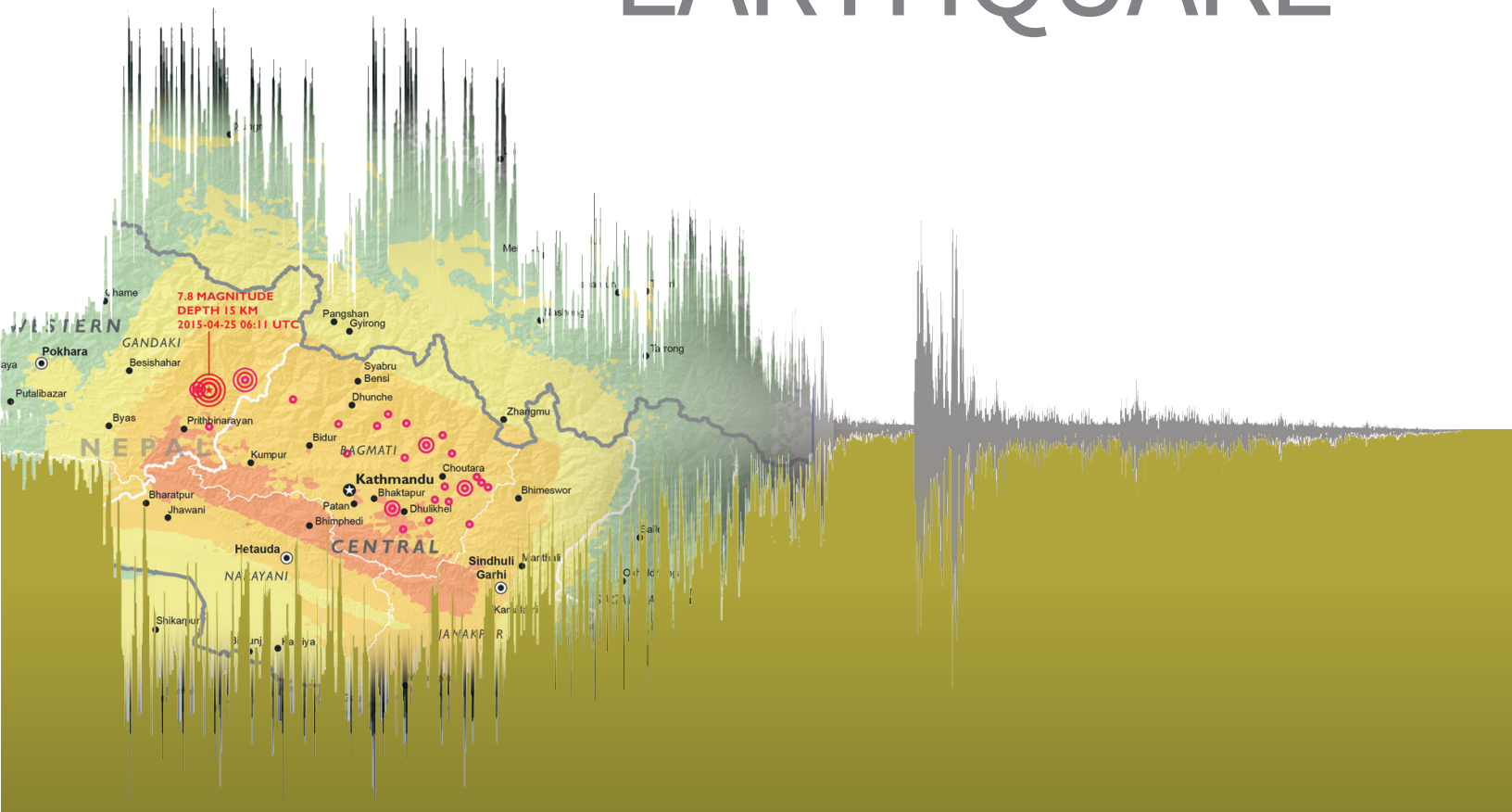
OVERCOMING PAINS

LIFE AFTER THE GORKHA EARTHQUAKE



ASHUTOSH SHUKLA, SHEELA BOGATI, VIBHUSTUTI THAPA and AJAYA DIXIT

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EXECUTIVE SUMMARY

This paper covers the lived experiences of the 2015 earthquake survivors. The research was conducted in urban and peri-urban areas of Gorkha District, the epicenter of the earthquake. This paper tells the story of the people from different social and economic groups of the district and tries to capture their emotions, understandings and learnings of disaster from before and after the 2015 earthquake. This paper also presents the perspectives of officials from central and local governments and development organizations involved in post-earthquake recovery and reconstruction efforts. The lessons identified in the report help to identify ways forward in order to build back better and ensure resilience in the coming days.

PREAMBLE

This case study aims to capture the lived experiences of people in and around Gorkha Bazaar, close to Barpak, the epicenter of the 2015 earthquake, and presents the experiences and learnings of the local people from different social and economic groups as well as the perspectives of officials from central and local governments and development organizations involved in post-earthquake recovery and reconstruction efforts. These officials have, and continue to help build the capacities of affected families in the area, so that the families are better prepared to face the risks of future earthquakes and disasters caused by natural and human-induced hazards.

