ICIMOD Working Paper 2015/6

ICIMOD

FOR MOUNTAINS AND PEOPLE

Strategic Framework for Resilient Livelihoods in Earthquake-Affected Areas of Nepal

About ICIMOD

The International Centre for Integrated Mountain Development, ICIMOD, is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalayas – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalization and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream-downstream issues. We support regional transboundary programmes through partnerships with regional partner institutions, facilitate the exchange of experience, and serve as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop an economically and environmentally sound mountain ecosystem to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now, and for the future.

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Strategic Framework for Resilient Livelihoods in Earthquake-Affected Areas of Nepal

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Message from the National Planning Commission, Government of Nepal

The earthquake in Nepal on 25 April 2015 and its subsequent aftershocks have had devastating impacts on the country, with nearly 9,000 deaths, over 20,000 injuries, and the destruction of numerous buildings and important infrastructure, including homes, health facilities, schools, and roads. The Government of Nepal has coordinated relief efforts to help address the immediate impacts of the earthquake. However, the secondary impacts – on livelihoods, industry, agriculture, and tourism, among other things – require a long-term strategy that incorporates the expertise of, and coordination among, multiple stakeholders and sectors to ensure a resilient recovery.

The preparation of a comprehensive reconstruction plan in general needs a comprehensive Post Disaster Needs Assessment (PDNA) to properly assess the damage, loss, and recovery needs. The preparation of a PDNA after such a devastating event is a daunting task. The National Planning Commission took on this challenging task with the help of all the line ministries of the Government of Nepal and a core group of development partners led by the United Nations, World Bank, Asian Development Bank, European Union, and Japan International Cooperation Agency. The National Planning Commission also benefited immensely from the regional and global experience of senior experts from neighbouring countries and other development agencies. More than 400 national and foreign experts worked around the clock to produce the PDNA, covering 23 themes, in less than one month.

However, the journey has just begun. We have a long way to go to rebuild a more resilient and inclusive Nepal. Building resilient livelihoods must be the top priority in the reconstruction and recovery process. A livelihood recovery strategy will not only redress the damage caused by the earthquake, it must also help build the resilience of communities in Nepal to future shocks. It requires appropriate policies and strategies that provide broad guidelines for the effective design and implementation of livelihood recovery efforts.

We are pleased to work with ICIMOD on the development of the livelihood recovery strategy detailed in this report, which outlines both broad and specific approaches for revitalizing livelihoods in post-earthquake Nepal. This report will be important for the Government of Nepal, development partners, the private sector, and others stakeholders to guide the planning and execution of efforts to revitalize and strengthen the livelihoods of earthquake-affected people.

The Government of Nepal is highly appreciative of ICIMOD's contributions over the last 30 years to the development of an economically and environmentally sound mountain ecosystem. More specifically, the Government thanks the Centre for its immediate support to the national rescue and relief operations in the aftermath of the 2015 Nepal earthquake.

Prof. Govind Raj Pokharel, PhD
Vice-Chair
National Planning Commission
Government of Nepal

Foreword

The recent earthquake that hit Nepal has devastated the central part of the country. Thousands lost their lives and livelihoods, and a sizable proportion of the population has been displaced. Several UNESCO World Heritage Sites within the Kathmandu Valley suffered damage. All major sectors suffered huge economic losses. At this juncture, the Government of Nepal faces an immense challenge to revitalize livelihoods in earthquake-hit districts and rebuild the nation.

In this light, ICIMOD has prepared this report to provide insights into how to restore, revive, and revitalize livelihoods focusing on the various socioeconomic challenges towards a strategic framework for designing and implementing actions, particularly those in the hills and mountain areas. I believe this report will be beneficial to the Government of Nepal and other development agencies in streamlining development efforts in the process of rebuilding the nation.

Immediately after the disaster, ICIMOD coordinated directly with the Ministry of Home Affairs in processing and analysing the latest satellite imagery received from space agencies around the globe. ICIMOD mapped pockets of settlements in affected districts and created profiles of affected VDCs to inform relief operations. ICIMOD also provided information to helicopter pilots and dispatchers of flight routes to help pilots navigate unfamiliar terrain, identify and recognize destinations, and plan appropriate landing spots.

With the onset of the monsoon, landslides have been another major obstacle to rescue and relief operations. Some slopes have been destabilized by the earthquake, which could lead to more landslides. There is an urgent need to assess the impact of landslides for immediate rescue and relief efforts and monitor potential hazards in the future. Moraine dams of glacier lakes may also have been weakened by the earthquake, which could result in floods affecting downstream communities. ICIMOD is closely monitoring landslides, glacier lakes, and river courses using the latest satellite images and sharing its findings with the Government of Nepal and relief agencies.

This paper aims to complement the Post Disaster Need Assessment (PDNA) of the Government of Nepal by providing insights into the livelihood dimensions of the earthquake and its socioeconomic and livelihood impacts. It explores the strategic choices and options for developing resilient livelihoods post-earthquake. It details a number of key elements of a strategy for livelihood recovery to inform the Government of Nepal's overall strategic plan. It will add value to the existing knowledge base on developing resilient livelihoods post-earthquake, especially in mountain areas.

Finally, it is not enough to just restore livelihoods and communities to their pre-disaster condition. Nepal needs a long-term strategy for the transition from reconstruction and restoration to sustainable livelihoods that are more resilient to future disasters. We need to develop a framework for revitalizing livelihoods and developing resilient communities. It is hoped that this report is a step towards this.

ICIMOD is thankful to the National Planning Commission, Government of Nepal for its valuable inputs and support in publishing this report. Our special thanks go to Prof. Govind Raj Pokharel, Vice-Chair; Dr Bhartendu Mishra, Member; and Dr Bimala Raj Paudyal, Member, National Planning Commission, for their strong support in preparing this report. The Centre looks forward to collaborating with the National Planning Commission to translate this strategic framework into practice for resilient livelihoods.

David Molden, PhD
Director General
ICIMOD

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Acronyms and Abbreviations

CBO	community based organization
CBS	Central Bureau of Statistics
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
HDI	Human Development Index
HPI	Human Poverty Index
ICIMOD	International Centre for Integrated Mountain Development
MoAD	Ministry of Agricultural Development
MoCTA	Ministry of Culture, Tourism and Civil Aviation
MoHA	Ministry of Home Affairs
MSME	micro, small, and medium-sized enterprise
NGO	non-governmental organization
NPC	National Planning Commission
NPR	Nepali rupees
PDNA	Post Disaster Needs Assessment
PYLL	person-years of life lost
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHABITAT	United Nations Human Settlements Programme
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
VDC	village development committee
WFP	World Food Programme
WHO	World Health Organization

Note: The exchange rate used in the publication is NPR 100 to USD 1.

Executive Summary

Nepal experienced a catastrophic earthquake of magnitude 7.6 on 25 April 2015, followed by more than 300 aftershocks. The total value of the damage and loss caused by the earthquake is estimated to be USD 7 billion, which is equivalent to about a third of Nepal's gross domestic product (NPC 2015a). The total loss in the agriculture sector, which is the main source of livelihood in most of the earthquake-affected areas, is estimated at around NPR 28.4 billion (NPC 2015a). Tourism has also been negatively affected, with much tourism infrastructure damaged or destroyed and tourism numbers dropping drastically. The earthquake has affected the overall economic situation in the production and service sectors, such as agriculture, livestock, tourism, trade, and industry. In such a situation, any government would be facing a major challenge to restore, revive, and revitalize livelihoods and the economy.

Livelihoods recovery for the affected people must be the top priority in the reconstruction and recovery process. While reconstruction is critically important, it is not enough. A long-term strategy is needed to support the transition from reconstruction and restoration to sustainable livelihoods that are more resilient to future disasters. Nepal can learn from other disasters to build a better, stronger country. Growing wisdom suggests that weak governance and ineffective management can lead to delays and poor recovery, as happened in Haiti after the 2010 earthquake. On the other hand, a well-designed recovery strategy can revitalize and enhance resilience and livelihoods, as happened in Sri Lanka after the 2004 Indian Ocean Tsunami and in Gujarat after the 2001 earthquake.

The process of reconstruction and recovery has already started, but recovery and revitalizing livelihoods is a Herculean task. Post-disaster relief and recovery operations are usually designed to return the community to pre-disaster conditions. However, experience shows that merely returning rural communities and households to their pre-disaster state can leave them vulnerable to future hazards. This paper aims to complement the Post Disaster Needs Assessment (PDNA) by exploring the strategic choices and options for developing resilient livelihoods as input into the Government of Nepal's post-disaster policies and strategic plan for a better and more successful livelihood recovery strategy.

The strategy for sustainable livelihood recovery in the earthquake-affected districts needs to grasp emerging opportunities, engage local people and raw materials (primarily from earthquake-affected districts, but also from non-affected districts to meet the gap), be innovative, and take into account the local context. It needs to initially help local people seize new employment opportunities in areas like clearing rubble, reconstruction of houses and infrastructure, and road building to provide immediate income. As part of this, local people's skills and capacities need to be built for reconstruction work as well as in agriculture and other vocational areas to make their livelihoods more resilient. Simultaneously, farmers and micro, small, and medium-sized enterprises (MSMEs) need to be supplied with inputs like seeds, tools, and credit to enable them to restore their livelihoods and perhaps upgrade or diversify them.

Across all of these activities it is vital that materials and human resources be sourced locally to stimulate the local economy, and for this the government could consider policies that make local materials more attractive. Districts not affected by the earthquake could play a vital role in filling gaps in the supply of resources (food, raw materials, construction materials, human resources) and capacity building and other interventions should target these districts as well, but with the main focus on earthquake-affected districts. The livelihood recovery strategy also needs to keep in mind long-term development goals such as the structural transformation of the economy (from subsistence to high-value commercial agriculture). It is also important to embed interventions in local institutions, such as government line agencies for agricultural extension services, farmers' cooperatives, and community forestry user groups. Environmental sustainability should be of primary concern in the livelihood recovery strategy to ensure both intra- and inter-generational equity and sustainability.

The livelihood recovery strategy should adopt an integrated approach that brings together employment-intensive reconstruction work, the skill development of local people, enterprise development, microfinance, and social protection, as well as the capacity strengthening of government officials, local representatives, NGO workers, community-based organizations, and the private sector, to enable smooth and efficient recovery. For this a strong coordination mechanism is needed to maximize the various skills and resources of the multiple stakeholders involved in livelihood recovery. Finally, community empowerment is the centrepiece of rural livelihood recovery and key to sustainable and resilient livelihoods. In a situation where male migration is a dominant phenomena and

women make up more than 60% of the agricultural labour force, women's active and empowered engagement in the planning and implementation of farm and non-farm based activities would speed up the livelihood recovery process. The following are some of the key elements that should be included in any livelihood recovery strategy:

- **Create an enabling policy and institutional environment** with clear policies, strategies, and instruments that provide a framework for active participation and effective planning, coordination, and implementation mechanisms.
- **Engage and coordinate diverse stakeholders** by instituting an effective multi-stakeholder coordination mechanism at different levels (from central to VDC), and institutionalize a mechanism that aligns external and internal financial resources with national development planning and sectoral strategies. A centralized information system should be established for smooth information sharing and better coordination.
- **Strengthen the skills and capacity of affected people** by integrating skill development and vocational training into livelihood recovery programmes and by building the capacity of local experts (private sector and government) to maximize the use of local expertise in the reconstruction and recovery process. Special measures should be taken to rehabilitate and improve the livelihoods of resettled people.
- **Tap the potential of internal and external job markets** by providing targeted skill building trainings required for reconstruction in Nepal (e.g., in masonry, carpentry, and road building, etc.) and for external job markets. Support the financial literacy of migrant households in the earthquake-affected areas and utilize the skills and remittances of the Nepali diaspora, which are important instruments for reviving the livelihoods of affected people.
- **Facilitate structural transformation from low to high productivity sectors** to move from a subsistence agriculture-based economy to a more commercial and diversified economy by creating employment opportunities in agriculture processing, marketing, value addition, manufacturing, the service industry, and other non-farm sectors with policy, financial, and institutional support.
- **Ensure gender equality and social inclusion** by integrating women and marginalized groups into planning and implementation processes, and by taking specific measures to ensure that employment opportunities are available to both women and men equally in emergency employment and reconstruction processes. Ensure the reconstruction process does not perpetuate gender inequality based on social and gender identity. Provide policy support to women's groups for livelihood generation and diversification through their priority engagement in public procurement processes linked to the recovery strategy.
- **Promote community empowerment** through building the capacity of local communities, community-based organizations, local government organizations, local MSMEs, cooperatives, and government agencies to participate in the livelihood recovery processes for effective planning, decision making, and implementation towards more sustainable and resilient livelihoods.
- **Integrate ecosystem and biodiversity conservation into the livelihood recovery process** in earthquake-affected areas. Adopt environmentally friendly technologies and conserve biodiversity by using ongoing relief and emergency employment generation support (such as cash-for-work and food-for-work programmes) and providing economic incentives for people for sustainable use and conservation.
- **Revitalize the farming sector** by providing inputs such as seeds, fertilizers, poly tunnels, tools, and feed and by strengthening agriculture and livestock extension services (including for post-earthquake suitable crops, vegetables, and livestock), as well as rebuilding damaged agricultural infrastructure such as irrigation facilities, seed stores, market sheds, and livestock sheds. Introduce crop insurance to mitigate the risk of crop failure resulting from disease or unforeseen events in earthquake-affected areas. Area-specific strategies for emergency relief and short-term employment creation schemes should be harmonized with medium to long-term livelihood recovery perspectives. As over a quarter of agriculture households are female-headed, development interventions should respond to the specific needs and challenges of female-headed households.
- **Revitalize the tourism sector** by using an eco-design approach and rebuilding environmentally friendly infrastructure and ecotourism, as well as supporting the rebuilding of damaged tourism infrastructure (such as trekking routes in safe areas) using people from earthquake-affected areas through cash-for-work, food-for-work, and other social protection programmes. Undertake targeted marketing of tourist destinations that have not been affected by the earthquake and provide policy and financial support to tourism entrepreneurs to restart their businesses.
- **Revitalize micro, small, and medium-sized enterprises** by providing loans at low interest rates, simplifying processes and mechanisms, and providing to support start-up businesses, as well as by facilitating insurance mechanisms with public-private partnerships to mitigate risk.

