizations working in the area to provide immediate food and drinking water as the displaced households lost their food grains in the flood. The displaced people were moved to Delight English High School and Dipendra Police High School in Dhangadhi for temporary shelter. Some 80 jars of drinking water were provided to those taking shelter at the schools. An NGO (Womancare) distributed dignity kits among women which was much appreciated.

After the floods and inundation, major roads have been blocked, power supply and internet services have been disrupted in almost all wards. Hospitals and private clinics have also been affected and remained closed. Drinking water has been contaminated and sewerage system has become dysfunctional. The Dhangadhi bazaar area was also completely inundated.

Cycle of violence and discrimination

Amrita Chaudhary, 25, was working as a home-based worker in Bangarakatan of Dhangadhi Sub-metropolitan City-9, Kailali. When she was 14, one day her landlord asked her to massage his head and after a while, he started touching her chest, belly and thighs. She felt uncomfortable but could not resist.

On another occasion, when no one was at home, the landlord raped her. She didn't like what happened to her but she was helpless. One day, a lady called Roja Bajracharya, who lived next to her landlord's house, asked her why she often seemed lost. With some hesitation in the beginning, she shared her story with Ms. Bajracharya, who was working as a counsellor at the One-stop Crisis Management Centre (OCMC). To cut a long story short, Amrita got rescued, treated, provided with counseling services and was helped to file a gender based violence (GBV) case against her landlord. He is now in jail.

After some time, she went to Kuwait for a foreign employment. There also, she faced similar or even worse situation. Officially, she was working as a house maid but the employer not only sexually exploited her but also physically abused her.

After 3 years of hellish life, she came back to Nepal and started a beauty parlour in Dhangadhi. Unfortunately, her parlour, which was on the ground floor drowned in the 2022 flood and her hopes of being on the fence shattered once again. She faced material loss of more than 200,000 Nepalese Rupees but did not get any compensation and she says she won't be able to restart the parlour.

News reports¹⁴ showed that a clash ensued the next day between the residents of Ward 2 and police personnel. A team of security personnel from the District Police Office and Armed Police Force in Kailali was mobilised to open a culvert along the Mohanapul-Attariya road after haat bazaar and the substation of the electricity office got waterlogged. However, the residents of Ward 2 of the metropolis obstructed the team from opening the culvert and channelising floodwaters into their settlement. A clash soon followed between the local people and the security personnel, where the latter lobbed tear gas canisters and fired warning shots.

According to the chairman of Ward 3, "The residents of Ward No. 2 had closed the culvert of Mitranagar along the Dhangadhi-Trinagar Bhansar road, obstructing the natural flow of water." In defence the chairman of Ward 2 claims, "Flooding and inundation have become a yearly issue in the area in the absence of a canal from Ward No 3 to Mohana River. We decided to close the culvert after the floodwaters from Ward 3 inundated our settlements."

Santosh Bhatta, a resident of Dhangadi bazaar shared, "The streams and rivulets in Dhangadhi have been encroached upon so there's no natural outlet for flood waters to flow into the Mohana River. The sub metropolitan office has neither laid out a proper drainage system nor has it invested in proper planning and zoning of the sub metropolis."

However, local officials claim that it is not easy to remove the settlers from the riverside areas, as they have land ownership certificates. They have developed a master plan and hope to rid the sub-metropolis of the problem of inundation soon.

¹⁴ <https://kathmandupost.com/sudurpaschim-province/2021/07/21/inundation-a-perennial-issue-in-dhangadhi>

Multi-fold discrimination against LGBTIQ+

Muskan (take name) was born as a son but is a third gender person belonging to Badi community. She identifies herself as a girl but the society calls her a '*Chhakka*' - a derogatory term used for the third gender. She moved to Dhangadhi from Lamki with a hope to establish her new identity as a girl in the urban centre.

She had opened a snacks shop at Sona Road, Bus Park. The Palika asked her to register her snacks shop at the Palika. She accepted the call and went to the District Administration Office for a citizenship certificate. She wanted her citizenship certificate marked with 'Others' in the gender section. But the officials at the administration office insisted on identifying herself either as a 'Male' or a 'Female'. The whole episode was humiliating. Finally, she got a citizenship with continued advocacy from the human rights groups.

Once she got her citizenship certificate, she opened the snacks shop. The administration asked her to put her name on the board. She just kept Muskan but one of the Palika officials asked her to write 'Muskan Badi' on the board. Once she did that, the number of her costumers dramatically decreased. Now with the 2022 flood spoiling her snacks shop, she has now become helpless. She did not receive any relief or compensation from the authorities nor from any other organizations.

7.3 Causal Analysis and Resilience Building with limited GESI lens

The economy of Dhangadhi is mainly dependent on agriculture. Nevertheless, much of the agricultural lands are converting into residential areas due to rapid population growth in the city and the resulting change in economic activities. The extent of land use change is quite substantial, as the population growth rate is over 6% annually, but there is no definite plan for urban development and thus there is a risk of erratic urbanization. Due to the low elevation of the city, existence of rivers around the city and unmanaged settlements, the risk of flooding bothers the residents of Dhangadhi every monsoon. From 2011 to 2021, the population of Dhangadhi increased by 38.61% whereas the national average was just 14.5%. On top of that, rapid deforestation in Chure region has significantly added to the risk of flooding in Dhangadhi.

Urban disasters are common due to rapid urbanization in the city. The city frequently receives floods around the periphery of the river and the low-lying areas are especially affected. The minimal management of the riverbank has led to increased encroachment together with incessant rain. The poor sewerage operations and waste dumping in the river are the key causes for the river flooding. The flood can be mitigated and prevented by constructing machinery walls, embankments, clearing the waste from the river and starting other environmental interventions such as building walls. The waterway to the river is altered because of encroachment and waste dumping. There must be effective and sustainable interventions to manage mitigate and prevent future floods in urban areas. The drainage systems inside the urban area need to be managed with a proper plan. The government agencies need to manage waste products of the urban area through proper planning by constructing embankments and drainage systems and clearing waste from the river and its banks.

Further in addition to the obvious danger of being damaged or washed away, buildings and other structures blocking the floodway also cause damage by trapping floodwaters which then overflow into formerly flood-free zones. There is thus an urgent need for floodplain management including flash flood hazard mapping. Flood hazard mapping need to be conducted with different degrees of detail. A very simple flood hazard map shows the area of inundation, while complex one can show the areas that will be impacted by a flood of a particular return period and enables delimitation of flood areas. The municipality needs to strategically undertake delimitation of flood zones.