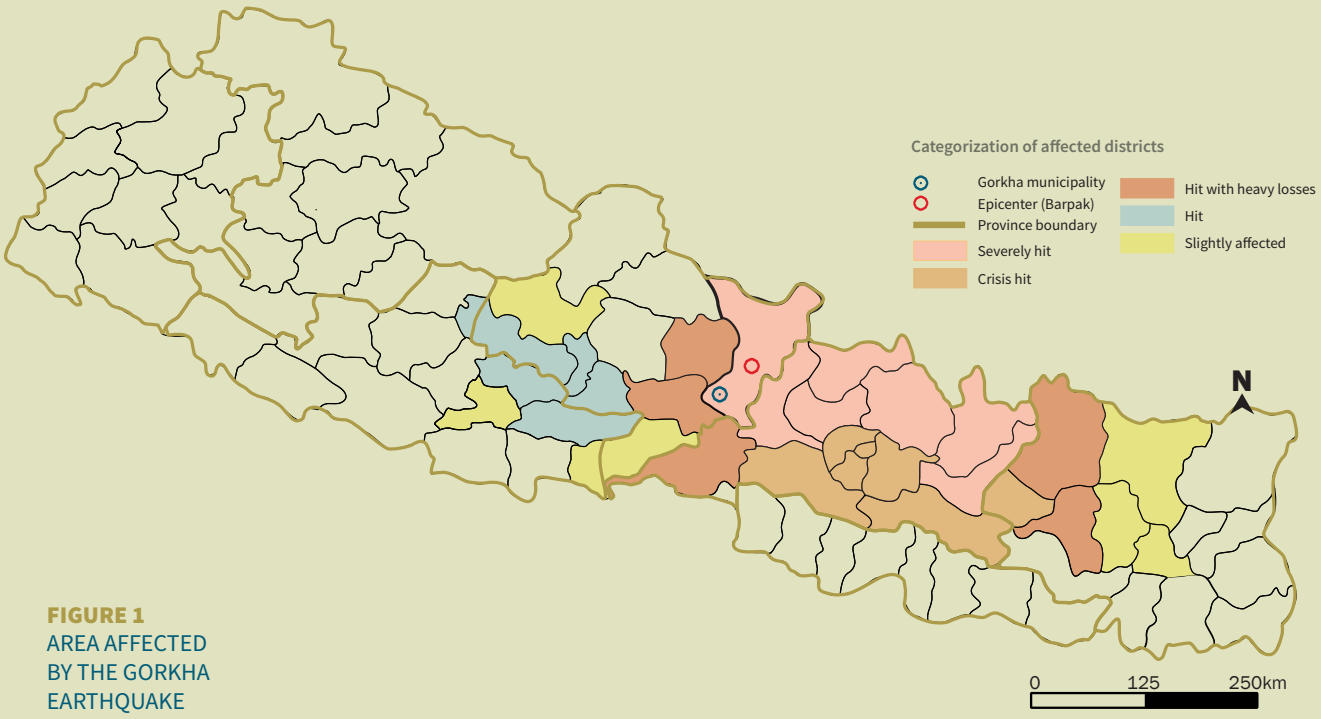


FIGURE 1
AREA AFFECTED BY THE GORKHA EARTHQUAKE

THE STUDY AREA

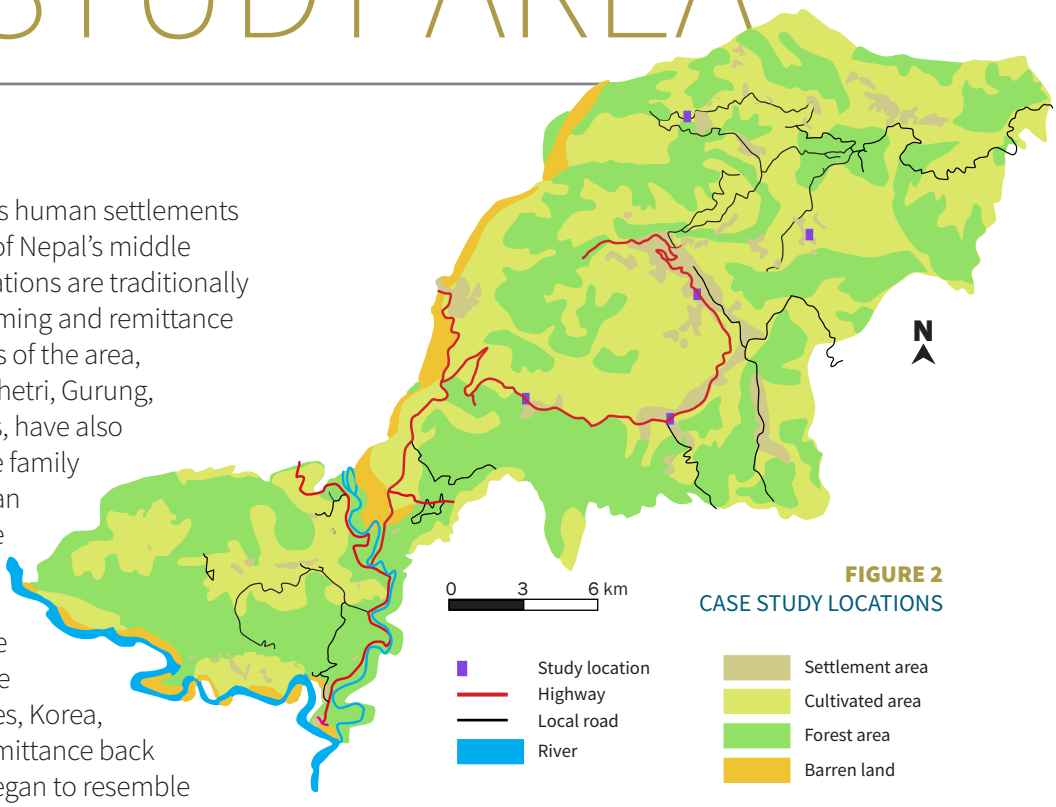


FIGURE 2
CASE STUDY LOCATIONS

Gorkha Bazaar's physiography, its human settlements and local livelihoods are typical of Nepal's middle mountain region, and the populations are traditionally dependent on crop, livestock farming and remittance for sustenance. Many households of the area, especially those belonging to Chhetri, Gurung, Tamang and Magar communities, have also had one or more members of the family employed in the British and Indian armed forces, and the remittance they have sent back home have supported their families. After 1990, outmigration became more widespread and more youth were going to work in the Gulf countries, Korea, or Malaysia and were sending remittance back home. The family asset basket began to resemble that of urban households (e.g. LPG cooking stoves, televisions or motorcycles), blurring the divide that previously existed. Crop and livestock based traditional livelihoods have gradually decreased in towns and villages around Gorkha Bazaar. According to the 2011 census, the bazaar has a population of 288,134 who practice mixed farm and non-farm occupations.

The Gorkha bazaar developed into a major town from Pokharithok village as settlements started expanding around the Gorkha palace. It was a supply center for food and other essential commodities to the surrounding villages. Traders settled in Gorkha and conducted their businesses. The population of the bazaar started to increase after the Pokhara-Kathmandu Road, which passed via Anbu Khaireni, south of the bazaar, was completed in 1974. Ten years later, in 1984, Gorkha Bazaar was linked to Anbu Khaireni, and further east, to Mugling Bazaar in the Pokhara-Kathmandu Highway, which is connected to Narayanghat. Since then, new houses, hotels, restaurants and commercial entities have been established along the roads leading to the Bazaar. Gorkha Bazaar has also become an important tourist destination since 1990, and the Gurung, Tamang and Ghale families in villages surrounding the bazaar continue to offer home-stay services, which provide them the experience of ethnic culture, to tourists.

Traditional houses of the area are built with stone-with-mud masonry with timber elements in the roofs and attics. Houses built after the 1980s use stone or brick masonry in cement, sand mortar with concrete and/or corrugated galvanized sheet (CGI) roofs, but in the surrounding villages, stone-with-mud masonry

prevails. The earthquake damaged more houses in these villages than in Gorkha Bazaar, although some recently built residential and office buildings there had structural damages. In the surrounding villages, including in peri-urban locations in Gorkha, the earthquake almost flattened those houses built in stone-with-mud masonry.

METHODOLOGY

The Gorkha earthquake has exposed the hidden limitations of the Nepali society that made its people vulnerable. It also created an opportunity to address those vulnerabilities. In doing so, the following four questions need to be considered. i) How did people from different social and economic groups experience the Gorkha earthquake? ii) What were some of their immediate learnings? iii) How are they using these learnings to ensure safer futures with low losses and damages to their livelihoods and local infrastructures? iv) How can their actions contribute to building resilience in the face of Nepal's multiple hazard-scape?