Key Facts

The Nepal Earthquake affected the livelihoods of over 2.28 million households and 8 million people in 31 districts, with total damage and loss of NPR 28.4 billion (USD 284 million)

- About 9,000 people died (55% women), 22,220 were injured, and over 100,000 people were displaced
- The earthquake has pushed an additional 700,000 people below the poverty line
- Over 5 million workers have been affected, with about 150 million work days lost, 69% of which are in the agriculture sector

In the 14 most affected districts, the earthquake has devastated the livelihoods of 5.4 million people (over 66% of total affected population)

- About 135,200 tonnes of foodstuff, 16,399 large livestock, 36,819 small livestock, and 460,762 poultry animals have been lost
- More than 3.5 million people are food insecure, and some 180,000 people engaged in tourism are extremely vulnerable
- The agriculture sector suffered total damage and loss of NPR 25.5 billion (USD 255 million), with maximum losses (86%) in Nepal's mountains and hills
- Out of the 150 million work days lost, 130 million (88%) are from the 14 most affected districts
- The average value of per capita disaster effect is highest in the mountains (NPR 219,503/USD 2,195) and the lowest in Inner Terai (NPR 50,813/ USD 508), with an average of NPR 130,115 (USD 1,301) in the 14 most affected districts
- The per capita disaster effect is negatively correlated (-0.55) with the Human Development Index and positively correlated with poverty (0.46) and the Nepal Earthquake Severity Index (0.74), indicating that less developed and poor communities, many of which are in mountain areas, endured a larger portion of disaster impacts
- About 26% of the damaged houses belong to women-headed households and 41% to Dalits and members of indigenous communities
- Women-headed households suffered the largest damage, followed by those from Adivasi Janjati communities
- Poor women and disadvantaged groups suffered more in terms of death, person years of life lost, injury, displacement, and impacts on other livelihood assets

1. Introduction

Nepal experienced a catastrophic earthquake of magnitude 7.6 on 25 April 2015, followed by more than 300 aftershocks with magnitudes up to 7.3. This was one of the worst earthquakes in recent history. It led to widespread devastation in Nepal, affecting 31 of the country's 75 districts (NPC 2015a) and more than 8 million people. Close to 9,000 people died, 22,220 were injured, and over 100,000 people were displaced. The earthquake caused extensive damage to physical and economic infrastructure, including many thousands of houses, schools, hospitals, government offices, roads, irrigation canals, and markets. More than 500,000 private houses were completely destroyed. The total value of the damage and loss caused by the earthquake is estimated to be USD 7 billion, which is equivalent to about one-third of Nepal's gross domestic product (NPC 2015a). All of this will continue to have a huge impact on the country's economy, as well as people's ability to maintain their livelihoods.

The earthquake has devastated the livelihoods of poor mountain people. It has affected the livelihoods of over 2 million households. Millions of people have lost employment in agriculture, tourism, trade, commerce, and other formal and informal sectors. An estimated 150 million work days have been lost in the 31 affected districts due to the earthquake (ILO 2015). Agriculture, animal husbandry, and tourism, which are the main sources of livelihood in Nepal's hills and mountains, have been particularly badly affected. About 135,200 tonnes of foodstuff has been lost, and 17,290 large livestock, 40,976 small livestock, and 507,665 poultry animals died following the collapse of buildings, especially livestock sheds and storage buildings. The effect of earthquake on the agriculture sector is NPR 28.4 billion (USD 284 million), of which NPR 16.4 billion (58%) is direct damages (NPC 2015a). Fissures and landslides have caused a huge amount of damage to agricultural fields. Many farmers lost their seeds, agricultural equipment, animals, fodder trees, and forage. Tourism, which is one of Nepal's most important sources of livelihood, has also been seriously affected. Many trekking routes have been damaged, as are hotels, resorts, restaurants, and shops. The livelihoods of 180,000 people engaged in tourism are now extremely vulnerable. Many migrant workers are returning to help their families, and outmigration has slowed, which may lead to a reduction in remittances and further pressure on livelihoods. Those who have lost family members in the earthquake are still traumatized and may take time to return to agriculture and/or other livelihoods. The number of people living with disabilities has increased resulting in more vulnerability. The loss of livelihood possibilities will further reduce the scarce livelihood options available for people living in hill and mountain areas.

Mountain people are facing multiple challenges and vulnerabilities. Mountain people already live in conditions of poverty, inequality, and vulnerability, with limited economic opportunities. Their land is fragile and sloping, housing structures are weak, access to public infrastructure and services is generally limited, and mountain areas are regularly exposed to landslides, floods, and other natural calamities. Life was already difficult before the earthquake; the post-earthquake scenario is significantly worse. Food, drinking water, sanitation, and security have emerged as burning issues in the aftermath of the earthquake, in addition to the basic problem of shelter. In some cases, grain that had been stored for the whole year has been buried by mud; in most areas food stores have been at least partially destroyed. This has undoubtedly worsened the food security situation in earthquake-affected villages. Mountain people are living in unsafe areas and houses due to a lack of choices and limited capacities. In addition to the challenges of daily living, women and children are now at high risk of sexual abuse in many rural areas as they are compelled to dwell under communal tents in open spaces. Widespread poverty, vulnerability, and remoteness, combined with increased environmental stress and limited economic opportunities, are seriously challenging the ability of mountain people to make a living.

Livelihood recovery is a Herculean task. The government is facing a major challenge to restore, revive, and revitalize livelihoods and the rural economy. The process of reconstruction and rebuilding has already started, but recovery and revitalizing livelihoods is a Herculean task. Realizing the need to plan for emergency recovery, the government formed a Post Disaster Needs Assessment (PDNA) Committee under the Nepal Planning Commission

(NPC), which has prepared a detailed assessment of the socioeconomic impacts (both direct and indirect) of the earthquake. The report covers 23 thematic areas/sectors, including macroeconomic and human development impacts, which have a direct bearing on livelihoods in the 31 affected districts. A major challenge facing the government is not only the generation of sufficient financial resources (both externally and internally), but also of technical and human resources to meet the reconstruction and development needs of the country.

Reconstruction needs to be linked to risk reduction for resilient livelihoods. Post-disaster relief and recovery operations are usually designed to return the community to pre-disaster conditions. However, experience shows that merely returning rural communities and households to their pre-disaster state can leave them vulnerable to future hazards (Wisner et al. 2004). New paradigms in post-disaster livelihood recovery focus on reducing vulnerability to future disaster events, as well as incorporating preparedness and mitigation initiatives as part of the post-disaster livelihood recovery process. From a livelihood perspective, effective disaster recovery – or 'resilient or sustainable recovery' – is defined, in a broad sense, as the "improvement of pre-disaster conditions, targeted to achieving long-term local development and disaster risk reduction building upon the holistic concepts of vulnerability, resilience and sustainable livelihoods" (Lizarralde et al. 2010). A livelihood that comprises the capabilities, assets, and activities required for a means of living becomes sustainable only when it can cope with, and recover from, stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural base (DFID 1999). Given the complex make-up of the livelihoods of the affected populations in Nepal, there is an urgent need to devise a comprehensive strategy that addresses not only the replacement of physical assets and the restoration of crucial livelihood assets, but also the long-term sustainability and resilience of livelihoods to future disasters. Such a transition from livelihood provision (immediate relief-based operations) and livelihood protection (reconstruction/rebuilding of destroyed physical structures and their restoration to pre-disaster norms) to livelihood

Every generation can contribute to rebuilding livelihoods

promotion (improvement on pre-existing conditions) requires the long-term commitment of governments and other development actors, capacity development, good governance, and an institutional culture dedicated to strengthening livelihood enhancing opportunities that are more inclusive and socioeconomically and environmentally sustainable.

Post-disaster recovery requires appropriate policies and strategies to seize new opportunities. A post-disaster strategic plan provides an opportunity to look at development goals and reflect, evaluate, and set new directions and priorities (Bankoff 2003; Nazara and Resosudarmo 2007). A well thought out recovery plan will not only help to restore and revive the old livelihood opportunities, but can also help in seizing new opportunities, 'building back better', breaking the poverty trap, reducing vulnerabilities, and building more resilient livelihoods. Building back better offers an opportunity to break the poverty cycle and develop more sustainable livelihoods. While the overall and sectoral recovery policy strategy to be formulated by the government based on the outputs of the PDNA report is expected to provide a roadmap, some pertinent questions in developing a post-disaster policy include: How can the country take livelihoods and economic recovery forward smoothly and efficiently? How can it link emergency relief work to recovery and sustainable livelihood and development goals? How can livelihoods be transformed from low remunerative, highly vulnerable to low vulnerability, highly remunerative? How should the different programmes be sequenced? How can diverse stakeholders be engaged and their work coordinated and facilitated? How can new opportunities be seized? What livelihood revival approach is appropriate? All these questions and associated issues deserve careful attention and well-designed policies and strategies to address them. Many of these questions are discussed later in this paper with an attempt to find answers.

Children start school in temporary learning centres

Nepal can learn from other disasters to build a better, stronger country. Growing wisdom suggests that weak governance and ineffective management can lead to delays and poor recovery, as happened in Haiti after the 2010 earthquake. On the other hand, a well-designed recovery strategy can revitalize and enhance resilience and livelihoods, as happened in Sri Lanka after the 2004 Indian Ocean Tsunami and in Gujarat after the 2001 earthquake (Robinson and Jarvie 2008; Srivastava and Shaw 2014). An appropriate recovery strategy will be critical for Nepal to build a better and stronger country – and this means building prosperous and resilient livelihoods. The success of post-earthquake recovery will depend heavily on our ability to vision and plan for a new Nepal free of poverty and with resilient communities. Effective coordination will be needed to minimize duplication, redundancies, and inefficiencies in services. Recent work on post-disaster recovery shows that focusing on rebuilding houses and infrastructure is not enough. It is essential to have proper policies and strategies in place aimed at rebuilding people's livelihoods effectively, sustainably, and within a reasonable amount of time (Christoplos 2006; Nazara and Resosudarmo 2007; Jayasuriya and McCawley 2008).

The purpose of this paper. This paper aims to complement the Post Disaster Needs Assessment (PDNA) of the Government of Nepal by providing insights into the livelihood dimensions of the earthquake and its socioeconomic and livelihood impacts, especially in the 14 most affected districts. It seeks to explore the strategic choices and options for developing resilient livelihoods as input into the Government of Nepal's post-disaster policies and strategic plan for a better and more successful livelihood recovery strategy. This paper also wishes to emphasize that while reconstruction is critically important, it is not enough. A long-term strategy for the transition from reconstruction and restoration to sustainable livelihoods that are more resilient to future disasters is also needed. This paper focuses mainly on the 14 most severely affected districts, namely Bhaktapur, Dhading, Dolakha, Gorkha, Kathmandu, Kavre, Lalitpur, Makwanpur, Nuwakot, Okhaldhunga, Ramechhap, Rasuwa, Sindhuli, and Sindhupalchowk.

Pregnant and lactating women are among the most vulnerable groups after disasters

2. Impacts on Livelihoods and Food Security

The earthquake has devastated the lives and livelihoods of mountain people. The lives and livelihoods of 5.4 million people in the 14 most severely affected districts, representing over two-thirds of the 8 million people residing in the 31 affected districts, were the hardest hit. With the exception of the Kathmandu Valley, these severely affected districts are essentially rural mountains and hills where subsistence agricultural is the main livelihood activity. The disaster impact on agriculture-based livelihoods and food security is particularly worrying as it has damaged people's houses, as well as their productive resources, employment sources, and means of living. Mountain communities living in poorly accessible areas with difficult and fragile terrain and limited livelihood options are among the most poor and vulnerable (Annex 1). The earthquake has exacerbated the livelihood conditions of these rural households, which were already poor and vulnerable prior to the earthquake. The poor accessibility and distance to major centres means that people have limited access to basic services such as electricity, clean drinking water, health, education, financial services, and transport, a problem further compounded by the destruction of those services that did exist.

Throughout history, mountain people have been facing the challenges imposed by harsh climates, climate variation, and natural hazards and have developed a range of coping strategies to reduce risks, and adapt to impacts. However, as agricultural households struggle to cope with the impact of the earthquake, there is the added risk that they will be forced to resort to negative coping mechanisms, such as the liquidation of key livelihood assets and degradation of the natural resources base for their immediate survival needs. These together with pre-existing poverty, inequalities, exclusion and discrimination have a direct bearing on how survivors respond to the disaster and the extent of their resilience to such events in the future. The hill and mountain areas of Nepal are physically and socially vulnerable. The fragile mountain ecosystem is highly exposed to climate variability and susceptible to frequent natural hazards. Livelihood vulnerability is a function of this exposure to hazards, the adaptive capacity of the population, and sensitivity factors. Clearly, a proper understanding of the livelihood impacts of the earthquake in these severely affected 14 districts is an important first step in devising a successful strategy for livelihood recovery (Annex 2). It is in this context that this section is dedicated to assessing the livelihood impacts of the earthquake in the 14 most affected districts dealing mainly with the key employment and income generating sources such as agriculture, livestock, food security, tourism, and migration and their implications for the future.