Long before the flooding happened, a local organization in collaboration with Dhangadhi municipality had carried out a flood mapping, that documented potential areas under flood risks,

classifying them into three zones - green (safe), yellow (with moderate risk) and red (with high risk). The flood maps were printed, disseminated through community meetings and through local radio messaging but people did not pay attention to them. These systems need to be updated and revived, while creating public awareness on the same. Local government representatives, especially the ones at the ward level need to be more proactively engaged in preparing urban risk management plans. Involvement of people affected by floods has been also limited in urban areas. Some ad hoc activities, such as embankment of rivers here and there, construction of some culverts in inner roads, raising road surfaces have been implemented without the involvement of affected people in the planning process.

The design of buildings and choice of building materials should consider the probability and severity of flash floods. The city should also promote flood adaptive infrastructures like adequate drainage, houses on stilts, raised plinth level etc. A team of engineers at the municipality has already developed model maps of houses to help people build new houses with certain parameters, such as higher plinth levels, wider drainage system, safer drinking water taps, etc. However, these models have not been used by the municipality. The implementation of building codes needs to be taken up on priority.

At the core of flood risk management process, however, is the need for undertaking a detailed risk assessment. Risk assessment helps identify potential risk-reduction measures. If integrated into the development planning process, it can identify actions that both meet development needs and reduce risk. Flood damage can be reduced by establishing a proper flood control management structure or organ to manage flood events and reduce their negative effects. The benefits of precautionary steps, measures, and actions will bring communities, agricultural land, infrastructure, and livelihoods in flash flood-prone areas to safety with the help of government.

Risk assessment includes two key activities- (a) Hazard analysis and (b) Vulnerability assessment. Hazard analysis includes describing alternative scenarios to determine the flood hazard intensity (the strength of the flood). The next step is the vulnerability assessment. There are multiple tools available to undertake vulnerability assessments including data analytics-based assessment and participatory assessments. For working with communities especially women, on implementing DRM activities, it is advisable to use participatory assessment processes to gather, organise and analyse information on the vulnerability and adaptive capacity of communities, which can subsequently be used for joint decision-making.

Based on the outcome of the risk and vulnerability assessment, a flood management plan needs to be developed in line with stakeholders' priorities. The flood risk management plan can include structural and non-structural measures.

A common strategy to cope with floods has been to construct civil works such as floodwalls, transversal protection works, embankments, conduits, and reservoirs to protect the environment up to an acceptable risk threshold. Such structural measures tend to consider mainly the hydrological

One important activity for building urban flood resilience is the delimitation of flood areas and securing of flood plains. Based on the technical study on flash flood hazard mapping, streams should have adequate buffer areas to safely cater for flood waves. The floodplain can be divided into: 1) critical zone (waterway); 2) restrictive zone; 3) regulatory zone; and 4) warning zone. Zone 1 is the waterway/river channel that gets flooded every year and where any human interference should be prohibited. Where a river has right of way, humans should stay out of its way. Zone 2 gets flooded every three to five years, and construction should be restricted and only agriculture permitted. Every 3-5 years one crop will be lost due to flood and there will be harvests in flood-free years. In Zone 3, construction should have adequate protection measures such as embankments, flood proofing, and so on. Zone 4 experiences flooding more rarely, averaging once every 25 years. Construction in the area should have tolerance against flash floods.

and hydraulic implications of flooding, which are generally solved by choosing the alternative that maximises the expected net benefit. In addition, such measures can have a substantial impact on the riverine environment and ecology. Examples of urban flood protection infrastructure include (i) construction of storm water drains; (ii) construction of storm water pumping stations; (iii) construction of catchpits at regular intervals in roadside drains to recharge the groundwater aquifer; (vi) construction of flood embankments; and (v) construction of evacuation shelters and emergency housing facilities.

Non-structural measures range from land use planning and construction and structure management codes, through soil management and acquisition policies, insurance, and perception and awareness, to public information actions, emergency systems, and post catastrophe recovery, all of which contribute towards the mitigation of flood-related problems. The advantage of non-structural measures is that, generally, they are sustainable and less expensive. Non-structural measures are often the most effective in managing floods. However, they can only be efficient with the participation of a responsive population and an organised institutional network. A combination of structural and non-structural measures can be the best.

Examples of non-structural measures in urban areas include (i) Floodplain management including hazard mapping, delimitation of flood areas and securing of flood plains; (ii) Land use regulation designed to reduce danger to life, property, and development when floods occur; (iii) integrated water resources management (IWRM) including developing capacities of community on green infrastructure investments and rain water harvesting; (iv) soft measures for solid waste management including segregation at source; (v) emergency response systems; (vi) creating awareness among community members on flood risks, impacts, and vulnerability; (vii) supporting community-based monsoon action planning and risk management.

7.4 Scenario 4b: Improved Response with limited GESI lens

In recent years local governments including Dhangadhi municipality, have gradually increased their awareness about urban risk management and resilience building. According to SUPER project staff, local governments have started using community mechanisms (e.g. Badhghar among Tharu communities) to spread awareness, prepare for and respond to natural disasters, including floods. Since the community leaders are respected by the members, their involvement in the awareness raising campaign has proven to be effective. People have become more aware about the preparedness on and response to disasters.

The Palika DMC has also developed its annual Dhangadhi monsoon response and preparedness plan in order to strengthen its ability to respond effectively. The first step in the process started with sensitization of the community especially those living in low lying areas and slums through meetings and focused group discussions on urban floods, its affects and importance of becoming resilient. Since, this action plan is for the people and by the people along with the government and other stakeholders, therefore, through discussions and meetings with people, challenges faced by them pre and post monsoon were identified to feed into the action plan.

The second step towards the action plan process was the organization of multi stakeholder workshop on Monsoon Action Plan in Dhangadhi. The multi stakeholder workshop witnessed the participation of more than 100 people from different stakeholder groups i.e representatives from the Municipality, palika DMC, CDMC, NGOs, and thematic experts to understand the challenges to monsoon management for urban poor and to share effective sustainable solutions for mitigating the pre and post impact of monsoon. The workshop progressed with healthy discussions amongst various stakeholders and concluded with strategic actions to problem solving and mitigation in the form of "Monsoon Action Plan" which will be implemented by the municipality in collaboration with the CDMC.