In an effort to answer the questions, the study has collected, "lived experiences" of affected families in the area (Table 1). The information was collected using semi-structured interviews with the participants who were purposely identified from selected localities of Gorkha Bazaar in Central Nepal. The interviews with the participants provided information on a number of challenges and opportunities for earthquake-affected families to build safer futures. Those findings based on analysis of the information shared by the respondents are locally rooted rather than determined through scientific studies.

The methodology provided an opportunity to compare lived experiences of these families and to understand the strategies they took after the earthquake and are taking currently for safer living in the future. The case study captures the experiences of people belonging to different castes/ethnicities, class, gender, occupation, livelihoods, ages and capacities. Individual and group interviews, and Focus Group Discussions (FGDs) were conducted. Informal discussions with men, women and youth belonging to different social and economic strata brought diversity to the lived experiences. Key Informant Interviews (KIIs) and observations of the affected households and landscape helped in the triangulation of information provided by the respondents. The lessons will help identify ways of building disaster resilience in Nepali communities.

Table 1 STUDY LOCATION, RESPONDENTS AND METHOD

Name	Location	Respondent		
		FGD	KII	Semi-structured interview
Phinam-4, Gorkha Municipality	Peri-urban	With women's group and Dalit group	Khop Bahadur Adhikari, Chairman, Ward-4, Phinam, Gorkha Municipality	Shrikala Shrestha, Social Mobilizer, Tulasi Meher, UNESCO Club; Minar Sunwar, Social Mobilizer, Oxfam
Nareshwor-3, Gorkha Municipality	Peri-urban	With elderly group and with people from lower income strata		Harimaya Chhetri, elderly woman
Bungkot-7, Sahid Lakhan Rural Municipality	Peri-urban	With farmer's group		
Terha Kilo-11, Gorkha Municipality	Urban	With women's group		
Laxmi Bazaar-9, Gorkha Municipality	Urban	With youth group/ earthquake affected people	Sitaram Chaudhary, Program Officer, Tulasi Meher UNESCO Club; Balkrishna Lamichane, Board Member, NGO Federation	
Haramtari-6, Gorkha Municipality	Urban		Minar Thapa Magar, National Coordination Officer, Housing Recovery and Reconstruction Platform (HRRP); Narayan Acharya, Local Development Officer (LDO), Gorkha District	Pawan Kumar Basnet, Member, National Disability Association

THE EARTHQUAKE HAZARDSCAPE

As the Indian plate pushes underneath the Eurasian plate at a rate of 2.5 cm per year, thrust is developed in the Himalayan sub-terrain. This subduction is the primary reason for the formation of the Himalaya range and its rugged topography, and is responsible for the accumulated energy underneath the surface of the earth, which when released, causes the occurrence of earthquakes. This region has experienced more than one thousand earthquake events ranging from 2-5 on the Richter Scale annually. Earthquakes larger than 6.5 on the Richter Scale occur only at an average return period of 70-80 years (Mainali and Pradhan, 2015).

Though records of earthquakes prior to 1887 CE are available (DPnet, 2015), actual measurements began in the 19th century. The measurements and records suggested that in the late 19th & 20th centuries, the central and eastern Himalayan regions were hit by four major earthquakes: the Shillong Earthquake of 1897 CE (Mw:8.1), Kangara Earthquake of 1905 CE (Mw:7.8-8.0), Bihar-Nepal Earthquake of 1934 CE (Mw:8.3) and the Assam-Tibet Earthquake of 1950 CE (Mw: 8.4-8.6). These four major earthquakes brought about catastrophic damages to lives and properties (Prakash et al., 2016). Nepal also faced smaller shocks in 1962, 1984 and 1988 (Mw: 6.8). The 1988 earthquake, which produced significant damage in Central and East Nepal, brought about policy changes including efforts at improving awareness. Based on the data of these past natural hazards, seismologists predicted the occurrence of another major earthquake in the region though they were uncertain about the time, the location, and intensity.

These high risks posed by earthquakes remained largely ignored until understanding of risks increased. With the growth of information and communication media, especially access to internet and mobile phones in post-2000 Nepal, people had access to a variety of information about disaster risks, safety, and preparedness. After the 1988 earthquake, the level of awareness dissemination effort has increased. Since 1988, January 15 is observed as the Earthquake Safety Day (ESD) (www.nset.org.np) when rallies, talk programs, safety drills, media campaigns are held and safety messages disseminated. Development organizations and aid agencies help in sensitizing people about earthquake safety. Radio Nepal, Nepal Television and other community radio stations broadcast messages of safety across the country. Incidentally, on April 25, the day of the Gorkha Earthquake, safety messages had been broadcast. How much of

this information has actually percolated to the grassroot level, and whether they are practiced remains to be assessed.

We asked respondents in the study location whether they knew that a major earthquake was long expected in Nepal. Most replied in the affirmative saying, “We did hear about the risk of earthquakes on radio and television every now and then, but we never thought it would come so early.” This kind of response reveals that the majority of the respondents of the study would listen to radio or television messages but did not necessarily produce behavioral changes to be more prepared for a potential earthquake. Furthermore, listening patterns to safety messages differed across individuals. Housewives in the rural and peri-urban areas understood the messages differently. It also differed across men and women belonging to lower economic strata and marginalized groups.

Shrikala, a house wife from Phinam, who had received school level education said, “My day starts early in the morning. I take care of the children and also work in the farm. I have no time to listen to the radio or watch television.” Most other housewives interviewed for the study similarly stated that they were heavily burdened with household chores and the stress of managing their daily lives meant they had very little time to listen to messages even if they owned a radio or television.

In both urban and rural areas, a majority of people held the view that “disasters are acts of God and cannot be prevented”. Such beliefs also seemed to shape prevailing perceptions across the social strata in the study locations. Although people were aware of safety messages such as “duck, hold and cover” and the benefits of retrofitting stone masonry houses to resist earthquake shocks, they were still not prepared and took no safety actions.

Will the Gorkha earthquake be a “turning point” in how Nepalis perceive and/or prepare for natural disasters? This is an important question and in the following sections we will attempt to answer the question through these lived experiences.

When asked about safety, preparedness, and earthquake-safe reconstruction of houses in the aftermath of the earthquake, a majority of the respondents said that they were indeed more aware, prepared and willing to build earthquake–safe houses. They also acknowledged the external environment as being conducive to making such a transition. They said, “After the earthquake, government agencies and development organizations have intensified their efforts in disseminating information on earthquake safety through house-to-house visits.”

THE EARTHQUAKE

Saturday, April 25, 2015, was a bright spring day in Gorkha, Nepal's central mid-hills. The days had become longer and middays were warmer. It was a period in spring where agricultural activities are at its peak. At 11:56 a.m., the ground started to move with a murmur, and the shaking increased substantially. Cracks appeared in places while rocks and boulders from upper slopes started falling down. Houses and roofs, telephone and electricity poles began to collapse. Unusual sounds emanated from all sides and the air was filled with thick dust. Many people did not immediately realize what had happened. But soon it was clear that a massive earthquake had occurred. The shaking lasted for 56 seconds. Radio and television stations began announcing that an earthquake of a magnitude of 7.8 Richter Scale had struck and that its epicenter was Barpak, Gorkha District. Eventually, people all around Nepal and the world would find out that those few seconds had led to lasting damages and collapse of several thousand houses in the villages, emerging towns along highways and urban centers, and the destruction of major cultural heritage sites like the Dhaharara in the capital, Kathmandu.