Agriculture

The agriculture sector in Nepal employs 76% of the labour force and contributes 34% of the nation's total GDP (NPC 2015b). The National Planning Commission in its Post Disaster Needs Assessment (PDNA) estimates that the total impact (direct and indirect losses) on the agriculture sector is NPR 28.4 billion (USD 283 million), of which direct damages represent 58% (NPC 2015a). The impact of the earthquake on agriculture and livestock and the consequences for local livelihoods and food security are discussed here.

Most of the 14 districts (Bhaktapur, Dhading, Dolakha, Gorkha, Kathmandu, Kavre, Lalitpur, Ramechhap, Rasuwa, Makwanpur, Nuwakot, Okhaldhunga, Sindhuli, and Sindulpalchowk) severely affected by the earthquake are in the mountains and hills, which have limited arable land for crops (Annex 2). The contribution of these 14 districts to national annual production of cereal crops prior to the earthquake is shown in Table 1. The earthquake-affected districts mostly use rain-fed cropping and are largely dominated by maize and millet. The earthquake-affected districts contribute 23% and 29% of national maize and millet production, respectively. In addition, these districts contribute 8% of the rice, 9% of the wheat, and 24% of the buckwheat produced in the country.

Table 1: **Contribution of the 14 most affected districts to the national production of cereal crops**

Crops	Cultivated area in affected districts ('000 ha)	% share in national cultivation area ('000 ha)	Annual crop production from affected districts ('000 t)	% share in national crop production ('000 t)
Paddy (rice)	113	8% (1,486)	441	9% (5,047)
Maize	216	23% (928)	552	24% (2,283)
Millet	80	29% (271)	92	30% (304)
Buckwheat	3	24% (11)	2	22% (10)
Wheat	64	9% (754)	144	8% (1,883)
Barley	2	9% (28)	3	7% (35)

Source: MoAD 2014
Note: Figures in the parentheses reflect the national total

The earthquake has had both direct and indirect impacts on agriculture in terms of loss of standing crops, livestock, seeds for planting, food stores, tools, and irrigation and other infrastructure. Vegetable production in Kavre, Dolakha, Kathmandu, Bhaktapur, and Dhading districts often exceeds subsistence use, with surplus often found in markets in Kathmandu. The earthquake forced many farming households off of their farms; as a result, vegetable production in affected districts may have reduced. This has affected both consumption and income, especially for women. Some of the short-term and potential long-term impacts are discussed in the following sections.

Standing crops

Spring crops such as early rice (chaite dhan), maize, and potato were the main crops standing at the time of the earthquake. The wheat harvest was almost complete in most areas. The earthquake had only a low to moderate impact on standing crops. The main crop losses were from landslides damage to fencing and followed by animal grazing, and over-maturation. According to a field study conducted by the Nepal Food Security Monitoring System (NFSMS et al. 2015), 60 to 80% of farmers had less than 25% loss of their standing crops as a result of the earthquake. These values only reflect the immediate losses, however, and further losses can be expected if farmers are unable to harvest or irrigate their crops at critical times.

Table 2: **Loss of seed in six affected districts**

Crop	% households that lost stored seed			
	<25%	25–50%	50–75%	>75%
Rice	34	7	13	46
Maize	46	11	10	33
Wheat	30	7	14	49
Millet	27	7	12	54
Potato	35	12	17	36

Source: FAO and NFSC 2015

Seeds

More than 60% of farmers in the mountains and hills keep their own seed in special structures for planting in the next season; only a minority buy it from the market. According to the field survey conducted by FAO and NFSC (2015) in six of the most affected districts, the majority of the farmers reported a substantial loss of seed, especially for millet, wheat, and rice seed (Table 2). The millet, maize, and rice planting season is in the months following the earthquake, so this loss of seed is expected to have a significant impact.

Rice is the major monsoon crop. The Ministry of Agricultural Development's (MoAD) preliminary estimates indicate a demand for more than 2,400 tonnes of rice seed to transplant rice in the most affected districts, valued at NPR 120 million (USD 1.2 million) (Table 3). More demand is coming from the hill districts, which account for a significant proportion of the rice growing area.

Table 3: **Requirement for rice seed in the 14 most affected districts for the 2015 planting season**

	Demand for rice seed (t)	Value NPR ('000)
Mountains[1]	31	1,550
Hills[2]	2,308	115,400
Kathmandu Valley[3]	29	1,450
Inner Terai[4]	47	2,325
Total	2,415	120,725

[1] Dolakha, Sindhupalchowk, Rasuwa, Gorkha
[2] Okhaldhunga, Ramchhap, Dhading, Nuwakot, Kavre
[3] Kathmandu, Lalitpur, Bhaktapur
[4] Sindhuli, Makwanpur

Source: MoAD 2015

Food stores

The earthquake had a significant impact on food stores. Preliminary estimates from MoAD suggest that around 135,187 tonnes of stored food was lost with a value of NPR 8.1 billion (USD 81 million), one of the highest losses in the agricultural sector. As subsistence farmers and rural households generally store grain (wheat, rice, millet, maize) and potatoes to last through the year, only the surplus (if any) is marketed. Stores of wheat, rice, millet, maize, and potatoes were lost in the earthquake (FAO and NFSC 2015), with the greatest proportion of losses for the recently harvested wheat and millet. A field study showed that an average household had 218 kg of cereals stored at the time of the earthquake. Many households in the most severely affected districts lost all their stored food. The destruction of food storage structures will also affect the storage of upcoming crops such as maize, which is harvested in the rainy season.

Agricultural tools

Farmers also suffered a significant loss of agricultural tools and implements. Most households reported losses of 'dokos' (baskets for carrying), spades, sickles, and ploughs, which will directly impact farming operations, from field preparation to harvesting including tilling, transplanting, irrigating, weeding, and applying manure. The loss of agricultural tools will lead to an increase in production costs and reduced yields in the upcoming crops. The Food and Agriculture Organization (FAO) estimated that USD 8 million is urgently needed to replace agricultural tools for the earthquake-affected farmers in time for the upcoming paddy plantation season (FAO 2015).

Agriculture-related infrastructure

The earthquake also damaged major agricultural infrastructure, including road access to markets, service centres, training centres, soil testing laboratories, plant pathology labs, and crop breeding centres. Preliminary estimates show a loss of NPR 1.34 billion (USD 13.4 million) in agricultural infrastructure (MoAD 2015). This will impact the access of farmers to information and technical services.

The earthquake and subsequent landslides have damaged or destroyed most of the irrigation infrastructure in the affected districts, including mud canals, polythene canals, lining, diversion structures, inlet and outlet tanks, reservoirs, and irrigation ponds. The estimated damage to irrigation due to the earthquake is NPR 383 million (USD 3.8 million) (NPC 2015a).

The months immediately following the earthquake are the time for preparing rice nurseries and irrigating standing maize crops. If the irrigation infrastructure is not repaired in time, there will be a significant negative impact on these crops. If farmers are unable to irrigate maize at the flowering stage the yield will be significantly reduced. Similarly, if farmers fail to raise rice seedlings in time, rice cultivation will be delayed (or may fail). A delay in rice cultivation may delay the planting time for wheat, the winter crop. Research has shown that a 15-day delay in wheat cultivation significantly reduces its yield. Thus, any delay in the repair and maintenance of irrigation infrastructure will have a long-term impact on agricultural production.

Substantial yield reduction

A substantial loss in yield is anticipated in the 14 most affected districts in 2015. MoAD had already estimated a 3.1% reduction in cereal production for 2015 year due to the variation in the monsoon, with the greatest reduction for rice and maize (Kathmandu Post 2015b). Damage to standing crops, seed loss, loss of agricultural tools, and damage to agriculture-related infrastructure including irrigation is likely to reduce yields much more sharply. As yet, there are no reliable estimates of the likely reduction in yield.

Livestock

The mountains and hills are niche areas for livestock farming. The 14 most affected districts hold more than 1 million cattle, 1 million buffalo, nearly 2 million goats, and 13 million poultry representing 16%, 19%, 19%, and

26% of national cattle, buffalo, goat, and poultry populations, respectively (Table 4). The 14 most affected districts account for nearly 20% of national milk production and a significant proportion of meat products, with the highest contribution from the poultry sector (Table 5). The hill districts of Kavre, Dhading, and Nuwakot and the Kathmandu Valley are emerging centres for poultry production.

Farmers suffered considerable loss of livestock, mostly due to collapsed housing structures. MoAD has reported 17,290 large animals, 40,976 small animals and 50,7665 birds were killed from 26 earthquake-affected districts (MoAD 2015). Estimated damage in the livestock and poultry sector is NPR 10 billion, 70 percent of which is direct damage (NPC 2015b). Major losses were observed in 14 districts estimated at NPR 8 billion, with the maximum losses observed in mountain and hill districts (Table 6). Anecdotal evidence suggests that there were significant losses among poultry enterprises, with the maximum loss recorded in the Kathmandu Valley. Livestock-related infrastructure, including sheds and storage structures, were destroyed, as well as feed and forage, through loss of crop residues and limited access to pasture following landslides. Dairy and poultry are a quick source of cash income in the mountains and hills, and the loss of milking animals and birds directly affected household income. In addition, loss of livestock will greatly impact crop production due to the lack of manure and bullock power. Small livestock and vegetables are important sources of family nutrition and often the only source of independent income for women. This element needs to be protected in livelihood recovery.

Table 4: **Number of livestock ('000) in 14 most affected districts**

	Cattle	Buffalo	Sheep	Goat	Pig	Poultry
Mountain[1]	284	236	64	485	41	1,344
Hills[2]	575	524	44	857	105	4,623
Kathmandu Valley[3]	87	69	1	167	24	3,392
Inner Terai[4]	230	164	2	393	32	3,184
Total	1,176	993	116	1,904	203	12,545
Share of national population	16% (7,243)	19% (5,178)	15% (789)	19% (10,177)	17% (1,190)	26% (48,079)

[1] Dolakha, Sindhupalchowk, Rasuwa, Gorkha
[2] Okhaldhunga, Ramechhap, Dhading, Nuwakot, Kavre
[3] Kathmandu, Lalitpur, Bhaktapur
[4] Sindhuli, Makwanpur

Note: Figures in the parentheses reflect the total number of animals nationally ('000)
Source: MoAD 2014

Table 5: **Contribution of livestock products (milk and meat) from 14 most affected districts to national production**

Product	Production ('000 t)	Share in national production
Milk (cow)	91	17% (532)
Milk (buffalo)	255	22% (1,167)
Meat (buffalo)	40	23% (173)
Meat (poultry)	11	27% (43)
Meat (goat)	8	13% (59)
Meat (pork)	4	19% (19)

Note: Figures in parentheses reflect total national production ('000 t)
Source: MoAD 2014

Table 6: **Total damage and loss in agriculture and livestock in the 14 most affected districts (million NPR)**

	Agriculture	Livestock	Total
Mountains	5,191	4,403	9,594
Hills	9,250	3,209	12,459
Kathmandu Valley	1,201	595	1,796
Inner Terai	1,058	556	1,614
Total	16,700	8,764	25,464

Source : NPC 2015c

Food security

About 3.6 million people in Nepal are malnourished, which is about 13% of Nepal's population. Twenty-nine per cent of children under five years of age are chronically malnourished, most of whom are in mountain and hill areas (FAO et al. 2014; FAO and NFSC 2015). The earthquake led to a loss of food stores, damage to standing crops, and loss of milking and meat animals, all of which will worsen the food security of mountain people.

Out of the total earthquake-affected population, 240,000 people are severely food insecure, 1.1 million are highly food insecure, 930,000 are moderately food insecure, and 774,000 are minimally food insecure (NFSMS 2015). About 1.1 million people in earthquake-affected districts do not have clean drinking water (UNOCHA 2015). Children and women are among those most vulnerable; 400,000 children from earthquake-affected districts are expected to suffer from malnutrition (UNOCHA 2015). In the 14 most severely affected districts, 85% of households have already reduced the size of meals for adults so as to give priority to children (FAO and NFSC 2015).

MoAD has estimated a food deficit of 466,230 tonnes in the 14 most severely affected districts (Table 7). The World Food Programme (WFP) estimated that USD 116.6 million will be needed to provide food for the 1.4 million food insecure people over the next three months. If farmers miss a full planting season for paddy, this could have a marked impact on long-term food security, as rice is the main staple crop.

Table 7: **Annual food production, demand, loss, and balance post-earthquake in the 14 most affected districts**

	Cereal production (t)	Cereal demand (t)	Estimated food loss (t)	Estimated monetary value of food loss ('000 NPR)	Food balance (t)
Mountains[1]	183,846	165,040	26,574	1,594,468	-7,768
Hills[2]	317,366	281,674	93,914	5,634,844	-58,221
Kathmandu Valley[3]	128,065	526,689	3,413	204,780	-402,037
Inner Terai[4]	159,995	149,964	8,235	494,100	1,796
Total	789,272	1,123,366	132,137	7,928,191	-466,230

[1] Dolakha, Sindhupalchowk, Rasuwa, Gorkha
[2] Okhaldhunga, Ramechhap, Dhading, Nuwakot, Kavre
[3] Kathmandu, Lalitpur, Bhaktapur
[4] Sindhuli, Makwanpur

Source: MoAD 2015

Tourism

Tourism activities generate employment for many formal businesses, such as international and domestic airlines, hotels, homestays, and travel and trekking agencies. The income generating opportunities are multiplied many-fold through value chains that reach into the informal economy to groups such as porters, minibus/taxi operators, vendors of handicrafts and other goods, and those who make craft goods for sale. In recent years, tourism contributed about 4% of GDP in Nepal and supported more than 500,000 jobs directly and 600,000 jobs indirectly (WTTC 2014).