Knowledge of Dalit woman goes unheeded

Saraswati Kumari Lohar Koli, a Dalit woman member from Ward number 1 of Dhangadhi municipality feels powerless when she cannot influence the decisions related to her ward. 'I have received training from Red Cross, Rural Women's Development and Unity Center (RUWDUC), Feminist Dalit Organization (FEDO) and others on disaster management and women empowerment. But when it comes to decision making, my arguments based on knowledge get discarded,' she says.

She adds that Dalits are the ones who live on the banks of rivers and therefore they are the most vulnerable lot. When there are cases of discrimination against women and Dalits, the Ward committee investigates into such cases. However, the deep-rooted discriminatory social values often dominate the minds of Dalits and non-Dalits equally.

Dalit women have created a network of Dalit women from all 19 Wards of the municipality and prepared to advocate for Dalit women's rights. She says, 'We meet every month and discuss about small issues, like access of Dalit women to drinking water, paralegal support to survivors of gender and caste based discrimination. During floods, we distribute rice, lentils, cooking oil, salt and dry food to Dalit women.'

Saraswati also mentioned that Dalit women faced discrimination in the rescue process and in the shelter homes. Dalits and LGBTQ+ people are not in the priority while carrying out rescue operations. They are humiliated, verbally abused and deprived of relief items provided by organizations.

The plan included both structural and non-structural measures. The municipality then began action on the structural measures- construction of storm water drains; construction of storm water pumping stations; solid waste management systems. The palika DMC then began action on the non-structural measures. Some of the innovative measures included:

Construction and repair of brick embankments: To prevent the houses from the adverse effects of flooding, brick embankments, locally referred "Palis", are built at the house entrances. The immediate need identified to act upon the prevention is to construct and repair the embankments especially in low lying areas. CDMC members along with a local NGO were tasked with the responsibility to sensitize communities and identify houses for construction and repair of brick embankments.

Grain storage platforms: Communities were also sensitized and supported to construct grain storage platforms in higher grounds within the area. Where such grounds were not available, the CDMC made an arrangement with the local school and temple for transfer of grains. The CDMC also created a system for marking of grains with the households and families were trained to do so, to enable conflict free retrieval of grains after the floods.

Bags for documents: Communities were provided with water proof bags to secure their documentation, including identity documents. Secure books and educational materials—for both girls and boys—in watertight folders/bags.

Signs were put with yellow and red color at the entrance of houses. Through awareness meetings the CDMC and local NGO worked to sensitize communities to identify the homes most sensitive towards flooding/inundation. After identification, CDMC marked the entrance of the houses with yellow and red color. This action would improve resistance of individuals towards flooding by making them aware that when the water level touches yellow sign, they need to be alert and start moving their things at safer places, and if, the level rise till red sign then immediate action is needed like calling municipality for pumping out excess water and/or move to identified safe shelter.

Alarm to rescue: The CDMC also undertook indigenous measures like setting up a local flood alarm for warning communities within their locality about water logging and inundation when city level flood warning measures are absent.

Thus, when like every year, in 2023 also it rained heavily in the morning at 5 am, the communities were not caught unaware. Until late evening the community was monitoring the rains and had already transferred all grains and documents to safe places. At night, when the alarm rang, people shifted other valuable belongings and called the municipality to pump out the water. Although there was some chaos people helped in the whole cleaning process and then by 10 am in the morning everything was in place. The residents had gone to work unlike last time where they had to take 2-3 days off from work which in turn affected their daily wages/monthly income.

7.5 Gender Responsive Interventions

While the above measures proved effective, when the municipal officials called for feedback on the action plan in the aftermath of the floods of 2023, the women shared some critical insights. All the active palika DMC and CDMC members were men. This meant that they had most say in the planning and management. Women were left to the mercy of men in the process.

Women shared how the grain management system developed was faulty in terms of tagging and there was lot of mix-up during retrieval. Many single women, elderly and people with disability pointed out that they were not able to move their grains to the higher grounds as the minimum quantity in the bags had to be 25 kgs, which they could not lift and transfer.

Also, while grain management was important, women also pointed to the need for similar systems for water and sanitation. They shared how, the drinking water systems and toilets had also clogged and it took almost a week to revive them.

Another issue was the alarm. While a good initiative, the women shared that the alarm needed to be much louder so that people can hear it better. Women also pointed that there was no system to put their children in safe places.

Hearing to these aspects, the municipality realised the need for including women in urban flood planning and management.

7.6 Scenario 4c: Gender Responsive Response

The DMCs and CDMCs were reconstituted with more women on board. The women members were also provided training on flood management practices. In June 2024, before the monsoon action plan development process, separate consultations were also held with women's groups.

A local women's NGO was engaged for conducting a gendered risk assessment study taking into consideration multiple forms of discrimination that may be faced by individuals and recognize their differing and specific needs, capacities and priorities in all assessments.

It was decided that female headed households, elderly and those with persons with disabilities would be provided subsidy for construction of brick embankments. The need for undertaking a sex, age and disability desegregated census of people residing the flood plain restrictive and regulatory zone emerged. It was discussed that a larger programme involving community-based rehabilitation and re-location for revival of the flood plains be considered with proper compensation for the affected communities.

A local group of volunteers was formed to support the vulnerable families in transferring their grains to higher grounds. Temporary drinking water supply system with water purifier and mobile toilet unit providers were pre-identified for immediate provision of the facilities in the affected areas after water logging.

Another key area of intervention which emerged in the discussions were the need for community engagement in the structural measures. Women pointed out on the need for better solid waste management systems in the locality specially to prevent the blockage of storm water drains. An immediate suggestion was to ensure a pre-monsoon cleaning drive of all drains in the area. It was also discussed that information dissemination regarding community based small scale civil works

activities should be accessible for employment for both women and men, and at least 30% of local works should be targeted for women employment.

7.7 Costing of Gender Responsive Interventions

A critical realisation of the process was the need for undertaking of gender-aware assessments, and involvement of women in all decision-making processes. A programme on gender responsive urban resilience building and flood management was thus developed by the municipality with budgetary support (Table 6) for the same.