The tremors continued throughout that day and night. There was a major aftershock of Mw: 6.9) the next day, on April 26, 2015. Two weeks after the main shock of April 25, on May 12, a third shock of 6.2 Mw occurred and caused further losses of lives and damages to property. The aftershocks, which gradually became intermittent and reduced in magnitude, continued for almost a year. The first three shocks caused significant damages in 14 districts while 18 other districts were affected to a lesser degree. The shocks caused widespread damage and affected everyone in Nepal's central and eastern mid-hills. Many felt anxious of what would happen to them and their loved ones. Many others were traumatized. Normal life, as we knew it, had taken a beating.

Newspapers, magazines and television talk shows were flooded with information about human deaths, livestock losses and property damages. They highlighted the plight of the affected families as well as ongoing efforts of rescue and relief. Seismologists, geologists and other professionals working on disaster risk reduction and management began to write in Nepali and English newspapers and magazines as they explained plate tectonics and the causes of earthquakes. Seismologists explained that the accumulated energy that had triggered the Gorkha earthquake had not been released completely and that a 'Big Earthquake' was still likely to occur in the future so that all the stored energy could be released. Professionals in the media also discussed the issues of risk, safety, recovery and reconstruction.

On April 25, 38 tremors over Mw: 4 had occurred; 16 of them were larger than 5, and two were larger than Mw 6. April 26 also had several tremors: 38 larger than 4, seven larger than 5, and one larger than 6 in magnitude. The National Seismology Center publicly announces the occurrences of tremors that are higher than Mw 4; the occurrence of any tremor below that threshold is not announced publicly. In the first two weeks, there were 154 tremors larger than a 4 magnitude. This meant that there were 11 tremors in a day, on average, and one tremor larger than a 4 magnitude every two hours (www.seismonepal.gov.np).

The continuous shaking of the earth during this time along with the plethora of details of the deaths and damages fueled people's anxieties. They hoped that someone would explain to them why the tremors continued so that they could have reliable information on tremor occurrences. They also wanted someone to provide them with information on immediate relief support as well as details on how the damaged homes would be reconstructed. Unfortunately, there were only a few people who could provide them with the information they desired. Information flow is still inadequate today.

Earthquake damaged rural house built in stone masonry in mud mortar, Nareshwar-3

THE STORIES

Everyone had a different story to tell after the earthquake. The stories of suffering, rescue and relief efforts differed, the story of a man was different to that of a woman. Even within a family, individual experiences were different and so were that of the youth, children, elderly citizens, persons with disabilities (PWDs), the poor, and those belonging to marginalized groups. But all stories begin with that midday Saturday shock. Saturday is a public holiday in Nepal so offices and schools were closed when the earthquake occurred. Most people were at home. In the mid-hills, in the month of April, people are engaged in sowing seeds for spring maize and vegetables. That afternoon, men and women were out working on the farms, either preparing the land or busy with plantation. Some were involved in the early stage of weeding, a practice to ensure that seedlings grow to their vegetative stages though the April and May rains are scanty. After all the work that they had put in, the locals were expecting a good harvest. Those who began early in the morning had returned home, had had their meals, and were resting. A few had returned home to avoid the midday heat. They had gone to rest or were involved in other household work when the shaking started. One respondent said, "We were watching a TV show when the lights went out. So we decided to go out with our kids. Then the tremor struck and our houses collapsed. Luckily we were safe because we left the house at the right time."

Harimaya, a 74-year old Chhetri woman of Nareshwor, recalled, "My daughter-in-law and I were at home; the others had gone to work on the farm. Suddenly the corridor of my house, where I was standing, started to shake, slowly in the beginning, but vigorously as time passed. The shaking made it difficult to even stand. I thought I had become sick and that something was seriously wrong in my head. I thought I would lose consciousness and die. Then I heard my daughter-in-law shouting *"Ayo-Ayo"* (came-came in Nepali). She helped me come out of the house. As we moved out of the house, we began to say *"Mero-Mero"*. We had learnt from our parents that one must say *"Mero-Mero"* during an earthquake to save the house and family members. I found myself standing on the *aangan* (the front yard of the house). It took me some time to realize that I was safe. Then I began to think about my family members. I was concerned for their safety."

Shrikala recalled, "I was at my parents' house with my one-year old baby girl, husband, my parents and sister. We were watching television in a room on the first floor of our two-storey stone-built house when everything started shaking all of a sudden. All of us went 'blank'; we were 'stunned'. Next, the backside of the house collapsed. We thought we would be trapped in the ruins and die. I had experienced low intensity tremors in the past, but they would come and go. These tremors, however, continued with high intensity. When we finally tried to escape, a big stone fell in front of

us and blocked the door of the room we were in. We only managed to get out because a wall had broken. Once we were out, it took us some time even to realize that we were safe even though the house where I had spent most of my childhood had collapsed. Only after some time did I begin to think about the safety of my other family members, my in-laws, and neighbors."

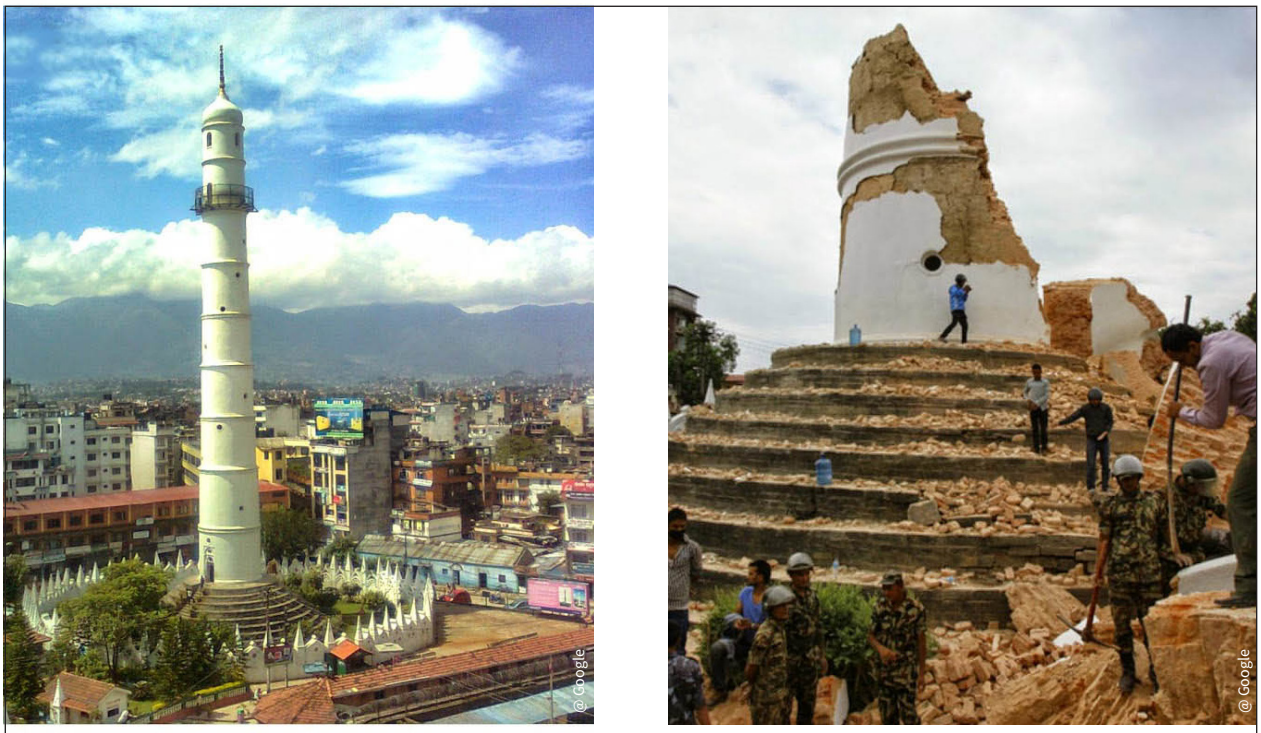
Other stories were no different. To most, the initial few seconds were full of terror. Those who managed to come out of their houses and were uninjured thanked the Almighty. Not everyone was fortunate enough though. Many were trapped in the debris with major injuries that needed immediate medical aid. The terror did not end as the ground kept shaking for the rest of the day and continued into the night. People did not go back to their damaged houses. They feared they would be stuck inside so they did not remove the debris, recover belongings or rescue trapped livestock.