The earthquake has severely affected the tourism industry and its sub-sectors. The total impact of the earthquake on the tourism sector alone is estimated as NPR 81.24 billion (USD 8.2 million), which is the highest among all the productive sectors of which indirect loss (mostly revenue loss) is 77% (NPC 2015a). More than 50% of existing private infrastructure was lost (hotels, homestays, travel/trekking agencies), while the destruction of major buildings at heritage sites also represents a significant loss to public infrastructure. Several UNESCO World Heritage Sites and famous trekking routes were extensively damaged or destroyed, including temples and monasteries that are flagship destinations in Kathmandu, Lalitpur, and Bhaktapur, tourism infrastructure such as hotels, resorts, restaurants, and shops, and diverse tourism-related enterprises. Some areas famous for trekking and adventure tourism, such as Manaslu and Langtang have been completely destroyed, and the local people have been forced to relocate. The cultures and settlements of certain ethnic groups have been primary attractions for many tourists, especially for those studying local traditions and cultures. After the earthquake, many of these villages need to be resettled in new areas, during which time it must be ensured that the unique cultural identity of these communities is preserved. In addition, the post-disaster exposure of Nepal in the international media has almost completely destroyed the image of the country as a safe destination, resulting in a dramatic decrease in the number of tourists. In the months following to earthquake some hotels registered an occupation rate of less than 5%, and many bookings have been cancelled for the current and coming seasons.

The tangible losses are accompanied by the long-term intangible loss of tourist confidence and interest; indirect and long-term losses are expected to be high in the tourism sector. Some 55,000 tourists usually arrive in Nepal in May and June (MoCTA 2014, 2015); in 2015 this number has dropped to close to zero. For example, Nepal's protected areas are well known for adventure tourism, with about 400,000 tourists visiting during 2012/2013. More than 40% of total tourists during this time visited the four protected areas (Annapurna Conservation Area, Sagarmatha National Park, Langtang National Park, Manaslu Conservation Area) located in earthquake-affected districts

(Table 8). Due to the recent earthquake, the number of visitors to these and other protected areas in Nepal is expected to decline in the coming year. National-level tourism numbers are projected to decline by 90 percent between May and July (NPC 2015a).

Table 8: **Number of tourists to conservation areas in the districts affected by the earthquake ('000)**

Fiscal year	Total visitors to protected areas in Nepal	Annapurna Conservation Area	Sagarmatha National Park	Langtang National Park	Manaslu Conservation Area
2011/2012	313	103 (33%)	36 (12%)	14 (4%)	3 (1%)
2012/2013	391	113 (29%)	37 (9%)	13 (3%)	4 (1%)

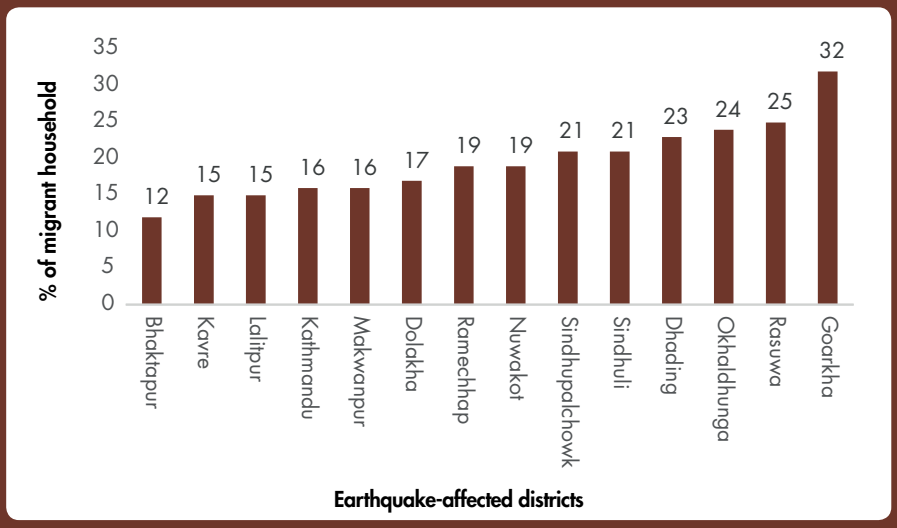
Source: DNPWC 2015
Note: Figures in parentheses reflect the share of total visitors to protected areas

It is estimated that the livelihoods of some 180,000 people engaged in tourism are now extremely vulnerable. The long-term impacts will be pervasive as the sector provides employment to thousands of people (tour operator, tour guides, porter, different service providers), directly and indirectly and makes a significant contribution to national GDP.

Migration

Labour migration is one of the dominant sectors in Nepal's economy. It is estimated that 2.2 million Nepalese are working abroad in the Gulf States and Malaysia, and there is an even greater, but unknown, number of migrant workers in India (IOM 2015). Labour migration is highest in the districts in the hills and the Terai. A total of USD 5 billion in remittances are sent to Nepal through formal channels annually, constituting 25% of national GDP (WB 2014; IOM 2015). These remittances are received by close to 50% of all households (2.5 million households).

Figure 1: **Migrant households in the 14 most affected districts**



Source: CBS 2012b

The 14 districts most affected by the earthquake are estimated to have received remittances worth USD 1 billion in 2014. In the affected areas, 12–32% of the households have at least one member working as a migrant labourer (CBS 2012b) (Figure 1). On average, one recipient household receives NPR 80,000 (USD 800) annually, or 31% of total household income (CBS 2011). Of this, 79% is used for daily consumption, 7% to repay loans, 4% to buy household property, and 2% to build capital.

Labour migration has also affected the ability of villagers to recover in the immediate aftermath of the earthquake. Many villages have a preponderance of old people, women, and children, with few young able-bodied men. The old and the young were particularly vulnerable when houses collapsed; they were also less able to mount rescue operations for those trapped. Funeral rituals were also seriously hampered by the absence of village youth, who are required to perform last rites.

The earthquake has had a substantial impact on migration, both through overseas workers returning to help their families and a reduction in the number leaving. Following the earthquake, more than 125,000 Nepali migrant workers are thought to have returned home, with an average of 4,000 workers returning daily and thousands more preparing to come (Kathmandu Post 2015a) to take care of their family members and rebuild houses. The number of people

taking up foreign employment has also reduced due to the disruption of the channels for sending workers abroad, the unwillingness of potential migrants to leave their families who are struggling to recover, and the need to use financial resources for recovery rather than to send family members abroad. It is difficult to estimate the short-term impact of the change in migration patterns as there are no precise figures available on the number of people leaving Nepal for foreign employment since the earthquake. However, some sources estimate that 20–25% fewer workers departed in May 2015 and that migration numbers will stay at this level for some months before gradually increasing again.

Employment loss

It is estimated that a total of 148 million annual work days were lost in districts affected by the earthquake, which is equivalent to NPR 27.5 billion of total annual labour earnings lost (Table 9). Estimates of labour earnings lost include both net income from self-employment activities and earnings from wage employment. The agriculture sector suffered the most, accounting for 69% and 46% of the total annual workdays and labour earnings lost, respectively. In the 14 most affected districts, the estimated total annual labour earnings lost is NPR 24.2 billion and total annual days lost in primary jobs is NPR 130.3 million, accounting for 88 % of the total labour earnings and workdays lost.

Table 9: **Estimated annual labour earnings and work days in primary job lost by sector**

Sector	Total annual labour earnings lost (NPR million)	Total annual work days lost in primary job (million)
Agriculture	12,609 (46%)	102 (69%)
Tourism	11,163 (41%)	35 (24%)
Industry and commerce	3,774 (14%)	11 (8%)
In 14 most affected districts	24,165 (88%)	130 (88%)
Total	27,546 (100%)	148 (100%)

Source: Compiled from PDNA sector report (NPC 2015c)

Despite heavy destruction, life started again and farmers started ploughing their fields

3. Economic and Social Dimensions of Impacts

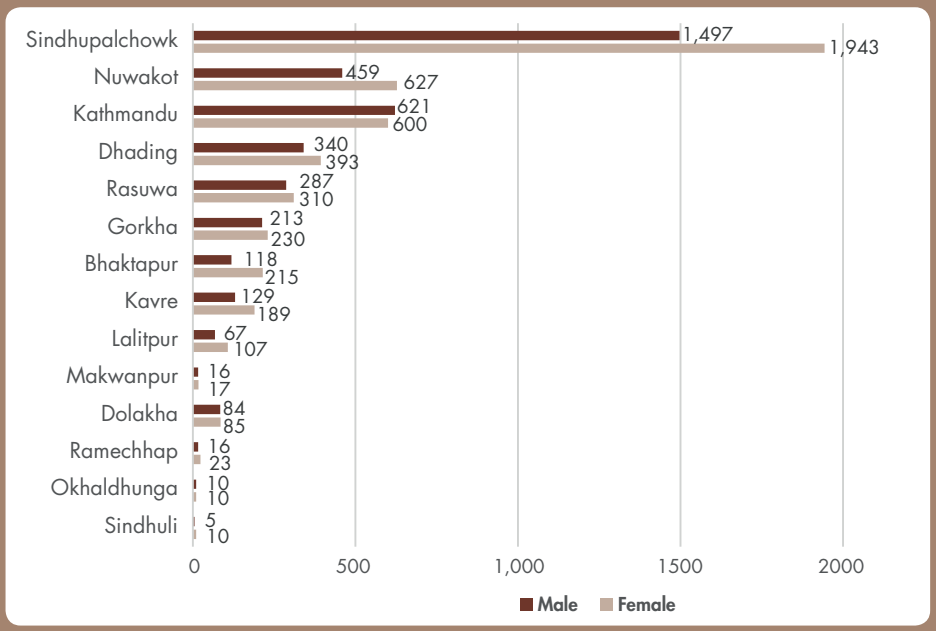
Post-earthquake effects

The earthquake and associated landslides have had a major socioeconomic impact in Nepal; almost all aspects of life have been affected and the lives and livelihoods of 8 million people have been directly threatened (NPC 2015b). The earthquake damaged or destroyed houses and animal shelters, livestock, crops, seeds, and food stores, as well as social infrastructure such as schools, health centres, banks, business centres, microenterprises, and roads. It has also affected health, threatened food security, and disrupted production, employment, business, trade, and services.

Some 500,000 houses were destroyed and 300,000 partially damaged. More than 100,000 people have been displaced, and a million lost their employment. The earthquake affected the overall economy, especially major production and service sectors such as agriculture, livestock, tourism, trade, and industry. The International Labour Organization (ILO) has estimated that 150 million work days were lost in 31 districts in the first few weeks following the earthquake. More than 8,000 people died and more than 22,000 were injured. More than 31,000 person-years of life lost (PYLL) are estimated to have been lost, which will affect long-term productivity. (PYLL provides an estimate of the average years a person would have lived if he or she had not died prematurely and was estimated assuming median age at premature death due to earthquake as 33, female life expectancy as 70, and male life expectancy as 67.3, as suggested by WHO 2013). Death and injury have led to direct costs for funerals and medical expenses for treatment of the injured, indirect costs such as the loss of income from those injured or deceased, as well as the incalculable costs of the physical and mental pain borne by the victims and the long-term effects of this on their health and productivity.

While the earthquake has affected all segments of society, the impacts are not equally distributed. Poor women and men, daily wage labourers, small and marginal farmers, and those working in the informal sector such as tour guides and porters have been disproportionately affected. Women were more affected than men, as indicated by the number of deaths: 4,801 of the 8,702 who died (55%) were women, and more women than men died in all districts except Kathmandu (Figure 2). The difference in the higher proportion of men who died in Kathmandu may be because there are more single men in the capital who have migrated from rural areas to support their families who remain in the villages. Some anecdotal evidences suggest that women also lost relatively higher working days. Women also lost a relatively higher number of working day's due to the earthquake as they are heavily involved in the agricultural sector.

Figure 2: **Number of male and female deaths as a result of the earthquake**



Source: MoHA 2015

Among the different marginalized groups, households headed by women have sustained the largest damage and loss – about NPR 85.3 billion in the 14 most affected districts. Adivasi Janajati households have suffered damage and loss of about NPR 80.6 billion, followed by senior citizens at NPR 75.01 billion, and the Dalits at NPR 53.16 billion (NPC 2015c). Estimates further indicate that about 26% of the damaged houses belong to women-headed households and 41% to members of Dalit or indigenous communities. Moreover, women, who make up 60% of the agricultural labour, have lost approximately NPR 15 billion in damage and loss within the agriculture sector, whereaas men in the same sector have lost NPR 10 billion (NPC 2015c).

The earthquake created many social problems and caused psychological trauma. Men, women, and children have been compelled to live outside in tents, which places women and girls in an especially vulnerable position. There have been reports that the trafficking of women and children has risen. Overall, there has been an increase in the mental and physical pressure on women in the aftermath of the earthquake due to hunger, sickness, and distress. Poor women with small children in households where men are away were particularly badly affected, as they had to try to obtain relief materials as well as look after their children and deal with the damage. These stress levels will also have long-term health impacts on health.