Table 6: Costing of Gender Responsive Interventions for Urban Flood Planning and Preparedness

Sr. No.	Description of Activity	Target	Unit Costs (in NPR)	(in)	Basis of Calculation
1.	GESI Focal Point at Municipal level	100% of Urban Municipalities	6,00,000 Municipality	per	One person @50,000 per person
2.	Gender integrated risk assessments	100% of Urban Municipalities	5,80,644 Municipality	per	Global Resilience Partnership (GRP) project on Women's Resilience Building in Nepal implemented by Saathi
3.	Facilitating women's engagement in flood risk and vulnerability assessment	100% of Urban Municipalities	97,742 Municipality	per	Global Resilience Partnership (GRP) project on Women's Resilience Building in Nepal implemented by Saathi
4.	Targeted awareness building and communication to women flood resilience planning and preparation	100% of Urban Municipalities	1,80,645 Municipality	per	56 million per year for Risk information dissemination, public education and awareness (Sector Projection 2019) divided by 310 (31 districts with average 10 municipalities)
5.	Facilitating women's engagement in monsoon action plan development	100% of Urban Municipalities	3,96,774 Municipality	per	12.3 million per year for Develop Disaster Risk Reduction Plan including contingency plans for the sub-sectors (Sector Projection 2016) divided by 31 districts
6.	Technical capacity building of women (including training on small construction design and maintenance)	100% of Urban Municipalities	3,91,935 Municipality	per	30% of 40.5 million for VDC planning, community planning, mobilisation, technical assistance, advice (Sector Projection 2016) divided by 31 districts
7.	Pre-monsoon house renovation (creation of temporary embankment) for female headed households and those with PWDs	28% of affected population	5,000 household	per	Global Resilience Partnership (GRP) project on Women's Resilience Building in Nepal implemented by Saathi
8.	Training of Provincial and Municipal Officers on GESI aspects in flood management	20% of Staff (approximately 100 persons per municipality)	89,516 Municipality	per	Unit cost of 895 per person multiplied by 100

9.	Supporting NGOs for GESI resilience building of low-income communities	100% of Urban Municipalities	6,41,000 for 10 slum Community	Global Resilience Partnership (GRP) project on Women's Resilience Building in Nepal implemented by Saathi
10.	Multi-stakeholder workshop for pre-monsoon action plan development with women, PWDs, NGOs, Academics and Municipal Officials	100% of Urban Municipalities	1,00,000 per Municipality	Global Resilience Partnership (GRP) project on Women's Resilience Building in Nepal implemented by Saathi

8. Promoting GESI responsive DRRM: Summary of Recommendations

8.1 Strengthening GESI in DRR institutional mechanisms

It is important to strengthen the GESI lens and GRB approach within the DRR institutional framework. This would require initiatives across the situational analysis, planning, budgeting, monitoring and audit cycles:

- Recognising the significance of diversity of vulnerability and risk and the need for inclusive planning for DRRM to be more efficient.
- Ensure establishment of mechanisms for the collection, analysis, use and dissemination of disaster related data disaggregated by sex, age and diversity. A gender analysis should be integrated into all situational analysis, needs assessment and sectoral assessments related to disasters.
- It is also important to create a mandate and mechanisms to carry out rapid gender analysis as also ensure that post-disaster needs assessments (PDNAs) include the gender differentiated impacts of disasters, particularly violence, exclusion, and inequality, are exacerbated by the disaster.
- Integrate a gender equality and women's empowerment in disaster risk reduction and management (DRRM) frameworks, Sector-Based Plans, and Monitoring and Evaluation Frameworks. Develop gender responsive DRRM frameworks. Use the gender equality glossary to ensure familiarity with key concepts and definitions.
- Create systems for gender appraisal of DRR policies and plans. Ensure that the gender analysis and PDNAs recommendations are translated into gender-specific differentiated needs, policies, interventions, and projects in recovery and reconstruction efforts.
- Prepare and enforce GESI responsive DRR related laws/orders/regulation at all levels of government. Focus on capacity building for gender-responsive response for all institutions and partners.
- Define the roles, responsibilities, and mandates of relevant stakeholders to address GESI issues in the DRR Process. Collaborate and engage with the Ministry of Women, Children and Senior Citizen, Ministry of Social Development, Women Development Units at provincial and ward levels, women's human rights organizations and organizations working on LGBTIQ rights, locally elected women representatives and other vulnerable and excluded groups. Invest in their capacities to prevent, prepare for, and respond to crises and disasters of all types, resource them financially, and protect the spaces in which they can operate.
- Institutional participation and representation of discriminated social groups especially women through District Disaster Relief Committee (DDRC) in all planning and recovery programmes is essential to ensure they benefit equally but also to ensure that recovery programmes do not further marginalize them.
- Make a provision to ensure equal participation of women and men in prevention and disaster risk management. Increase the participation of women and excluded groups (e.g. youth, people with disabilities, etc.) in policy and planning processes.
- Humanitarian coordination team (HCT) should enable a formal, meaningful consultative forum with women's groups/networks to ensure a gender lens in the assessment, planning, prioritization, coordination, development and implementation of policies and programs.
- Design tools to engender the humanitarian programming cycle. Use gender with age markers to analyze if the programming is relevant, effective and based on analysis and that the programming is at a minimum gender-and age-sensitive and responsive, transformative and intersectional.
- Recovery, relief and rehabilitation efforts must reflect the voices of women and the vital leadership role women can play in shaping priorities for relief and reconstruction.

- Ensure gender balance and adequate numbers of trained women staff in the overall response and ensure they are provided with necessary safety and security measures.
- Deploy women into technical and decision-making roles and ensure all humanitarian responders consult with and involve women's civil society groups and women of all ages, including those hard to reach (female headed households) or at risk such as women with disabilities/elderly women.
- Develop guidelines on relief distribution prioritizing women and girls. Involve women's groups and professionals in the development of these guidelines and the dissemination of these packages.
- Monitoring mechanisms through women on board need to be established to ensure that key issues are addressed, and to track progress and facilitate accountability.
- Ensure development of feedback mechanisms for women, girls, men, and boys of diverse groups.
- Establish a women's fund for women-specific programmes (prioritizing issues for women with disabilities including access) and ensuring a formal role for women's organizations in the management and disbursement of such a fund.
- Inclusion of both gender mainstreaming and targeted actions on Gender Equality and Women's Empowerment in preparedness, response, and recovery activities. Ensure rights-based and gender transformative strategy and action plan development, and meet the specific needs and priorities of women, girls, men and boys of all diversities.
- Ensure equitable resource allocation and needs prioritization for gender concerns. Apply GRB Principles to increase support targeting women and excluded and vulnerable group in preparedness, response, recovery and DRR activities. Apply Gender-Responsive Budgeting Principles to increase support targeting women and excluded and vulnerable group in preparedness, response, recovery and DRR activities.