Recalling the day, residents of Terha Kilo said, "As the ground started to shake, hill slopes slid, big boulders rolled down and houses collapsed. There was thick dust all around. People were panicking and running around. The immediate aftermath was that of fear and uncertainty. It took us some time to realize that we were safe. We thought that this was the *pralaya* we had heard about in religious texts, the dissolution when everything on earth is destroyed. We thought that this was the end of the world."

They added, "Before people began reconciling with the shock, evening dawned. The immediate challenge then was to feed the children and elderly. Some houses were still erect and others had been partly damaged but nobody dared to enter their homes and recover food. Spending time together provided courage in facing the trauma that the continuous shaking caused. Men, women and children stayed in the open spaces alongside their houses. When we heard over the radio that the iconic Dharahara in the capital Kathmandu had collapsed, we understood how bad things were in other parts of the country. Fortunately, mobile phones started to work about an hour after the first shock and that helped us contact our family and friends. However, since the electricity supply had ceased, our batteries soon started to deplete. We realized that, without electricity, we would not be able to charge our phones. So we started taking turns using our phones in a kind of spontaneous rationing of batteries. At that point we felt that solar PV would be a useful alternative for charging batteries when mainline supplies ceases during emergencies. The good news was that the mobile towers had not collapsed".

A group of women in Phinam revealed, "We became used to the continued shaking and learnt how to differentiate between tremors of different intensities. We stayed inside the house when the intensity of the shaking was low and of a short duration. After every shake, information on the intensity and the epicenter would be broadcasted on the radio. Those with access to mobile phones and internet connection would receive information within a few minutes of the tremor." They said, "After each tremor, we were able to make fairly reasonable estimates of the shock's intensity which generally matched the intensity measured scientifically. Our bodies seemed to have adapted to recognize the intensity of a tremor."

A group of women at Terha Kilo revealed that the continuous shaking has made them more alert than before. "We now know that earthquakes are a part of our lives and that we must live with earthquakes. We need to build our houses strong enough to resist future earthquakes of higher intensities than the 25th April event." A middle-



Kathmandu's Dharahara before and after the earthquake

aged man from the same area said, "We realized the importance of keeping a Go Bag (small bag that should contain important papers and documents: citizenship certificate, passport, land registration, some dried food and a bottle of water, a flash light, emergency medicines) in the evening of April 25 when we spent the night in the open. We had no food or water. A flashlight would help us see at night while extra clothing would keep young ones safe from the cold nights. We had heard about preparedness and listened to precautionary messages about the importance of these bags on the radio and television, but none of us had the bag at hand." He added, "Our ancestors have taught us that *"hool ma jiu jogaunu, anikal ma biu jogaunu"* (save your life first during a social unrest and save seed to survive the famine). We had forgotten this lesson."

NEIGHBORHOOD: THE FIRST RESPONDER IN EMERGENCY

The morning after brought a mixture of hope and agony: hope in having survived the earthquake, and the agony of having lost homes, assets, livestock and even dear ones. The first challenge as morning dawned was to manage something to eat, since even children had not eaten since the day before. Shrikala recalled, "We tried to recover food, clothing, cooking utensils from our damaged houses, but were scared to enter our houses because of the continuing tremors." Many others could not recover food, clothing and cooking utensils because their houses were damaged severely and it was impossible or unsafe to venture among the ruins. So, the survivors decided to start a common kitchen for 3 to 5 families. The clans with close family ties

worked together. This practice continued for the next three to five days. The next priority was to build some kind of makeshift shelter especially so that children, elderly and pregnant women could be protected from the hot days and the cold and rainy spring nights. The locals jointly collected plastic, tents, GI sheets salvaged from damaged homes, timber elements and tarpaulin sheets to build temporary shelters for a majority of families in the community.

Shrikala recalled the days immediately after the earthquake when the locals of her village were unable to salvage their partially damaged assets because of the fear of entering partially or severely damaged houses. She said, "Finally the youth of our village decided to use the tools they had to dig through the rubble and recover belongings. Everyone cooperated. They removed the carcasses of the dead livestock—goats, cattle, dogs, cats and poultry and helped bury them in safer places. This cleaning effort, where everyone cooperated and worked, continued for many days."

Respondents at Nareshwor recalled, "The sense of togetherness that the people displayed immediately after the earthquake was remarkable. Even the neighbors who were not on talking terms supported each other. We stayed in the open, shared food, shelter and our griefs. This gave us courage to face the pains of the losses we had incurred." This sense of cohesiveness had been absent for the past three decades since political affiliation had divided most locals living in the area. The Maoists' armed struggle had further strained the social relationships in the village.

However, a majority of the people in all locations felt that the sense of community seen in the immediate aftermath of the earthquake has faded subsequently. An elderly man at Bungkot said, "Things started to change after humanitarian, agencies and development organizations arrived with relief materials and started to distribute them. Then everyone started fighting for themselves and grabbed and hoarded any relief material they could access." He further added, "In the two-and-a-half-year period since the first shock, people still live in temporary shelters, many have not overcome the shock, yet the feeling of cooperation among the affected families has eroded. People have reverted back to the state of 'every man/woman fends only for him/herself' that pervaded before."

WHOSE HOUSES WERE DAMAGED?