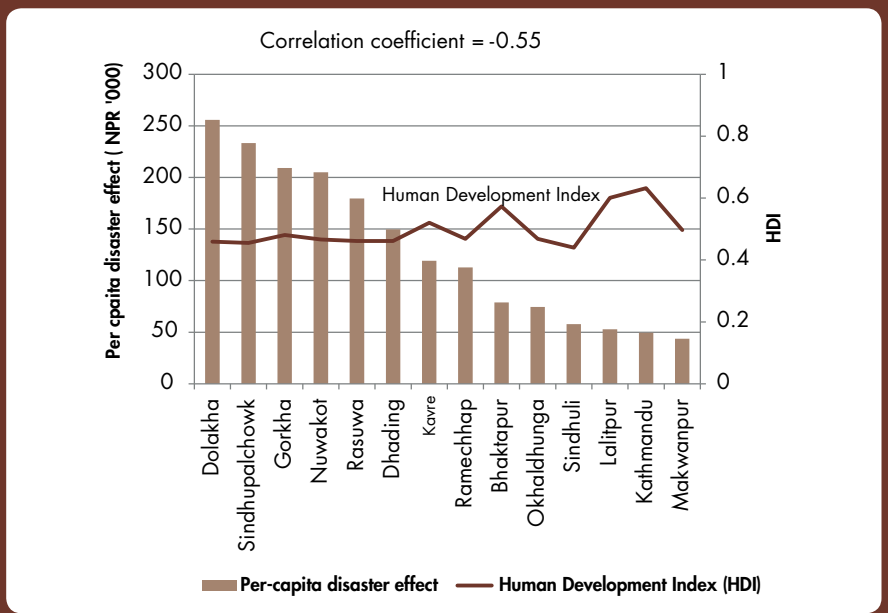
Pre-existing vulnerabilities and post-earthquake effects

The post disaster effects have severely intensified pre-existing poverty and vulnerabilities, especially in the 14 most affected districts (Annex 1). Many vulnerable and poor people affected by the earthquake have now become even more highly vulnerable and poor. The Post Disaster Needs Assessment (PDNA) Report of the Nepal National Planning Commission suggests that the earthquake has already pushed a further 700,000 people below the poverty line (NPC 2015a). Vulnerable groups, such as women, children, the disabled, the elderly and ethnic minorities remain at higher risks to be excluded if their specific needs are not addressed as priorities to restore and enhance their livelihood assets, capabilities and opportunities.

Estimates from the PDNA indicate that the average value of disaster effect per person across the 14 affected districts is NPR 130,000, with the mountain and hill districts experiencing the largest impact (Table 10). The per capita disaster effect decreases as the Human Development Index (HDI) increases, indicating a greater disaster effect in districts that are less developed (Figure 3). This confirms that the poor and most vulnerable usually face the largest effects of disaster.

A composite index of severity constructed by UNOCHA in the 14 most affected districts further provides an overview of estimated severity of impacts resulting from the earthquake, which further highlights the need to address livelihood vulnerability (UNOCHA 2015). The index combines indicators underlying earthquake impacts (damaged buildings, injured persons, migration), physical vulnerability (landslide and flood risk, road accessibility), and socioeconomic vulnerability (caste/ethnicity, gender inequality, HDI). Across the 14 most affected districts, the severity index ranges from 0.13 (Kathmandu) to 0.78

Figure 3: **Relationship between Human Development Index and per capita disaster effect in the 14 most affected districts**



Source: NPC 2015

Table 10: **Post-disaster effects and pre-existing vulnerability and poverty in the 14 most affected districts**

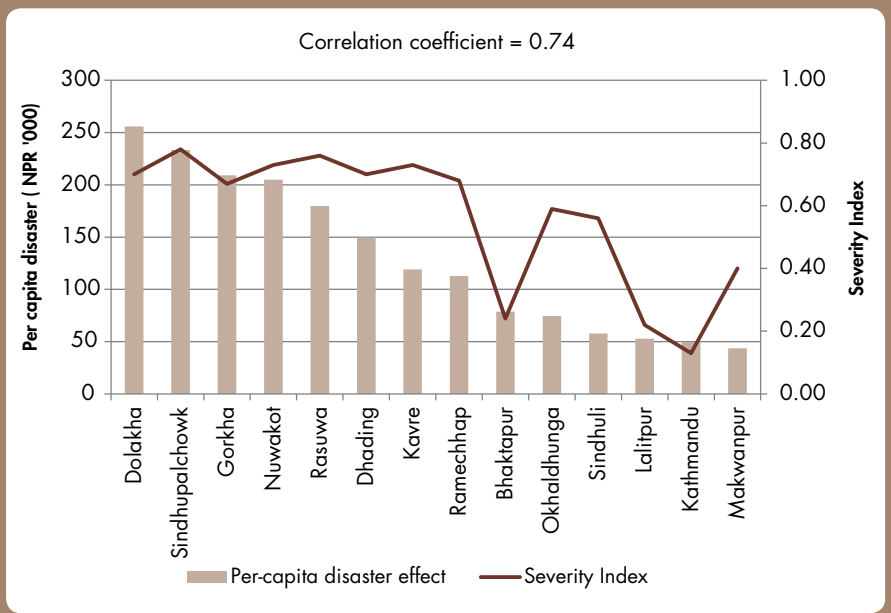
Region	District	Per-capita disaster effect (NPR)	Severity Index	Human Development Index (HDI)	Poverty (% poor living below poverty line)	Human Poverty Index (HPI)
Mountain	Dolakha	255,860	0.7	0.459	30	35.7
	Sindhupalchok	233,370	0.78	0.455	31	38.0
	Rasuwa	179,700	0.76	0.461	43	42.2
	Gorkha	209,080	0.67	0.481	39	33.6
Hill	Nuwakot	204,930	0.73	0.466	19	35.7
	Kavre	119,200	0.73	0.52	19	27.3
	Dhading	149,580	0.7	0.461	18	33.4
	Ramechap	112,740	0.68	0.468	23	36.4
	Okhaldhunga	74,500	0.59	0.468	41	35.6
Inner Terai	Sindhuli	57,865	0.56	0.44	31	38.0
	Makawanpur	43,760	0.4	0.497	20	28.4
Kathmandu Valley	Kathmandu	49,495	0.13	0.632	6	22.5
	Lalitpur	52,765	0.22	0.601	8	19.2
	Bhaktapur	78,770	0.24	0.573	14	19.4

Note: Data on per capita disaster effects were taken from NPC 2015a, severity index from UNOCHA 2015; HDI and HPI from UNDP and NPC 2014; and poverty from CBS 2013. The HPI measures average deprivation in the three basic dimensions of human development: deprivation in a long and healthy life, deprivation in knowledge, and deprivation in economic provisioning.

(Sindhupalchowk), with the mountain and hill districts being most severely affected and the three districts of the Kathmandu Valley the least affected. It should be noted that the level of severity is relatively uniform across the mountain and hill districts. This is because some districts less impacted by the earthquake have high underlying vulnerability and vice versa. As expected, the level of severity in the 14 affected districts has a strong positive correlation with the per capita disaster effect (Figure 4) and poverty as measured by both income poverty and human poverty index (HPI) (Figure 5) while showing negative correlation with pre-disaster HDI (Table 11). This further confirms that post-disaster impacts and vulnerabilities as measured by the severity index are more pronounced in districts (mountain and hills) that are less developed and poor which are primarily in the mountains and hills.

Poor people are generally more affected than those better off, not in the least because they are more likely to live in poor quality, unsafe houses. There is a clear positive correlation between the number of people living below the poverty line in different districts and the number of deaths, person years of life lost, injuries, and damage to houses,

Figure 4: **Relationship between Severity Index and per capita disaster effect in the 14 most affected districts**



Source: NPC 2015a, UNOCHA 2015

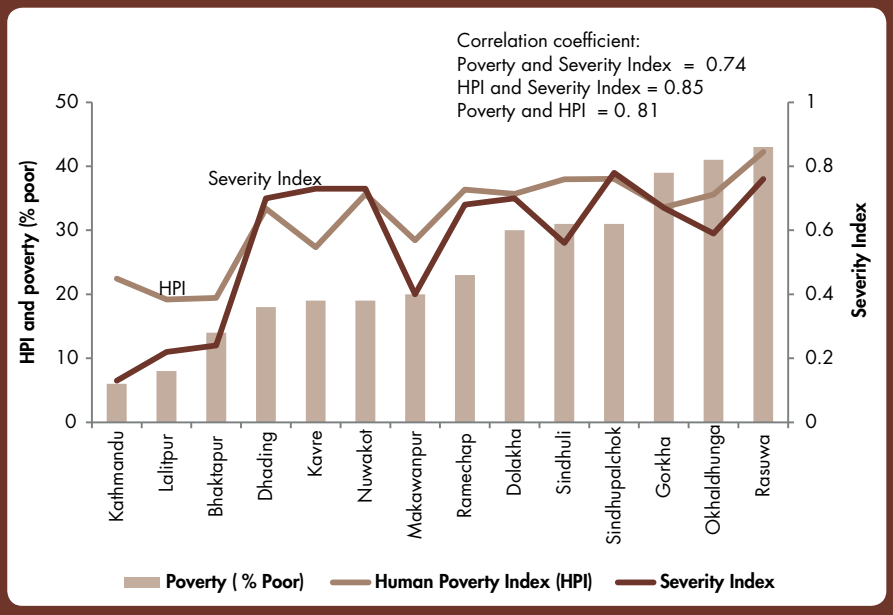
although not with displacement (Table 12). The correlation between poverty and damage to private houses is particularly high (Figure 6) with the exception of Sindhuli and Makwanpur where the earthquake was less intense. The relationship between the number of poor and PYLL also suggests a positive relationship between poverty and premature loss of life (Figure 7).

Implications for the future

The earthquake devastated countless lives and livelihoods and poses a formidable development challenge for the country. There is a strong relationship between development and disaster effects. Unless appropriate and adequate support is provided in a timely manner the situation could deteriorate further. The main risks that urgently need to be addressed are as follows:

- **Loss of livelihood assets.** People, particularly those who have lost their source of income, may be forced to sell essential capital assets such as livestock, land, and agricultural equipment to pay for basic needs, medical treatment, and the reconstruction of houses. This will make them more vulnerable and will further reduce their resilience.
- **Increase in poverty and vulnerability.** Loss of houses, crops, food, employment, and income may push many more people into poverty. The Post Disaster Needs Assessment Report of the Nepal National Planning Commission suggests that the earthquake has already pushed an additional 700,000 people below the poverty line (NPC 2015a). Women and the poor may be further marginalized as most of them work in the informal sector and their assets and capabilities to respond and adapt are low. Vulnerable groups, such as women, children, the disabled, the elderly, and ethnic minorities remain at higher risks of being excluded if their specific needs are not addressed as priorities for restoring and enhancing their livelihood assets, capabilities, and opportunities.

Figure 5: **Relationship between poverty and Severity Index in the 14 most affected districts**



Source: CBS 2013, UNOCHA 2015

Table 11 : **Correlation coefficient between post-disaster effect and pre-disaster HDI, HPI, and poverty in the 14 most affected districts**

	Per capita disaster effect	Severity Index	HDI	Poverty (% poor)	HPI
Per capita disaster effect	1	0.74	-0.55	0.46	0.58
Severity index	0.74	1	-0.87	0.67	0.85
HDI	-0.55	-0.87	1	-0.75	-0.91
Poverty (% of poor)	0.46	0.67	-0.75	1	0.81
HPI	0.58	0.85	-0.91	0.81	1

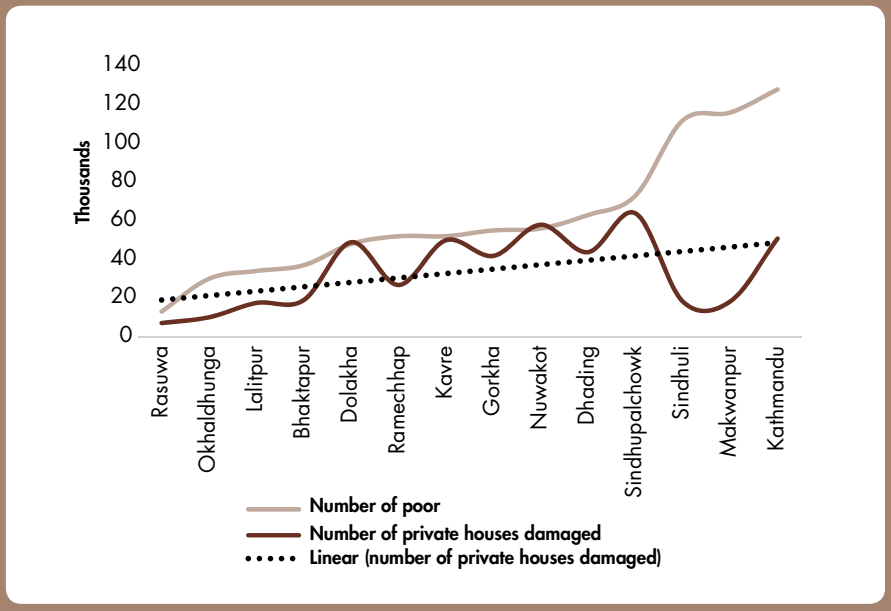
Table 12: **Correlation of level of poverty in 14 most affected districts with various indicators of impact**

Major impact	Correlation with number of poor
Death	0.16
Person years of life lost	0.16
Injury	0.35
Displacement	0.05
Damage to private house	0.26

Note: Correlation coefficient is derived using secondary data available from CBS (2013) and MoHA (2015)