8.2 Earthquake Preparedness, Rescue and Relief

A critical aspect of earthquake is preparedness of both the general population as well as the responders. To avoid or at least minimize the human casualties and property and infrastructure damage and loss, it is of utmost importance that the general population be fully prepared and the infrastructure be built for any impending earthquake. Actions regarding this could include: public awareness programs; regular earthquake drills in schools, colleges, public buildings, and hospitals; training of personnel in different sectors of public and private institutions and construction industries; the necessity of strict adherence to building codes and their implementation; quality construction practices; upgrading the existing building codes; and preparation of new codes and standards for infrastructure design.

Local governments also need to be adequately prepared for rescue and relief operations. Most critical is to give early information immediately after an earthquake and provide instruction for immediate search and rescue and mobilize security force for rescue operation. In addition, an effective emergency information system needs to be

operational to avoid the inevitable panic and manage coordination of services. Dissemination of regular information for the public awareness through radio, TV, SMS etc. is vital.

During an earthquake, the most important thing for people is not to panic but to stay calm and follow the systematic step-by-step procedures practiced during drills. Turning on a battery-operated radio and listening to the siren; taking immediate shelter under a sturdy desk, table, or doorway; staying away from windows and using the "duck, cover, and hold" rule are some of the immediate steps to be followed until the shaking stops. Detailed procedures to follow when inside or outside a house or inside a vehicle are reviewed with illustrations in several of the references (NGED-CRED, UNICEF, NSET, 2011; NSET-Nepal and GHI-USA, 2007; TMG and NSET 2006).

Preparation of a situation report, deployment of search and rescue teams for immediate rescue of the survivors, providing first aid to the injured and evacuation for treatment to severely injured victims are the next steps. Towards this the local government need to be prepared with adequate ambulance services, readily available emergency medical supplies, first responders, paramedics, and expert medical health teams. Coordination with local and international organisations, and unobstructed access to the pre-assigned open grounds and facilities for temporary health camps are additional components required for a successful response during an earthquake.

The biggest challenge during post-earthquake preparations lies in coordinating and mobilizing the nationally and internationally available resources properly and effectively, in a chaotic situation, with the possibility of aftershocks. Qualified professionals must evaluate and red-tag unsafe buildings and infrastructure in the affected areas essentially immediately. Effective use of the sophisticated heavy machinery and equipment necessary for rescue, immediate repair of essential facilities- water, sanitation, electricity, telecommunications and the public transportation system, fast erection of temporary shelters at different locations, and maintenance of pedestrians' safety and mobility will have to be coordinated under difficult conditions.

Restoring road communications and management of transportation facilities for search and rescue materials and equipment is also critical. Electricity services need to be made available to hospitals/health centres/medical centres/IDP Camps, schools, along with establishment of field hospitals at affected site. Water Supply, Sanitation and Hygiene facilities needs to be provided to hospitals, medical centres, IDP Camps, Schools, Other types of Settlements.

Undertaking Multi-Cluster Initial Rapid Assessment ([MIRA](#)) including rapid need assessments (RNA) by the government, of existing hospitals, schools, health facilities along with bridges, roads and others for structural damages; and immediate relief needs assessment is critical.

Setting up of temporary shelter in the pre-determined safe and open/evacuation sites for displaced families and distribution of immediate lifesaving relief materials to the survivors is also a top priority, along with distribution of non-food items such as cooking utensils, fuel, clothes, blanket, family kits, baby kits, hygiene kits (being undertaken by NRCS).

Proper management of dead body including cremation and issuance of death certificates, debris management (collection and disposal) including dead animals, collection and management of animal carcass and monitoring of vector borne disease control in the open/evacuation sites is also important.

It is important to ensure gender mainstreaming across the board for all the above actions. However, equally important is to undertake targeted GESI interventions including, inter alia, the ones mentioned here:

- Rescue and relief mechanisms are built on the Leave No One Behind (LNOB) agenda. Undertake a mapping of service providers and ensure gender diversity and gender sensitization trainings within all service provider teams.
- Ensure that women, disabled and people from marginalised communities have access to preparedness trainings and are have equal access to information.
- Ensure that no one faces discrimination in shelters and camps, with special focus on Dalits and LGBTIQ+ individuals.
- Target for universal access to relief both for food and non-food items. Create systems to ensure that women, children, elderly and disabled have equal access to relief. Involve women and women's groups in rescue and relief efforts- both in planning as well as distribution.
- Special protection arrangement at the camps and distribution sites for the protection of women, children, elderly, disabled and monitoring of SAM children in the camps needs to be ensured.
- Address women and adolescent girls' specific needs related with sexual and reproductive health (for instance hygiene and sanitary items required during menstruation, and postpartum period

including items such as toilet chair, wheel chair, urine bag etc.) to address the specific needs of women living with disability and elderly women.

- A safe environment for survivors particularly the vulnerable groups, and control gender-based violence.
 - Community awareness and sensitisation messages on risks associated with child and early marriage, internal migration, forced migration and human trafficking through the media and mobilisation of parents, teachers, community leaders.
 - Establishment of alert systems, confidential counselling and community safety nets, paying particular attention to the most vulnerable and marginalized groups of children and women who are at risk of trafficking, violence, abuse and exploitation and sharing of information to enable stakeholders to take appropriate measures.
 - Provision of information 'listening posts' on where women and children can report concerns and get support and information on services and focal points and through the strengthening of government and local actors who provide these services.
 - Establishment and strengthening of referral systems to support women and girls who are victims of violence.
 - Capacity development and training to the police and the judiciary on gender sensitivity to treat SGBV cases seriously and mobilisation of community and engagement of men and boys.
 - Review and reform the legal process for reporting and responding to rape and gender-based violence in order to make it more accessible to women and girls.
- Social support to unaccompanied children, disabled and elderly who have lost their supporting family members; and reunion of their lost members or relatives should also be part of the immediate relief operations.
- Training of healthcare providers on psycho-social support.
- People who have become disabled because of the disaster may find difficult to accept this new reality and may need peer counselling. Connecting them with other PWD for counselling would be essential.