A group of residents at Sahid Lakhan Rural Municipality were asked about the nature of damage to their houses, and the extent of human and livestock casualties. Two middle-aged women were killed in the area while many suffered from minor leg and head injuries. Everyone agreed that poor quality of house construction resulted in the damage. They said, "the houses would have

Discussion with elderly affected persons, Nareshwar-3

Discussion with low-income affected families in Nareshwar-3

been flattened even if the shocks had been of a lower intensity." The April 25 and April 26 shocks flattened most of the houses built with stone, mud and mortar.

They further added, "We used to hear on the radio that earthquakes do not kill, but that poorly built structures do and this is exactly what happened." Those houses that were damaged were two or three stories high with attics. "The attics were mostly used for grain storage. The houses were top heavy with weak stone masonry, so, they had collapsed," they said. Respondents also said that single storey stone and mud masonry houses with timber elements in the walls, with CGI roofs, and without attics survived the earthquake and many newly built houses with cement masonry walls and concrete roofs were damaged. They all felt that it would be difficult to ascertain the type and nature of construction that would be 'robust' to withstand an earthquake of that magnitude.

Houses built on rocky foundations survived the earthquake while those on loose soil collapsed. They agreed that safety depended not only on the materials and quality of construction but also on the nature of the foundation.

A group of women at Terha Kilo held similar views. They said, "We learned that building multistoried and taller buildings does not necessarily guarantee safety. A small house with all the elements of security incorporated should be built. Taller houses display wealth but now, practices of building multi-storey houses, without considering how safe they are just to show affluence, must change." They added, "People continue to believe in *'kaal naaye mardina'*, (one is not killed before the day of the death fixed by destiny). The Gorkha earthquake has demonstrated that such thinking is erroneous. Many died because their houses, big or small, were poorly built".

A group of respondents in Gorkha Bazaar stated, "It is not the materials used to construct a house but the way it is constructed that determines safety. Even many concrete houses collapsed because they were built on weaker foundations. Adding floors to weak foundations makes a house weaker. It cannot even withstand low intensity tremors." They added, "For safety, it is important to build a house following the engineering codes of practice. Building a house is a major investment and it is important to consult with an engineer beforehand, get the foundation soil tested and decide upon the number of floors that can be built. This investment is small considering the safety that will be ensured." They said, "Most of the damaged houses belonged to hotel and restaurant entrepreneurs who had added additional floors and rooms without safety concerns. They were guided by profit motives. Compromising on safety resulted in losses; houses collapsed and people were killed." Respondents were also concerned about expanding the urban sprawl of Gorkha Bazaar. They said, "Open spaces have vanished, and if this rate of growth continues, there will be no open spaces left for use during emergencies. The municipal government must designate open areas at locations and provide unhindered access to them." When asked if they knew about designated open spaces for use in emergencies, they said, "Before the earthquake, we were unaware of such allocated areas".

A group of men and women residing near a secondary school were asked about 'safety features in schools'. Most of them believed that the schools their children went to lacked safety features. Their major concern was with the floors of the school. They said, "Two-storied buildings are not safe for smaller kids." They added, "The corridors and staircases are narrow, and exit routes are inadequate. Such features make school buildings unsafe for children in emergencies. The earthquake-safe construction of school buildings and proper maintenance of facilities not only build confidence of parents and students but also create an ambience for learning."

Parents were asked if the schools held safety drill sessions or gave precautionary instructions preparing students for any natural disaster such as an earthquake. They replied, "If such drills were organized, the children would have told us." About a month after the earthquake, though, when the schools reopened, the students went through several sessions of psychosocial counseling. The school, with outside support, had organized such safety sessions. "This time we were sure that the school was teaching our children ways to deal with an emergency situation like an earthquake because the kids talked about these activities held in the school," they added.

RELIEF, RECOVERY AND RECONSTRUCTION EFFORTS

After the earthquake, civil and armed forces as well as military personnel helped the locals dig through the rubble and retrieve food, clothing and belongings. They said, "The security personnel worked with us for the first time. They helped us remove carcasses of dead livestock trapped in the rubble and bury them to prevent the spreading of diseases. They also shared our burden and griefs." On the third day, food, clothing, tarpaulin sheets and medical relief arrived. Residents felt that there was more relief material than needed and that distribution was problematic. "The influential members of the society grabbed most of the materials. The marginalized and disadvantaged groups who needed the most did not get enough," they said. The respondents of Nareshwor said, "Though we received food and other materials, tents and tarpaulin sheets to make temporary sheds did not reach us for several days." They felt that the distribution of relief was limited to places closer to the road heads and that it did not reach affected people in the remote villages. "We saw people from remote areas queuing in the district administration office everyday to receive tarpaulin sheets, but they returned empty-handed in the evenings," they added.

Minar Thapa, head of the field office, Oxfam, and the coordinator of the Recovery and Reconstruction Platform in Gorkha, agreed that there was a lack of coordination in distribution of relief for a few days after the earthquake. "The scale of the disaster was very large for government agencies to handle. They neither had the resources and the capacity nor the preparedness to handle

A house under construction with RCC pillars and brick masonry in cement and mortar, Phinam-4

an emergency of such a magnitude." Eventually the situation started to get sorted out as international aid agencies and non-governmental organizations worked together and coordinated with the government agencies to organize rescue and relief efforts," he added. People at other locations had similar observations: the chaos decreased with relief support reaching out to the people in about two weeks. "We formed local rescue and relief committees to coordinate with the government and aid agencies. This helped in assuring that support was available to those who needed them the most," the locals added.

Many felt, and still feel, that post-earthquake reconstruction and recovery support has been inadequate. But they have learned from their own experiences to remain prepared at the family and community levels and to build earthquake resistant homes. More importantly, they have learned how to act on their own even before relief, rescue, and recovery support by the government and aid agencies reach them.

Even though every story is varied and reflects the social and economic diversity of Nepali society, the one thing that people have collectively internalized is that "the risk of earthquakes are the result of the formation of the Himalayas and the threat will remain as long as the Himalayan range exists; Nepali people just have to learn to live with earthquakes because they are natural characters of our landscape." They seem to have realized that they must be better prepared to minimize losses and damages when a major earthquake strikes in the future. The following sections encapsulate individual and group experience as they make efforts to transition from the condition that existed prior to the earthquake that led to high damages and losses, to a safer future.

Those who lost their homes began to make temporary shelters. Initially they stayed in shelters made using plastic and tarpaulin sheets provided by relief agencies; only a few purchased their own. But a major concern was to be safe from pre-monsoon rains. Pre-monsoon rain showers in the mid-hills of Nepal start in April and May and by the second week of June, the entire country experiences rainfall, till September. Since the construction of damaged houses in less than two months was not possible, the government proposed that support would be provided for the purchase of CGI sheets to be used as roofing along with two bags of cement (Rs. 10,000). This would help the victims construct temporary shelters and avoid the perils of the monsoon. Respondents in both rural and peri-urban areas said that this support was indeed useful. They also used materials recovered from the rubbles of the damaged houses to build the shelters.