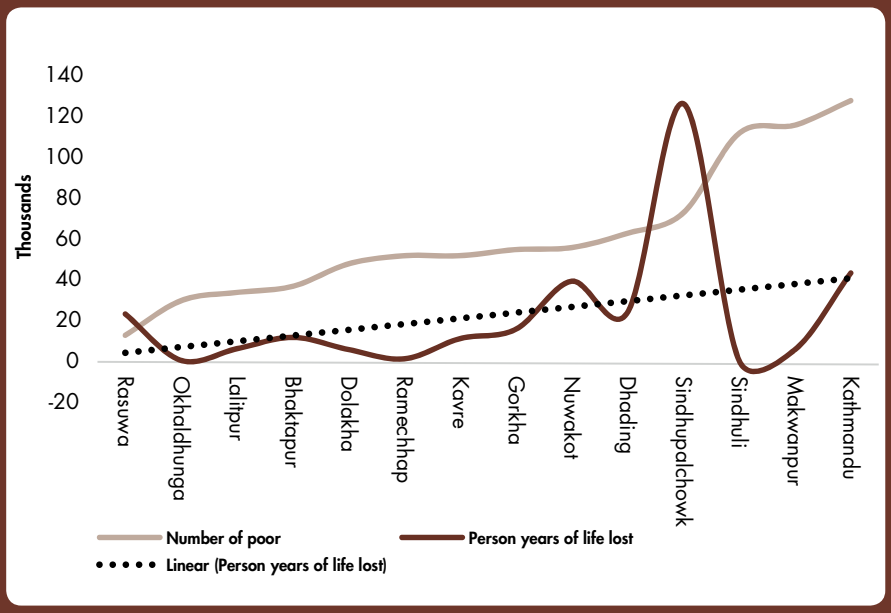
- **Constraints to reviving agricultural activity.** The loss of crops, livestock, stored grain, seeds, and agricultural tools and disruptions in the delivery of inputs and market access may hinder the resumption of agricultural activities during the monsoon and reduce agricultural production. The earthquake has resulted in delays to the regular pre-monsoon agricultural operations. This will also have negative repercussions for agricultural labourers who work for daily wages. Those relying on daily wages often have limited or no savings and will find day-to-day survival difficult if there is no work available.
- **Increase in food insecurity.** The combination of loss of crops and livestock, damage to stored grain, reduction in incomes, and reduced livelihood options may cause more people to become food insecure.

Figure 6: **Relationship between poverty and damage to private houses in the 14 most affected districts**



Source: CBS 2012 and MoHA 2015

Figure 7: **Relationship between poverty and person years of life lost in the 14 most affected districts**



Source: CBS 2013 and MoHA 2015

Immediate relief work after the earthquake

4. Lessons from International Experience: Implications for Nepal

Coordinating post-disaster recovery

Top-down and multi-stakeholder mechanisms

The coordination of recovery and reconstruction efforts in a post-disaster situation is widely acknowledged to be the most critical factor contributing to effective results. A clear allocation of roles among institutional actors, well-defined decision-making processes, empowered leadership at different levels, and a robust communication-cum-stakeholder engagement strategy are essential to good coordination. There are two main coordination mechanisms for disaster response: a top-down coordination mechanism involving a centralized government approach and a multi-stakeholder coordination mechanism involving a multiplicity of organizations coming together to respond to the disaster. Which is appropriate depends not only on existing capabilities, but also on the complexity of the post-disaster situation and the scale and scope of the desired recovery response (Table 13).

Reliance on a traditional top-down coordination mechanism may be justified when government agencies have proven institutional capabilities, prior experience of responding to post-disaster situations, and adequate resources. In this case, pre-planned disaster response protocols would define role allocation among agencies and decision-making processes. Decisive political leadership at a higher level of the governance system also plays a crucial role in the case of top-down coordination.

However, if there is no prior experience and built-up expertise to guide the government response, it may be more appropriate to put in place a multi-stakeholder coordination mechanism that pools resources, capabilities, and experience. A multi-stakeholder mechanism can also extend the 'reach' of the recovery response in both spatial and temporal terms. The Sri Lankan response to the 2004 tsunami used the expertise of a number of international agencies in different sectors, coordinated by central government.

Role of the military, private sector, and cooperatives

The logistics of procurement and transportation of people and material in the affected region is a critical aspect that calls for the expertise of military agencies. The private sector can also play a supporting role in certain areas, such as IT-based decision support systems. International agencies with sector-specific technical expertise and a presence in the country can be given the responsibility of planning and implementing recovery-related activities in partnership with civil society organizations. Think-tanks can bring strategic depth to planning and media engagement, which is crucial for effective communication. Nepal's economy is comprised of three pillars – state actors, private actors, and cooperatives. In the context of rural Nepal, cooperatives function much more effectively than the private sector, as the private sector has limited reach in remote areas due to high transaction costs. This needs to be recognized. Nepal should also utilize its own experts and reduce the use of experts from outside of the country to ensure the most cost-effective use of resources and to ensure a context-specific response. Local community-based organizations could be mobilized as a measure to improve accountability.

Table 13: **Top-down versus multi-stakeholder coordination mechanisms in post-disaster situations**

Mechanism	Disaster	Coordination mechanism	Advantages	Disadvantages	Source
Top-down	Aceh and Nias, Indonesia, 2004: earthquake and tsunami	• A state-level ministry called the State Ministry of National Development Planning (the Bappenas) initiated and concluded a participatory process to develop a Master Plan for rehabilitation and reconstruction • Reconstruction was coordinated by a special ministerial-level agency created by the government (the Badan Rehabilitasi dan Rekonstruksi or BRR) • Municipal authorities took the lead in specialized activities such as debris management	• Centralized coordination led to impressive physical progress despite unfavourable conditions	• Without outlining roles, responsibilities, outcomes, and timeframes, it was difficult to move from relief to recovery and to focus on post-disaster responses • Municipal departments needed to heighten their awareness of disaster risks and improve their ability to coordinate responses	Leitmann 2007
Multi-stakeholder	Sri Lanka, 2004: tsunami	• Standing government agencies were given additional responsibility for managing recovery and reconstruction • New government agencies were established to provide additional capacity • The Sri Lanka Reconstruction and Development Agency (RADA) was the sole government agency responsible for recovery issues under the Presidential Secretariat and coordinated the different sectors • The Inter-agency Standing Committee (IASC) was chaired by the UN Resident and Humanitarian Coordinator and included the executive heads of organizations such as UNHCR, UNICEF, FAO, WHO, etc.	• A cluster of organizations/ stakeholders working together helped bring different expertise to the table (e.g., UNHCR – conflict resolution, emergency shelter; WHO – health; UNICEF – nutrition)	• Agencies were at the national and sub-national levels, but the local level incurred additional responsibilities • Local-level agencies were dominated by private sector representatives who lacked links to ministries • The ability to efficiently coordinate activities among government agencies was hampered	Yahampath 2015
	Tamil Nadu, India, 2004 tsunami	• Tamil Nadu Tsunami Resource Center (TNTRC), a joint venture of seven organizations such as UNDP and the state government, brought together a variety of stakeholders • United Nations Team for Recovery Support (UNTRS) • NGO Coordination and Resource Center/Building and Enabling Disaster Resilience of Coastal Communities (BEDROC), initiated by three local organizations, brought together the government and NGOs	• Good platform for policy advocacy and information dissemination • Platform for dialogue and negotiation between involved organizations • Standardized procedures in the form of guidelines • Brought various UN agencies under one umbrella, which helped bring together expertise from different areas	• Lack of clear understanding of the scope of the term 'coordination' – clarification of the roles and responsibilities under the coordination mechanism would have been helpful	Raju and Becker 2013
	Yogyakarta and Central Java provinces, Indonesia, 2006: earthquake and tsunami	• Government agencies • Civil society organizations • Local governments • Coordination of domestic health staff, field hospitals, and orthopaedics through international assistance	• Clear designation of the coordination mechanism was helpful in facilitating recovery and relief	• The large scale of the disaster and inaccessibility of some areas required better coordination mechanisms	Leitmann 2007
	Haiti, 2010: earthquake	• Interim Haiti Recovery Commission (IHRC), a collaborative effort between the government and an international organization (co-chaired by Prime Minister Bellerive and UN Special Envoy Clinton), was formed for 18-months to mobilize financial and technical resources • Haiti Reconstruction Fund, which had a longer life span, was a partnership between the government and the international community	• Government's NGO coordination platform was a good tool for networking, sharing experiences and resources, and advocacy to local or national governments	• The PDNA was led by the government so it was centralized in nature; few funds flowed directly to local governments • Need for increased awareness of the country context and for improved language and cultural skills on the part of international experts	Patrick 2011

Reconstruction: There is no one size fits all model

The construction sector, although initially disrupted, will experience a surge in demand for workers to carry out demolition, clearing, site preparation, and the reconstruction of destroyed and damaged buildings and other physical infrastructure. A rough estimate suggests that housing reconstruction work alone may generate up to 352 million work days over the next five years. The main challenge will be in meeting the demand for skilled construction workers, which represent some 40% of the needed workforce.

Assuming that the majority of reconstruction will occur in the first three years, more than a million workers will be required in the housing and reconstruction sector. If properly trained and prepared, local people can move from work in low productive sectors (such as farming) to relatively high productive sectors (such as construction, supply of raw materials, and transportation), which will build people's skills and capacity for more resilient livelihoods.

The reconstruction process provides an opportunity to create employment for those in earthquake-affected districts. Skilled and unskilled workers will be needed to clear rubble and in construction and road building. The construction work will also create employment in secondary industries that produce building materials such as brick kilns, concrete factories, and so forth. While the shift from the agriculture to the construction sector will diversity livelihood options in the short term, building more resilient livelihoods should come from transforming agriculture.

There are three main models commonly used for reconstruction work: contractor-driven, owner-driven, and people-centred reconstruction (Coppola 2006). The type used depends on the type of disaster and its degree of devastation, the country context, and nature of the government and donor community.

Contractor-driven reconstruction

Under this model, all reconstruction tasks are managed by professional reconstruction companies. It is suitable for situations where the affected population does not have the skills to rebuild structures that are resilient to disasters. Its advantage is that it is fast and uses staff with sound technical expertise. Its drawbacks are that it does not generate employment at the local level and depends on outside markets for construction inputs. As the contractor is profit-oriented, the quality of inputs can be compromised unless there is proper supervision. Furthermore, if a one-size fits all model of construction is applied by the contractor, the structures may not be appropriate to the social and cultural context.

After the Gujarat Earthquake of 2001, a contractor-driven approach was adopted for the reconstruction of 3,000 houses. Although the programme achieved the target of building houses, it was criticized for using sub-standard housing materials, being biased against lower income groups, and having low involvement of house owners.

Owner-driven reconstruction

In owner-driven reconstruction, the recipient/community can select the building materials and design the houses so that their preferences are incorporated in the reconstructed structures. Its advantage is that it is less costly than contractor-driven reconstruction and has a high rate of satisfaction. It can also empower the population through training and skills enhancement. Its drawbacks are that it is slower than contractor-driven reconstruction. It also may not be suitable if the affected population does not have the skills to rebuild structures that are resilient to disasters.

Box 1: **Owner-driven house reconstruction after the 2005 earthquake in Kashmir, Pakistan**

After the 2005 earthquake in Pakistan, an owner-driven rural housing reconstruction approach was adopted that involved homeowners from the very beginning of the response. One of the key principles of rural housing recovery was to provide support for people to organize their own solutions according to their capacities, needs, and priorities following safety guidelines. After an initial 25,000 Pakistani rupees (approximately USD 380) for immediate humanitarian relief, beneficiary households received three more grants of 75,000 (USD 1,150), 25,000, and 50,000 (USD 770) rupees for start-up, laying foundation, and constructing the roof respectively. Each step was inspected and verified before the next payment was made. People rebuilt homes with their own hands or hired skilled local labour. The guiding principles included combining new earthquake-resistant construction with the best traditional methods and rebuilding on family plots. House construction was supplemented with social and livelihood support

(Source: ISDB 2014).

This model was used after the Pakistan earthquake of 2005. The Government of Pakistan provided individual families with USD 2,800 in different stages if their house was destroyed and USD 1,200 if their house was partially damaged (in two instalments) (Box 1). This method allowed the government to reconstruct houses at a relatively low cost and to train and empower the population.

People-centred reconstruction

People-centred reconstruction goes beyond owner-driven reconstruction. It puts people at the centre of the post-disaster reconstruction process, not only in terms of looking at their housing needs but also their lives and livelihoods by ensuring their participation in the planning, design, and decision-making processes (Maly and Shiozaki 2012). The people-centred reconstruction process empowers affected people to make their own decisions about reconstructing their homes, and also promotes policies that create housing options that support the ability of all residents to reconstruct their homes, lives, and livelihoods. Like owner-driven reconstruction, the advantage of this model is that it generally produces ownership and higher levels of satisfaction, and can empower the population by involving communities in the decision-making process. However, the pace of reconstruction may be slow as more time is required to ensure participation in reconstruction work on a large scale. This model is endorsed by the World Bank, UNHABITAT, United Nations Development Programme (UNDP), and other humanitarian organizations. People-centred reconstruction was used by the Government of Indonesia in Aceh after the 2004 Indian Ocean Tsunami and by the Government of Japan after the Kobe Earthquake in Japan in 1995.

Examples of good practices: Innovative options for post-disaster livelihood recovery

A review of post-disaster recovery experiences reveal a number of good practices that can be adopted in Nepal. Although not comprehensive, this section offers a few of these good practices for consideration in Nepal's livelihood recovery strategy.