8.2 Earthquake Recovery and Rehabilitation

Before rebuilding or rehabilitation, there is the need to also focus on extended relief interventions including cash or other assistance to affected populations; provision of minimum essential services and security at the hospitals, schools etc. in the camp sites; restarting of schools to help children feel secure and help them to go back to normal life; etc.

Another important component is to conduct Early Recovery Assessment and Plan Development Covering key sector including shelter, livelihood etc. For example, after the 2015 Earthquake, Post Disaster Recovery Framework with Sector plans were prepared by sector teams led by the respective line ministries and with the support of relevant development partners and coordination by the NRA. These sector plans were used to guide, plan and estimate resource requirements for recovery and reconstruction activities at the sector level with a gender lens. Sector plans also included tools to monitor progress against targets on an ongoing basis.

The most important aspect of earthquake rehabilitation is reconstruction. This includes reconstruction of homes, hospitals, schools, water and sanitation infrastructure, etc. For example, after 2015 earthquake, the GoN announced to rebuild all the damaged structures of the individuals, the public houses/infrastructures and the heritages devastated by the earthquake in one year, two years and five years respectively.

Housing reconstruction needs to be but accompanied by disaster-resistant reconstruction of physical and community infrastructure, taking into consideration gender, sustainability and environmentally friendly technologies and techniques. As far as possible, on-site reconstruction will be ensured, except where relocation is necessary due to vulnerability or loss of original land.

Special and immediate attention also needs to be given to restoration and improvement of access to services by sequencing recovery activities in the basic services sectors. Priority needs to be laid for rebuilding of schools, hospitals, water, sanitation and hygiene (WASH), and improving communications, telecommunications and road transport.

Equally important is to restore economic opportunities and livelihoods. With regard to the on-farm economy, efforts will centre on the re-establishment of agricultural livelihoods of vulnerable earthquake-affected smallholder farmers, as well as meeting the most urgent recovery needs of the agriculture, livestock and irrigation sector and of the families reliant on it. Another key consideration will be that all recovery programmes should contribute to the restoration of basic operational systems and structures essential to restart sector growth.

Recovery from disasters also provides an opportunity to promote resilience, especially of the affected people. In this regard, it is important to enhance the coping capacity of the most vulnerable. One of the areas to be given priority attention is the promotion, adoption and expansion of social protection where it is absent or where coverage and levels of benefits are low through social assistance, social insurance and work-related measures.

The post-disaster recovery also presents an opportunity to start redressing inequalities and at the very least not perpetuate unequal access to power and resources through the allocation of recovery financial and human resources. Making extended relief and rehabilitation more gender and socially responsive requires:

- Post Disaster needs assessments must consult with women and men of all ages, disaggregate data by sex and age and explicitly address the capacities and needs of women and girls, as well as men and boys in protection and service delivery. Female enumerators must be involved as necessary.
- Cash transfers to most vulnerable households will be essential in order to reduce the pressure on them to resort to negative coping mechanisms.
 - Provide a temporary benefits top-up in social assistance allowances for senior citizens, single women, people with disabilities, and endangered ethnicities.
 - Ensure incorporation of gender dimensions into the vulnerability criteria to help mitigate targeting errors for cash transfer services to women and excluded groups.
 - Create flexible delivery mechanisms for channelling cash to women, including necessary accompaniment support like registration facilities, alternatives to lack or loss of identity documents and opening of bank account.
- Housing reconstruction programmes needs to be based on National Shelter policy, which requires the state to provide land and housing to economically weaker sections.
- Measures to support and promote attainment of ownership rights and tenure rights are essential to ensure that post disaster recovery programmes do not re-enforce the inequalities faced by women and vulnerable social groups.
- Mechanism to support certification and registration of women, which could facilitate ownership of land and homes and women and children who have lost their spouses and their parents respectively should be in place.
- Strengthening the Civil Registration and Vital Statistics System to ensure that it is resilient to future shocks and disasters, ensuring that children are able to easily replace lost birth certificates.
- Provision of information on government services available to PWD, and expedition of disability registration to enable access to government social protection schemes.
- Establishment of integrated mobile teams in the most affected areas to ensure that PWD who have lost their social benefit documents are able to obtain new ones.
- Design and reconstruction of homes and shelters need to take into account of the accessibility for people with disabilities.
- Important to ensure that PWD are resettled or relocated in areas where they can easily access essential services such as schools, health facilities etc.

- Ensuring senior citizens, have access to information, aid (medical care and emotional support especially with possible loss to social networks and isolation from a familiar environment).
- In case of relocation and resettlement, senior citizens should be resettled in areas that have easy access to essential services.
- Consultations with the elderly in the design/ development of housing structures that support mobility of the elderly.
- Establishment of integrated mobile teams in the most affected areas to ensure that senior citizens who have lost their social benefit documents are able to obtain new ones.
- Housing rebuilding support for old people who may not be able to take the responsibility or have the manpower support to repair or reconstruct their shelters or houses. Designs of shelter and houses should also take into account the needs of senior citizens.
- Undertaking a comprehensive review of existing child protection systems and their appropriateness to respond in the context of humanitarian situations to
 - Inform the development of strategies for child protection in emergencies.
 - Strengthen the National Child Protection System and child protection services through capacity building, inter-institutional networking, and strategic partnerships at the national and sub-national levels.
 - Support relevant government agencies to review and enhance the implementation of the National Master Plan on Child Labour.
- Provision of social protection support to the elderly who have the additional burden of caring for children who have lost their parents.
- In order to improve the delivery of social assistance by reducing human errors, digitization of beneficiary data is suggested. The establishment of a beneficiary registry, which is unified across districts and accessible online, could ensure timely updating of critical information such as registration of new beneficiaries, updating of vital event data and verification of payments to individual beneficiaries.
- Ensure women are represented in any decision making and consultation forum and women are provided with livelihoods and income generation opportunities, based on direct consultation with them to ensure activities are tailored to their needs, circumstances, and capacities.
- Provide immediate financial support to local women's groups including women's civil society groups who are already working with local affected people and have the local knowledge and resources necessary to rapidly identify and meet the priority needs of all members of the community.
- Targeting of livelihood restoration programmes such as cash for work as well reconstruction programmes at the Dalits, particularly Dalit women.
- Provision of livelihood options to reduce the risk of forced migration and human trafficking for women and parents who are desperate to find livelihood alternative opportunities.