The shelters had one or at most two rooms with timber walls and CGI sheet roofs. The space was used for cooking, sleeping, storing food grains, and in some cases, for keeping livestock. When they built the shelters, they had hoped that after the monsoon, they would be able to build a new house with the support promised by the government and donor organizations. Unfortunately, this objective of building new houses remains unfulfilled even to this day. Many affected families continue to live in these temporary houses even today. A group of women in Nareshwor confided, "We think the temporary houses will become our 'new houses'. At least we constructed the temporary shelters, otherwise our conditions would be miserable. Constructing a new house looks like an unachievable dream at this point."

Respondents expressed frustration at the slow process of disbursement of reconstruction support by the government. They said, "Only less than 2 per cent of the damaged houses have been built to date; even those who have started building houses following the standards prescribed by

the National Reconstruction Authority (NRA) are in limbo. They received their first installment of NRs. 50,000 to make the foundations but many haven't received the second installment of NRs. 100,000 to build the walls and superstructures. The inspection and approval processes have been lengthy and cumbersome. At all locations respondents opined, "The procedures for receiving government support are so lengthy that we are losing hope that our houses will ever be built. When we visit the municipality office, we are told that to get the support we need, we must follow the standards prescribed by NRA and incorporate earthquake safety elements in all components of the house. But no one explains to us what these safety elements are, how they can be incorporated or what qualifies a building as being 'eligible' for reconstruction support. We do not receive the right kind of information and this is one of the reasons why progress in reconstruction is slow. It seems like the government and the functionaries in aid agencies are apathetic to our pains."

A group of women at Terha Kilo said, "We believe that the houses we will rebuild or are rebuilding must meet our requirements and not only the government's. We will incorporate the elements of earthquake safety in our new houses, but we must also be allowed to make the kinds of the houses that we want to construct." A middle-aged woman from the same location said, "The NRA norm requires us to build a toilet inside the house, but many of us prefer toilets to be located outside the house. However, having a toilet outside the house disqualifies us from getting government support. We do not understand why policies do not respect our culture and values."

Respondents from all study locations highlighted other factors that have delayed reconstruction of damaged houses. For example, a resident of Gorkha Bazaar said, "I keep getting asked to produce a domicile certificate when I try to get the approval of the municipality to build my damaged house. I migrated to this place many years ago. Before building my old house, I had the construction plan approved by the municipality. I even paid all taxes. But now, after having applied for an approval for the construction of the new house, I have been asked to produce a certificate of domicile. This was never asked before, and my voting rights had not been questioned earlier."

Others were concerned about the stringent norm in the approval of construction plans in the municipality area—all the houses have to leave a 25-meter space from the road head. "Leaving this land would mean that we will be left with little or no land to build a house along the road," said a resident at Terha Kilo. "If we follow this norm, we will become *'sukumbasi'* (landless peasants); reconstructing the damaged houses will be out of the question for those without enough land," she added. Additionally, at all locations, respondents mentioned that the rules and standards must be easy to understand and that a pro-people approach of reconstruction would speed up the sluggish rebuilding process.

In response to the grievances of the locals, Narayan Acharya, the Local Development Officer (LDO) of Gorkha District who heads the district level development program and is tasked with the job of directing post-earthquake reconstruction, mentioned that the reason for the slow start of reconstruction works was because the norms, standards and institutional arrangements to oversee the reconstruction of the houses were still being designed. With the institutional mechanisms in place now, he added, "Rebuilding is an opportunity to build back better. In this process of rebuilding, safe houses have to be built without reproducing the vulnerabilities which led to the high loss in the Gorkha earthquake." The government, through local level agencies, is supporting the affected families in their reconstruction efforts. He

Discussion with farmers' group in Bungkot-7

said, "the families must cooperate and abide by the standards that have been set. People are concerned about losing land due to the new housing policy that requires them to leave 25 meters on the road head. But this regulation is made for their benefit in the long run. In the reconstructed settlements, every house must be connected to a road so that ambulances and fire engines can reach them unhindered. This provision has been made considering the fact that Nepal faces recurrent disasters, including fires in the summer."

Who is vulnerable to disaster and why?

Understanding people's perceptions of vulnerability and how they identify and compare vulnerabilities of one group with another was an important part of the study. They identified geography, climate, low-income and traditional thinking as key sources of vulnerability. "Our dwellings on the hill slopes expose us to multi-hazard risks, including earthquakes," all respondents said. They added, "We face the risks of landslides and mass wasting in the monsoons when it rains persistently. There are lightning strikes in the monsoons. In the pre-monsoon months, hailstorms damage standing crops. If it does not rain in the springs we lose our crops, and given the dry summer days, incidences of fire in the settlements increase."

When they were asked to compare the vulnerability of one group with another, they said, "People with houses on terraced hill slopes are more vulnerable than those who have houses on valley floors. Those with houses built with stone in mud masonry are more vulnerable than those with cement-concrete houses. Those with houses built with stones and mud masonry with more than one floor are more vulnerable than single-floor types." They identified Dalits and marginalized groups as more vulnerable than Brahmin and Chettri families with higher social and economic capacities. They identified women, elderly and persons with disabilities to be more vulnerable to disasters than others. Furthermore, "low household economy" they mentioned, "is one

of the key determinants for high vulnerability. They said, "increased and diversified income sources help minimize vulnerability. Increased incomes enable people to build safe houses. The other factors include quality education, mobility and linkages with government agencies."

When the same question was asked to a group of women in Phinam they said, "Not all women are equally vulnerable; the economically disadvantaged and marginalized households are more vulnerable than those in upper castes and economically well-off households." They said that women of Gurung, Magar, Tamang and Ghale households are better positioned within their households. "They have greater exposure, they are better informed, more entrepreneurial, and are able make household decisions. Their vulnerability to disasters, such as earthquakes, is lower than those of even Brahmin and Chhetri households of that area." They identified pregnant and lactating women as less vulnerable than the elderly and disabled men and women in the family. On being asked why, they suggested, "A person who can move, seek help and take coordinated decisions on his/her own in stressful situations is less vulnerable than someone who cannot do all these on his/her own. Pregnant women are comparatively more 'able', despite the obvious limitations they face, than the elderly and disabled. Therefore, they are less vulnerable than elders, the visually impaired and physically handicapped." They further added that they had observed that chance of child survival during disasters increased when the child was with the mother.

Harimaya shared her experience of the earthquake: "Had my daughter-in-law not pulled me out of the house, I would have been buried in the rubble." She added, "Your physical condition matters when

Discussion with women's group, Phinam-4

it comes to responding efficiently to emergency situations and when one fails to respond quickly, chances of survival decrease. With age, this ability to act swiftly diminishes remarkably."

RECOVERY TO RESILIENCE

A group of men and women at Sahid Lakhan Rural Municipality were asked to assess the social, economic and institutional resources available to them that would help with safety and preparedness. They replied, "There has not been much improvement in the resources available after the earthquake. There still is a lack of an enabling environment to create safer living conditions." Increased awareness levels of the people have been a welcome change. "People's awareness levels have improved. We now actually talk about disasters, safety and preparedness with friends." They also highlighted knowledge, technology and financial resources as salient features when it came to preparedness and dealing with multi-hazard risks. They mentioned that the support services provided by local government entities for risk reduction were, however, inadequate.