Youth help build temporary shelters

Integrate post-disaster livelihood restoration initiatives to maximize synergies

In post-disaster situations there are typically multiple initiatives from multiple agencies aimed at restoring the livelihoods of the affected population. The integration of all such efforts ensures that synergies are created that are beneficial to the target community. However, the integration of post-disaster livelihood restoration initiatives requires enabling support mechanisms and adequate resources.

The Livelihood Rehabilitation Strategy launched in Pakistan following the 2005 earthquake had the stated goal of the integration of all livelihood initiatives. Khan et al. (2014) explain the approach: "In theory, each village had a community livelihood restoration plan, which was based on the overall livelihood rehabilitation strategy and was to provide guidelines for any organization working with livelihood schemes at the village level". In practice, of course, it would depend on the institutional capabilities available for regular community-level needs assessments and monitoring to inform the national strategy. Moreover, as the Pakistan experience suggests, integration by itself will not necessarily ensure holistic rehabilitation and the recovery of community livelihoods without the adequate allocation of resources to comprehensively address needs and sustain the intervention over a suitably long period of time.

Box 2: **Gujarat Earthquake Reconstruction and Rehabilitation Policy**

Four months after the earthquake that struck Gujarat, India, in 2001, the State Government of Gujarat announced the Gujarat Earthquake Reconstruction and Rehabilitation Policy. It included the creation of the Gujarat State Disaster Management Authority and proposed a different reconstruction approach for urban and rural reconstruction and in different regions of the state, depending on their seismic zone.

The stated objectives of the policy included building, retrofitting, repairing, and strengthening houses and public buildings, and improving the earthquake resistance of what was rebuilt. Other objectives related to the revival of the local economy, reconstruction of community and social infrastructure, health support to those affected by the earthquake, restoration of lifelines and major infrastructure, gender empowerment, social attention to the poor, implementation of a comprehensive disaster preparedness and management programme, and the need for long-term mitigation of a variety of risks to which the population were exposed.

The policy's guiding principles included the need to: involve people and representative institutions in decision making; strengthen civil society institutions; ensure that the needs of the vulnerable were addressed; give people information to make informed choices in rebuilding, including about disaster risk reduction; and involve the private sector, NGOs, and expert institutions in the reconstruction programme. Lastly, it called for the highest levels of transparency and accountability for the reconstruction programme through the use of appropriate institutional mechanisms and practices.

Source: GFDRR 2010

A sound national recovery policy and plan is required in support of livelihood promotion

Livelihood recovery interventions are usually categorized into three overlapping phases: livelihood provisioning (relief-based operations); livelihood protection (restoration to pre-disaster conditions); and livelihood promotion (improving the pre-existing conditions by reducing the structural vulnerability of the whole livelihood system). However, the success of any post-disaster livelihood recovery programme will depend very much on how well an enabling policy and institutional environment is created beyond reconstruction in support of the livelihoods promotion phase to strengthen livelihood strategies and enhance people's resilience to future disasters. Experience from the Gujarat Earthquake provides useful lessons on the importance of sound reconstruction and rehabilitation policies and governance systems for the successful transition towards long-term livelihoods promotion (Box 2).

Linking to context, especially in the case of microcredit based initiatives

It is the local community-level context that often calls for innovation in the design and implementation of livelihood recovery actions, especially those based on microcredit or soft loans for enterprise development. The post-tsunami recovery experience in India and Indonesia suggests that efforts towards micro-entrepreneurship creation are successful only when the community has a history of prior mobilization in the form of self-help groups (SHGs) through the sustained work of local NGOs (Regnier et al. 2008). In their study of post-hurricane recovery investments in Nicaragua, the importance of "capacities, especially those related to social capital", was highlighted as a precondition for communities or sectors (such as horticulture, organized commerce, etc.) to benefit from capital infusion (Christoplos et al. 2010). Similarly, in Pakistan we have the example of post-earthquake

livelihood support grants being provided in the form of goods and services rather than cash, because of a community's prior history of failing to pay back loans (Khan et al. 2014). Nepal has good experience in collective action and community-based organizations. Mothers groups, community forestry user groups, and cooperatives can play important roles in reconstruction. The overall recovery strategy, therefore, should be flexible enough to accommodate local variations to the response.

Creating ownership of shelter and infrastructure assets

Shelter and infrastructure construction are the main sources of jobs in the recovery phase. This presents an opportunity to create community ownership of local infrastructure assets, which is necessary for their long-term maintenance. The involvement of community institutions through mechanisms such as participatory monitoring and social audits also ensures quality control in construction activities. Community involvement at the institutional level will help ensure the continuity of safe practices and knowledge, which is vital for creating resilience to hazards in the long run. The post-disaster response to the 2001 Gujarat Earthquake was characterized by an effective community-driven housing recovery plan. However, the transfer of knowledge to communities was not institutionalized, which led to the reversal of safe construction practices after some years (Powell 2011).

Source construction materials locally

As much as possible, construction materials should be sourced locally. After the Haiti Earthquake, many materials were imported at a higher price and then provided free or heavily subsidized, undermining the private sector (Patrick 2011). Human resources from within the country should also be used whenever possible, particularly to ensure that the local context is considered in response and recovery efforts (Box 3).

Sequencing and exit strategy for cash for work programmes

Cash for work programmes are increasingly accepted as a vital component of a post-disaster recovery response (Doocy et al. 2006). Experience in the administration of such programmes establishes that there is a need for proper phasing along with an exit strategy. Ideally, cash for work should, in its initial phase, focus on the mobilization of labour and, after a certain time, change to output-based labour payments. An exit strategy is crucial and should depend on the actual circumstances rather than any pre-fixed timeline (Box 4).

Box 3: **Lesson from Haiti: Replace international staff with national staff as quickly as possible**

International staff who fly in to aid in the post-earthquake relief and recovery efforts are expensive and need accommodation, putting pressure on already overburdened housing markets and other resources. Furthermore, they may not be sufficiently informed about the local context and risk violating the 'do no harm' principle. Although valuable during the initial emergency relief phase, a large number of international humanitarian aid and development workers can fuel inflation of the housing and other markets making it more difficult for local people to access or afford the same things. One of the lessons from the Haiti Earthquake was to replace international staff with national staff as quickly as possible.

Source: Patrick 2011

Box 4: **Food for work and cash for work programmes**

Food for work and cash for work programmes employ disaster affected people in reconstruction work in exchange for either food or cash. The benefits of such programmes include increased calorie intake and household income. Both models reduce household mal-adaptation practices, such as selling productive livelihood assets, and stimulate local economic growth. Cash for work has the added advantage that it reduces transportation costs and increases family income and food security, thereby promoting the local economy in the long run. However, this approach is suitable only if food is available from nearby markets. Food for work is more appropriate if the area is food insecure or in remote areas where food in the local market is not readily available. Despite these positive aspects, both programmes can increase the dependency of poor people on aid agencies. This risk should be thoroughly examined before implementing such programmes in Nepal's post-earthquake context. One modification that could prevent dependency would be to provide assets for work, because many farming households lost livelihoods assets such as livestock, seed stock, and agricultural tools.

Sources: Bryson et al. 1991; Magen et al. 2009; Gedamu 2006; Mission 2014

Capacity development at the institutional level for local-level human resources development

Post-disaster recovery requires large-scale skill building among the affected population. This presents an opportunity to build skills in alternative livelihood opportunities. There is an example from Sri Lanka in which, following the tsunami, coral poachers were retrained and certified to function as undersea divers. Experience from development interventions (especially government programmes on extension services to agriculture) suggests that local resource centres are crucial for the continued relevance of skill building initiatives at the community level.

Table 14: **Best practices from post-disaster recovery experiences**

Disaster	Post disaster recovery strategy/ programme	Factors contributing to success	Key challenges	Source
Northern Pakistan, 2005: earthquake	**Livelihood Rehabilitation Strategy:** Consisting of subsistence cash grants, livelihood cash grants and micro-credit (for revival of small businesses) The livelihood support cash grant by the Government of Pakistan was one of the world's largest post-disaster cash grant based recovery initiatives, disbursing grants of USD 300 per family to 267,802 families.	• Integration of all livelihood initiatives under the national strategy, while at the same time seeking to be informed by bottom-up perspectives in the form of community livelihood restoration plans • Strict beneficiary selection criteria for livelihood grants • Context-specific customization (e.g., grants in the form of goods and services instead of cash to take account of the history of loan recovery failure)	• Power relations at VDC level (potential for favouritism) • Leakages (faulty targeting in implementation) • Underfunding	Khan et al. 2014
Aceh, Indonesia, 2004: earthquake and tsunami	**Cash for Work Programme (by Mercy Crops):** Implemented in 60 tsunami-affected communities, with an average of 10,905 participants a month and a mean monthly disbursement of USD 650,517 for 7 months. In post-tsunami Aceh, Cash for Work played an important role in the revitalization of household economies and longer-term economic recovery.	• Decision-making power remains with individuals and households, who are empowered to make their own spending choices • Timely phasing out: shift in programme focus from cash for work to output based labour payments (OBLPs) after seven months • Transparency in implementation • Community perception of psychosocial benefits	• Logistics and security were the main concerns • Problem with ghost workers • Quick scale up requires strong management capabilities and uninterrupted supply of tools, materials, and skilled labour	Doocy et al. 2006
Tamil Nadu, India and Pidie, Indonesia, 2004: earthquake and tsunami	**Micro-entrepreneurship creation and development by NGOs**	• Prior mobilization of communities in the form of self-help groups helped in making this work	• Inadequacy of local markets and market-linked infrastructure	Regnier et al. 2008
Gujarat, India (Kachch district), 2001: earthquake	**Community/owner driven in-situ housing recovery plan:** Purpose was to address structural vulnerability Project was successful in terms of high occupancy; the provision of extensive training to masons, artisans, engineers in the design and construction of multi-hazard reconstruction; and achieving a shift in construction practices in the region.	• Technical knowledge transfer to community • Compensation disbursement linked to phases of housing reconstruction	• Non-institutionalization of the knowledge transfer to community • Cost implications for the poor due to change in construction practices • Underfunding • New sources of vulnerability introduced (e.g., use of asbestos sheets)	Powell 2011
Nicaragua, 1998: hurricane	**'Picking winners':** Employed selective recovery investments (e.g., in the coffee industry), which later (in 2006) shifted to a more broad-based and pro-poor food security programme (including the provision of livestock and agriculture inputs)	• The success of the cooperative sector (in organized commerce) highlights the importance of organizational capacity as a precondition for benefiting from recovery investments. Capacities, especially those related to social capital, are more important than capitalisation.	• Developing livelihood-social protection synergies • Ensuring equity in access to externally-supported social protection	Christoplos et al. 2010

Rebuilding better livelihoods will be an important step toward a more resilient Nepal

5. Post-Disaster Livelihood Recovery Strategy

Livelihoods recovery for the affected people should be the top priority in the reconstruction and recovery process

Livelihood recovery requires a comprehensive strategic plan that involves efficient multi-organizational coordination with clear communication, defined roles and responsibilities for the different actors, and strong governance. The livelihood recovery plan must recognize the biophysical and socioeconomic characteristics of earthquake-affected regions. Area-specific strategies for emergency relief and short-term employment creation schemes should be harmonized with medium to long-term livelihood recovery perspectives. It should also be equitable and should not perpetuate inequalities already existing in society. Relief work that leverages local resources, including local human capital, is paramount for private sector participation to reduce livelihood risk and increase resilience for sustainable livelihoods. The transition from relief and reconstruction to a livelihood enhancing recovery strategy requires the long-term commitment of the government and other development actors, capacity development, good governance, and a clear-cut policy and institutional culture to strengthen livelihood enhancing opportunities to be more socioeconomically and environmentally sustainable. Notably, community-centred and local institution-focused strategies can stimulate structural transformation for a positive transition. The livelihood recovery agenda must be coordinated and mainstreamed into the programmes and interventions of all development partners, including UN agencies, civil society and NGOs, the private sector, and community-based organizations.

A livelihood recovery strategy should not only redress the damage caused by the disaster and restore crucial livelihood assets, it should also ensure the long-term sustainability and resilience of livelihoods to future disasters. The vision is to establish a revitalized and strengthened livelihood support system for creating income and employment opportunities while ensuring that people have access to food, shelter, clean energy, safe water and sanitation, health care, education, and security using a sustainable livelihood framework. An inclusive community-based approach can result in a sustainable livelihood recovery scheme. Programming for sustainable livelihoods and economic recovery that also improves the capacity to manage risks, provides an opportunity to 'build back better', stimulating more rapid and equitable growth.

Guiding principles

To properly address the above goals and related issues, the post-disaster livelihood recovery strategy must be guided by the following overriding principles for the better design and implementation of recovery interventions.

- **People-centred.** The livelihood recovery strategy should be people-centred, supporting people's immediate survival needs and building their capacities for improving their quality of life.
- **Participatory.** The livelihood recovery strategy should be participatory, inclusive, and representative of a wide range of diverse stakeholders for multi-stakeholder partnerships and collaboration; it should integrate the voices of communities, the government, the private sector, NGOs, and international development agencies.
- **Pro-poor.** The livelihood recovery process should be pro-poor and focus on the most vulnerable sections of society (including the poor, landless, female-headed households, children, orphans, people with special needs, youth, and the elderly) towards the construction of an equitable society.
- **Socially and gender inclusive.** The livelihood recovery strategy should include the voices of all sections of society, particularly women, the poor, ethnic minorities, and other disadvantaged groups, for inclusive and equitable development, and it should ensure equal livelihood options and opportunities for women, people living with disabilities and other disadvantaged groups to have a voice in shaping their choices.