8.3 Planning and Preparedness for Urban Floods

Large-scale disasters, such as—floods, cannot completely be avoided, but there are measures that can be taken to ensure they do not diminish hard-earned economic and development gains. Learning to live, and thrive, with floods means considering flood risk in planning and investment decisions right from inception, as well as taking steps to protect assets already at risk. It also means planning for response and recovery, which protects and even enhances development and growth potential.

At the core of flood risk management process is the need for undertaking a detailed risk assessment. Risk assessment helps identify potential risk-reduction measures. If integrated into the development planning process, it can identify actions that both meet development needs and reduce risk. Flood damage can be reduced by establishing a proper flood control management structure or organ to manage flood events and reduce their negative effects. The benefits of precautionary steps, measures, and actions will bring communities, agricultural land, infrastructure, and livelihoods in flash flood-prone areas to safety with the help of government.

Risk assessment includes two key activities- (a) Hazard analysis and (b) Vulnerability assessment. Hazard analysis includes describing alternative scenarios to determine the flood hazard intensity (the strength of the flood). It is common to present hazard scenarios in the form of hazard maps. Modern technology has advanced hazard mapping and the prediction of future events considerably through techniques such as geological mapping and satellite imagery, production of high-resolution maps, and computer modelling.

The next step is the vulnerability assessment. There are multiple tools available to undertake vulnerability assessments including data analytics-based assessment and participatory assessments. For working with communities on implementing DRM activities, it is advisable to use participatory assessment processes to gather, organise and analyse information on the vulnerability and adaptive capacity of communities, which can subsequently be used for joint decision-making.

Based on the outcome of the risk and vulnerability assessment, a flood management plan needs to be developed in line with stakeholders' priorities. The flood risk management plan can include structural and non-structural measures.

A common strategy to cope with floods has been to construct civil works such as floodwalls, transversal protection works, embankments, conduits, and reservoirs to protect the environment up to an acceptable risk threshold. Such structural measures tend to consider mainly the hydrological and hydraulic implications of flooding, which are generally solved by choosing the alternative that maximises the expected net benefit. In addition, such measures can have a substantial impact on the riverine environment and ecology. Examples of urban flood protection infrastructure include (i) construction of storm water drains; (ii) construction of storm water pumping stations; (iii) construction of catchpits at regular intervals in roadside drains to recharge the groundwater aquifer; (iv) construction of flood embankments; and (v) construction of evacuation shelters and emergency housing facilities.

Non-structural measures range from land use planning and construction and structure management codes, through soil management and acquisition policies, insurance, and perception and awareness, to public information actions, emergency systems, and post catastrophe recovery, all of which contribute towards the mitigation of flood-related problems. The advantage of non-structural measures is that, generally, they are sustainable and less expensive. Non-structural measures are often the most effective in managing floods. However, they can only be efficient with the participation of a responsive population and an organised institutional network. A combination of structural and non-structural measures can be the best.

Examples of non-structural measures in urban areas include (i) Floodplain management including hazard mapping, delimitation of flood areas and securing of flood plains; (ii) Land use regulation designed to reduce danger to life, property, and development when floods occur; (iii) integrated water resources management (IWRM) including developing capacities of community on green infrastructure investments and rain water harvesting; (iv) soft measures for solid waste management including segregation at source; (v) emergency response systems; (vi) creating awareness among community members on flood risks, impacts, and vulnerability; (vii) supporting community-based monsoon action planning and risk management.

It is important that a GESI lens is included in all the above actions including a focus on:

- Ensuring that gender analysis is integrated into the needs assessment and in all sector assessments or situational analyses.
- Ensure that risk assessments and plans take into consideration multiple forms of discrimination that may be faced by individuals and recognize their differing and specific needs, capacities and priorities in all assessments.
- Use the gender desegregated data of the specific community or area to plan and focus response for women and excluded groups.

- Ensure provision to provide full knowledge of disaster to women, men and esp. other excluded group.
- Equally consult with women, girls and excluded and vulnerable groups, during need's assessments.
- Ensure women, including from excluded and vulnerable groups, are represented in related decision-making and consultation forums, as well as in leadership positions.
- Ensure women's representation also in consultation meetings on the design of structural measures.
- Information dissemination regarding community based small scale civil works activities should be accessible for employment for both women and men, and at least 30% of local works should be targeted for women employment.
- Gender-responsive community participation, community education and community awareness raising on inclusive flood planning and preparedness.
- Building resilience of flood affected low-income communities, especially women by supporting organisations of women and other genders on flood resilience as well as training of women leaders on flood management.

8.4 Early Warning, Rescue and Relief from Urban Flooding

The most critical aspect of flood management is early warning systems (EWS). These systems are instrumental in saving lives and assets during floods. An EWS is a flood sensor attached to the transmitter detects rising water levels. When the water reaches a critical level, a signal is wirelessly transmitted to the receiver. The flood warning is then disseminated via mobile phone to concerned agencies and vulnerable communities downstream.

The indexes of urban flood early warning, however, often focus on rainfall information or inundation information, and take the whole city or region as a whole to issue early warning information, ignoring the spatial difference characteristics of urban buildings. Especially in areas with different urban economic levels, the early warning level should be different. Similarly, EWS that do not explicitly consider gender are likely to increase the marginalization or vulnerability of marginalized gender groups.

For EWS to work communities need to be trained on preparedness and response aspects. Communities need to be trained comprehensively in response and evacuation procedures so that they know what to do when they receive a warning, and so that this knowledge does not leave the community when men migrate for work.

Locally appropriate flood management related information and publication materials needs to be prepared, and distributed for all stakeholders and communities. This includes information on flood forecasts and flood management and preparedness such food storage, securing the safety of livestock, ensuring food availability, etc.

Much of the loss during floods is also due to lack of pre-flood preparedness. Distribution of emergency kits comprising of drinking water, eatables, candles, mosquito repellents, medicines and other essentials to keep them aware and ready before the arrival of the flood is a critical strategy.