The respondents added, "The earthquake was catastrophic and instantly affected a large population. We also face low intensity disasters, such as slumping and mass wasting, droughts, fire, and epidemics. These events weaken our ability to face major disasters. It is important to build our capacity to face day-to-day hazard risks, and not let them become major disasters."

When asked what would help them come out of the cycle of vulnerability and build resilience to disaster they said that "knowledge, skill, employment and pro-people approach of governance" were basic components in empowering the vulnerable. Because these elements are currently missing from livelihood systems, the cycle of vulnerability seems to persist and magnify the impact of even low intensity disasters. They suggested, "Our livelihoods are agriculture-based and we do not get sufficient output from the farms because of many limitations including low access to inputs. Our crops fail due to vagaries of weather and we do not get the right prices for our produce making us economically weak."

They also made observations about ongoing recovery and reconstruction processes. They said, "The government is supporting only the reconstruction of houses damaged in the earthquake but little effort is being made to reduce other sources of vulnerabilities that exacerbate the scale of damages. The other sources of vulnerabilities are low productivity and return from farming, lack of knowledge and skills, and weak local institutional capacities." When the urban dwellers in Gorkha Bazaar were asked the same question, they said, "Developing norms and standards for building houses are important but they alone will not minimize disaster risks. The key is effective execution of policies." They added, "With the expansion of the urban sprawl in Gorkha Bazaar, newer vulnerabilities are being created due to pollution, disease and social unrest. We do not possess the institutional capacity to deal with these emerging risks."

The respondents from all locations hoped that the election of representatives in the local governments would be instrumental in expediting reconstruction. "We had no elected representatives for the past two decades. Public accountability was low in local level governance." The respondents recognize that it would be important to build capacity of the local government to respond to recurrent and episodic disasters like earthquakes. The government needs to focus on building early warning and advisory services, organize effective relief and rescue efforts. It must regulate haphazard urban growth." They added, "It is important to internalize processes that incrementally lead to a safer future."

CONCLUSIONS

The case study unfolded lived learnings of the people regarding many aspects of disaster risks like earthquakes and issues related to preparedness that would make the future safer. These efforts will cushion them when a major earthquake occurs again. These stories provide lessons on preparedness that families, local governments, central government departments, development agencies and others need to take. The key messages are as follows:

Improved knowledge and awareness: The Gorkha earthquake has indeed raised awareness about safety. People seem to understand that an earthquake of this magnitude can strike at any time and that preparedness would help individuals, families and communities minimize losses and damages without them entering the cycle of vulnerability. The Gorkha earthquake could be a turning point in improving preparedness to multi-hazard risks faced by Nepali society.

In an emergency, the community is the first responder: The collective action of the local people is a key factor during any disaster. Such actions help minimize immediate risks and provide an early start in local level search, rescue and relief efforts before external support arrives. It is important to build and capitalize on this capacity. Organizing local management committees is a useful entry point in preparedness. Such efforts help build on the practice of community-based approaches to managing water and other natural resources in Nepal. However, leaving everything to this committee would be inappropriate considering its limited capacity to respond in an emergency situation.

The quality of materials and construction both determine safety: Building a safe house is important. Safety comes when structural elements of a house are appropriately designed and constructed. The use of 'proper' materials alone will not contribute to safety. Even stone and mud masonry could be made safer to face shocks if appropriate components and features were incorporated in the houses. Even cement-concrete houses built with 'modern materials' could fail if built inappropriately.

Open space is important: In urban areas, open spaces are required not only for their value in serving as spaces for evacuation, rescue and relief in the event of an emergency, but also in maintaining the urban ecosystem. Open spaces help minimize land and air pollution, promote groundwater recharge, and evacuate drainage during heavy rainfall.

Quality of school buildings and management determines safety of children: Parents whose children attend schools recognize the importance of safety arrangements in schools, for example, how exit routes are organized and managed determines

safety in schools during earthquakes. School buildings must incorporate safety features in a way that they contribute in creating an enabling environment for learning.

Not everyone is equally vulnerable: Local people understand differential vulnerability. They can compare the vulnerability of one group with another and analyze the reasons for differential vulnerability. This knowledge is helpful in developing an information base at the local level and in formulating local level disaster risk reduction plans.

Improvement in the household's economy helps minimize vulnerability: Preexisting vulnerabilities exacerbate losses and damages in earthquake disasters. Improvement in the household economy, through diversification of the income basket, is one of the basic requirements in reducing vulnerability. Considering the dependence of most households on agriculture and livestock-based farming for sustenance, improvement in the existing practices of farming is necessary to enhance and diversify the income basket.

Access to finance helps recovery: Most of the people in the study area face economic difficulties in mobilizing financial resources to rebuild their damaged houses. They seek financial help in the form of low interest loans and other sources. Yet they face limitations in accessing finance for such purposes. Lessons from across the world show that access to finance through various sources helps families affected by disaster adapt to shocks. Efforts must be made to ensure access to finance through effective mobilization of local financial institutions and people-friendly policies.

Poor convergence in the perspectives of people and the government: Perspectives on how recovery and reconstruction should proceed as well as the meaning of the two terms vary among affected families and government officials. Government officials and local people do not interact enough to coproduce knowledge. This gap has delayed reconstruction of the houses in the study area and other affected areas. The participants in such conversations should discuss assumptions used in making polices related to disaster risk reduction including reconstruction. To multiply the dividends of reconstruction, there is a need to encourage the ongoing reconstruction approach as "people-led, local-institution-facilitated and government-supported.

Reducing vulnerability means building resilience: Building resilience at the household and community level is not only about reconstruction of houses and infrastructure damaged in the earthquake, but also about recognizing existing sources of vulnerabilities and reducing them proactively. Building a house and physical infrastructures without addressing the exposure to local hazard risks and vulnerabilities would mean creating new sources of vulnerabilities.

Disaster is an opportunity: Disaster not only negatively affects communities but is also an opportunity to build-back-better and introduce new changes in policies.

Transformative changes are multi-faceted: The study shows that the process of transformation is multifaceted. Change requires the simultaneous focus on roles and capacities of the individuals, families, communities, government agencies and their personnel, governance, customary practices and decision-making, as well as the quality of human-built systems such as houses, roads, electricity and communication system. Furthermore, the quality of the natural ecosystem and the assurance of their services is central to order in minimize vulnerabilities and build resilience.

FINAL OBSERVATION

The Gorkha earthquake by its disruptive impact provides unique opportunities to identifying social relationships that were hidden during normal times. The event helps identify pathways to change existing relationships by creating new institutional arrangements and procedures to minimize the vulnerabilities faced by marginalized groups repeatedly affected by disasters. It is for these reasons that the development efforts currently being undertaken, especially those that attempt to alter power structures, are key to mitigating the harmful effects of all hazards including earthquakes. The pathways followed must strive to reform those relationships and institutional arrangements that lower societal vulnerabilities so that they are able to instead foster resilience.

Haramtari, Gorkha Bazaar-6

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