Another important preparation is plans for the setting up of evacuation shelters and relief camps. Creation and training of local committees for dealing with evacuation shelter, housing and housing facilities can be vital for timely actions.

Studies also show that local response is more effective than national Government and INGO response. Community Disaster Management Committees (CDMCs) can be instrumental in responding to community needs amid the chaos and confusion of external response, helping organize and distribute relief, assisting district security personnel with search and rescue, and conducting health campaigns to minimize the spread of diseases. The CDMC along with a team of volunteers needs to be trained for enabling these. Providing a flood rescue tool kit and first aid equipment to the CDMC is also important.

Post flood, most important is the undertaking on the initial rapid assessment and distribution of food and non-food item relief material. Ensuring that food distribution is timely, transparent and reaches everyone should be the top priority of all involved in relief activities. Non-food items include- water, tents, tarpaulin, sleeping bags, mattress, plastic sheet, warm clothing and blanket, etc. It is important to develop a guideline for the distribution of relief to ensure that it reaches everyone.

Additional assistance in kind could also take form of roofing material (like corrugated galvanized iron sheets). Alternatively, direct cash transfer could be an amount that is adequate for now, but deductible from the total lump-sum entitlement during the reconstruction phase.

Rapid Response Team (RRT) formed by the health Ministry need to engage for organising special outreach of health services to stem likely health-related epidemics, offer counseling and re-enforce the provisioning of basic health care. This would include organising health camps; dissemination of health awareness messages through print and audio-visual media; and coordination with other sectors for activities related to nutrition and sanitation and distribution of emergency items such as dignity kits.

A dedicated fund for post-floods medical care and treatment needs to be established for the population who still require medical assistance. In addition, it is recommended that resources be allocated for purchasing textbooks and other educational materials for those students who have lost them in the floods and families are unable to support these.

The recovery work also needs existing capacities of districts affected by floods to be augmented to support the implementation, reduce further risks and be prepared for future shocks. For example, raising the levels of hand pumps, deepening tube-wells, and improving the drainage are some of the important risk reduction measures recommended.

Making these initiatives gender and socially responsive would require the following considerations and actions:

- Gender-responsive community participation, community education and community awareness raising on inclusive disaster preparedness and response is important
- Early Warning System (EWS) should not rely on only one form of communication such as SMS messages, but should ensure that warnings are shared in easily accessible and understood ways for all sections of the community.
- Training on the EWS, preparedness, and response needs to be made more accessible to women and marginalised gender groups and accommodate the barriers that prevent their participation.
- Ensure provision to provide full knowledge of disaster to women, men and esp. other excluded group.
- Empower women and excluded groups to participate in early warning responses, disseminating information, becoming first responders. Train women volunteers in response, recovery and/or the development and implementation of evacuation plans.
- Ensure women have bags or other means to secure their documentation, including identity documents. Secure books and educational materials—for both girls and boys—in watertight folders/bags.
- All women and marginalised groups need to be empowered as decision makers in the home and in CDMCs so that they are not dependent on men to undertake preparedness activities or to evacuate, and so that their needs for more time and prompt evacuation are recognised and fully accommodated.
- Another critical strategy to build resilience of flood affected low-income communities especially women, is to organise them. Supporting separate committees and/or SHGs of women and other genders trained to work in rescue, relief, and rehabilitation is very important.

- The evacuation shelters and relief camps should be gender responsive and socially inclusive. Ensure shelters have provisions for women, in particular for pregnant and lactating women, women with disabilities, adolescent girls, as well as gender minorities.
- Locks, lighting, accessibility, and sex-segregation must be integral to their design. Provide for additional privacy and security measures in shelters, including during menstruation.
- Make special provisions to ensure that persons with disabilities have access to shelters and that shelters provide for their specific needs.
- Ensure gender parity and diversity in distribution teams, social mobilisers, trainers, and enumerators and provide adequate training and capacity strengthening including gender sensitization.
- Ensure women, including from excluded and vulnerable groups, are represented in all decision-making and consultation forums, as well as in leadership positions. Women also need to be involved in committees dealing with evacuation shelter, housing and housing facilities.
- Conduct gender sensitive initial rapid assessment and post disaster need assessments for accurate and speedy recovery plan. Equally consult with women, girls and excluded and vulnerable groups, during need's assessments.
- Develop guidelines on flood relief distribution prioritizing women and marginalised groups. Involve women's groups and organisations in the development of these guidelines and the dissemination of these packages.
- Ensure separate lines for women and men as well as the elderly for goods distribution. Provide specific priority to people with extreme vulnerabilities (persons with disabilities, single women, elderly, children-headed households, women-headed households, pregnant women). Involve local women and women's groups as logisticians, where available, to perform their functions in situations which require exploring and meeting women's needs.
- Prepare hygiene and wash kits, including water purification tablets to ensure access to safe drinking water, and prioritize distribution to women and girls, including sexual and gender minorities, persons with disabilities and other excluded or vulnerable groups.
- Ensure that women, adolescent girls and gender minorities are included in the planning, preparation and distribution of emergency/dignity kits. These should include reusable sanitary pads (including instructions on proper disposal in local language), masks, underwear, two sets of clothing in accordance with the local context, toiletries, water purifier tablets, umbrella, mosquito net, batteries, shampoo, nail cutter, five meters of fabric, sewing kit, soap for bathing and washing, towel, whistle, as well as a flashlight/solar lantern and solar radio.
- Note that dignity kits may be required also by trans-persons.
- Additional items should be added into the NFI kits for specific groups: visually impaired persons: a white cane. Pregnant women: razor blade or scissors to cut an umbilical cord, string to tie it, plastic gloves, sheeting for hygiene, and brief with photo-based instructions for how to safely deliver a baby. Women with infants: five meters of fabric. Women with disabilities: other assistive devices as required.
- A moderate quantity of wood could be provided on concessional terms to reduce the drudgery of poor women (and men) engaged in household chores and construction.
- Appoint staff and volunteers (ensuring gender parity) for routine spot checks and community consultations as part of efforts to prevent SGBV and provide them with adequate training on SGBV prevention and response. Provide staff with information of available services including hotline numbers of the National Women's Commission (1145) for reporting of SGBV.
- Deploy women police to patrol shelters to promote safety and security of women in the post-lockdown context.
- Ensure that psycho-social support as well as first aid and trauma counselling is available for survivors of violence, women separated from families and children, and children separated from parents.

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