- **Transparent and accountable.** The livelihood recovery process should be transparent and accountable, with strong coordination mechanisms, financial mechanisms, and monitoring and evaluation mechanisms.
- **Ensure long-term development objective.** The livelihood recovery strategy should be designed in such a way that it contributes to long-term development and livelihood improvement and resilience.
- **Recognize mountain specificities.** The livelihood recovery strategy must recognize the mountain-specific constraints (inaccessibility, fragility, marginality) and opportunities (diversity, niche products) and adaptation mechanisms) and take an area-based (mountains, hills, valleys, and cities) and balanced approach in each context of its programmes and responses.
- **Environmentally sustainable.** Environmental sustainability should be of primary concern in the livelihood recovery strategy to ensure both intra- and inter-generational equity and sustainability.

Key elements of the sustainable livelihood recovery strategy

The strategy for sustainable livelihood recovery in the earthquake-affected districts needs to grasp emerging opportunities, use local people and raw materials (primarily from earthquake-affected districts, but also from non-affected districts to meet the gap), be innovative, and take into account the local context. The strategy needs to initially help local people seize new employment opportunities in areas like clearing rubble, reconstruction of houses and infrastructure, and road building to provide immediate income. As part of this, local people's skills and capacities need to be built for reconstruction work as well as in agriculture and other vocational areas to make their livelihoods more resilient. Simultaneously, farmers and micro, small, and medium-sized enterprises (MSMEs) need to be supplied with inputs like seeds, tools, and credit to enable them to restore their livelihoods and perhaps upgrade or diversify them.

Across all of these activities it is vital that materials and human resources be sourced locally to stimulate the local economy, and for this the government could consider policies that make local materials more attractive. Non-earthquake-affected districts could play a vital role in filling gaps in the supply of resources (food, raw materials, construction materials, human resources), and capacity building and other interventions should target these districts as well, but with the main focus on earthquake-affected districts. The livelihood recovery strategy also needs to keep in mind long-term development goals such as the structural transformation of the economy (from agricultural to non-agricultural) and embed interventions in local institutions, such as government line agencies for agricultural extension services, farmers' cooperatives, and community forest user groups.

The livelihood recovery strategy should adopt an integrated approach that brings together employment-intensive reconstruction work, skills development of local people, enterprise development, microfinance, and social protection, as well as the capacity strengthening of government officials, local representatives, NGO workers, community-based organizations, and the private sector, to enable a smooth and efficient recovery. For this a strong coordination mechanism is needed to maximize the various skills and resources of the multiple stakeholders involved in livelihood recovery. There is a need to consider how regular development efforts can complement reconstruction. Earthquake reconstruction must be undertaken in the same context and time frame as ongoing development programmes to ensure a smooth transition from recovery to long-term resilience. Finally, community empowerment is the centrepiece of rural livelihood recovery and is key to sustainable and resilient livelihoods. The following are some of the key elements that should be included in any livelihood recovery plan.

1. Create an enabling policy and institutional environment

Clear policies, strategies, and instruments should be in place from the very beginning of the livelihood recovery strategy to provide an enabling policy and institutional environment. A coherent livelihood recovery policy framework, specifying clear institutional roles, is crucial to provide overall guidance for post-disaster recovery initiatives. This is also an opportunity to critically review existing national policies and tailor them towards long-term economic performance. The following strategies could be considered:

- Formulate post-disaster livelihood recovery policies, strategies, and programmes as an integral part of the national disaster risk reduction and recovery strategy

- Provide a framework and standard operating procedures for livelihood recovery with a clear mandate for decision makers, planners, and practitioners, as well as civil society
- Strengthen livelihood recovery institutional arrangements within the national disaster management framework
- Promote good governance with emphasis on transparency, accountability, stakeholder participation, and controlling corruption

2. Engage and coordinate diverse stakeholders

Livelihood promotion and recovery programmes are multidimensional. Partnerships are required at different levels including with government ministries and line agencies, civil society organizations, international development agencies, NGOs, the private sector (such as banks and local entrepreneurs), and local organizations. A clear and focused coordination mechanism or unit is particularly important to harmoniously address the multi-dimensional nature of the livelihood recovery agenda, which cuts across different ministries and sectors. The following strategies could be considered:

- Initiate multi-sectorial engagement platforms (see example of generic coordination mechanism in Figure 8)
- Institute an empowered stakeholder coordination unit with standard operating procedures and a clear mandate for ensuring a multi-sectoral approach to managing livelihood recovery programmes
- Identify relevant stakeholders and forge strategic partnerships to maximize synergies
- Institutionalize a system to align foreign aid with national development planning and sectoral strategies

3. Strengthen the skills and capacity of affected people

The reconstruction process provides an opportunity to create short and long-term employment for those in earthquake-affected districts. It can also create long-term employment opportunities when linked to the strengthening of local businesses and implemented as part of a larger local economic recovery plan. If properly trained and prepared, local people's employability can increase and livelihoods can become more resilient. To enhance local people's skills an integrated approach is required. The following strategies could be considered:

- Provide short-term training to youth people who have lost their jobs because of the earthquake, and people displaced by the earthquake including women, poor, disadvantaged caste and ethnic groups on basic skills required for construction and other related work, as part of cash-for-work and food-for-work programmes and other social protection programmes

Figure 8: **Example of a multi-stakeholder coordination mechanism**

- Promote partnerships with the private sector to ensure the provision of demand-driven skills training for earthquake-affected people
- Promote training programmes on small enterprise development skills for returned migrants wishing to invest in small businesses in rural areas
- Build local capacity to maximize the use of local expertise, resources, and materials in the reconstruction and rebuilding process
- Establish district-level job information and facilitation centre in the most affected districts to provide services to job seekers and employers

4. Tap the potential of internal and external job markets

Due to the huge damage to the local economy, complete recovery will take a long time. This may lead to increased outmigration. There is a growing demand for Nepali labour in various countries, particularly in the Middle East and Asia. Encouraging labour mobility, both within Nepal and abroad could be a short- and medium-term strategy for livelihood recovery. However, long-term strategies should focus on creating economic opportunities for youth at home so that their potential is tapped in rural development. To tap the potential job markets the following strategies could be considered:

- Enhance employment opportunities by providing skill building training targeted at the urban job market and destination countries for migrants. Such skill building may include orientation training and networking with migrant associations in the destination country to help migrant workers adjust to live in the destination communities. During the skill building process, special attention should be paid to poor households, which have weak social networks and limited economic capacity to explore jobs in urban areas or foreign countries.
- Support potential migrants from earthquake-affected areas to make migration more beneficial by reducing the cost of migration and remittance transfers and by increasing their earning ability through skills training.
- After the earthquake, many migrant workers are returning to Nepal to assist their families in the reconstruction process. These returnees will bring back skills, knowledge, and values. Appropriate strategies need to be designed to integrate and use their expertise and financial resources in the livelihood recovery process.
- Migrant families in the earthquake-affected areas need financial skills (e.g., savings accounts, fixed deposits, investment bonds), literacy in financial management and how to make productive investments, and in preparedness for disaster risk reduction. The government should support the financial literacy of migrant households in the earthquake-affected areas.
- In many countries, the diaspora and their remittances are used successfully in post-disaster livelihood recovery (Box 5). The skills and finances of the Nepali diaspora should be engaged in reviving the livelihoods of the households in the affected districts. The government should design appropriate strategies and mechanisms to engage the Nepali diaspora in the livelihood recovery process.

Box 5: **Remittances and contributions from the diaspora during disasters**

Remittances are an important source of income during times of disaster and tend to increase in the post-disaster period. In many natural disasters, remittances have proved to be much quicker in reaching affected populations than the relief and recovery operations of the government or aid agencies. In Nepal, in the immediate aftermath of the earthquake when most other sectors were reporting a reduction in services, remittances grew by about 35% (Interview with the Nepal Remitter's Association). The globally-dispersed Nepali diaspora has also been involved in fundraising for relief and recovery. Such philanthropic efforts from diaspora populations including have been experienced in other countries with significant migrant populations, including the Philippines (Typhoon Hyain in 2013), Pakistan (2005 earthquake), Sri Lanka (2004 tsunami), and Bangladesh (1998 floods). In the case of Nepal, the Non Resident Nepali Association has collected NPR 214 million for earthquake relief and reconstruction and has pledged to rebuild 1,000 disaster-resilient houses (http://nrna.org.np/article-NRNA_disaster_support). The Government of Nepal can consider issuing diaspora bonds for reconstruction, which have been successfully used as an instrument of external financing during times of economic hardship by countries like India and Israel.

Source: Le De et al. 2013; Orrenius et al. 2010

5. Facilitate structural transformation from low to high productive sectors

In all interventions there should be a long-term view towards the structural transformation of the economy from a subsistence agriculture-based economy to a more commercial and diversified economy. Long-term livelihood and economic recovery calls for employment-led inclusive growth and the integration of capacity development measures into a national strategy. The following strategies could be considered:

- Promote the commercialization of agricultural activities so as to maximize the return on investment from limited landholdings
- Design market-based education and training curricula with collaboration between the public and private sectors
- Strengthen the capacities of local governments for public administration, participatory planning and budgeting, and effective relations with communities and the private sector.

6. Ensure gender equality and social inclusion

To make reconstruction and recovery processes inclusive and equitable, the following strategies could be considered:

- Use gender analysis tools and collect and assess gender-disaggregated data to identify gender-specific issues and options
- Provide equal opportunities for men and women in livelihood recovery interventions and ensure that reconstruction process does not perpetuate inequalities already existing in society
- Integrate marginalized groups throughout livelihood recovery and rehabilitation programmes
- Ensure the representation of women and ethnic groups in recovery planning and implementation processes
- Take specific measures to ensure that skill development training and employment opportunities are available to women, disadvantaged, caste, and ethnic groups to reduce marginalization of existing caste, ethnicity, and gender-based inequalities.
- Provide policy support to women's groups for livelihood generation and diversification through their priority engagement in public procurement processes linked to the recovery strategy
- Strengthen social protections for women, the disabled, orphans, the poor, and the elderly to ensure their health and nutrition

7. Promote community empowerment

As the community is the main player in livelihood recovery, it is crucial to empower local communities through an inclusive community-driven approach so that they are capable of planning, implementing, and managing their resources in the recovery and rehabilitation process. The objective is to capacitate local people so that they have the ability and authority to make choices for themselves and others in their community. The following strategies could be considered:

- Identify gaps and leverage points in the livelihood assets/capabilities of the economically active population in affected areas
- Support the capacity building needs of communities and community-based organizations so that they can play a central role in various aspects of the livelihood recovery programme
- Create economic opportunities to use their expanded capabilities for reducing vulnerability and enhancing livelihoods

8. Integrate ecosystem and biodiversity conservation into the livelihood recovery process

Given the heavy reliance of local people in the disaster-affected areas on various ecosystem services for their sustenance and livelihoods, an ecosystems approach must be an integral part of the livelihood recovery process. Properly designed, renewable energy services can be a vehicle for improving livelihood and environmental security. The following strategies could be considered to integrate ecosystems and biodiversity conservation principles into the livelihood recovery strategy. The following strategies could be considered:

- Provide economic incentives to encourage the adoption of conservation technologies to reduce the pressure on the environment
- Promote area-specific, mountain-friendly technologies and green infrastructure (green roads, gravity ropeways, renewable energy, agricultural systems that are suitable to mountains, and high-value/low-volume niche products)
- Promote the use of green and climate-resilient technologies and eco-friendly land management practices (e.g., the use of appropriate varieties of trees, crops, and livestock, home garden)
- Mainstream the enforcement of regulatory guidelines on the use of land, pesticides, and water and for the disposal of waste and effluent
- Address the timber supply gap, recognizing that Nepal's forests can provide significant amount of timber without compromising environmental sustainability if some regulatory mechanisms are simplified
- Promote a cadre of energy entrepreneurs (private entities, local people, village cooperatives, and local NGOs) for the supply of technology, spare parts, and after sale services
- Integrate energy with water and food using smart policies to minimize trade-offs and maximize synergies for sustainable livelihoods and environmental security

Sector-specific strategy

In addition to the core strategies of the livelihood recovery strategy, the following sectoral components should be included in any livelihood recovery plan. For further details see the response matrix for revitalization of livelihoods (Table 15).

9. Revitalize the farming sector

Livelihood recovery strategies based mainly on farming sectors (agriculture and livestock) need to be embedded in local institutions, such as government line agencies for agricultural extension services, farmers' cooperatives, and community forestry user groups, for sustainability. Community empowerment through a holistic and bottom-up approach is key to revitalizing farming sectors. The following strategies could be considered to the strengthen on-farm interventions:

- Support the rebuilding of damaged agricultural infrastructure (irrigation facilities, seed stores, market sheds, livestock sheds) and the provision of agriculture and livestock inputs (seeds, fertilizers, poly tunnels, breeds, feed)
- Support farm mechanization through financial inclusion mechanisms to address labour shortages for on-farm livelihood activities
- Ensure veterinary treatment of injured livestock and supply of vaccinations
- Provide access to finance so that farmers can restart their income activities including dairy, broiler, egg, and fishery production and marketing
- Support the capacity building needs of communities and CBOs so that they can play a central role in various aspects of the livelihood recovery programme
- Establish and strengthen farmers' groups and cooperatives and production and market services groups to maximize economies of scale, bring about efficiencies in the provision of inputs and services, and for the marketing of products
- Strengthen extension services to support and train farmers' groups and cooperatives on the application of climate adaptive practices, low-cost technologies, and on-the-spot demonstrations of good practices in farmers' fields
- Raise community awareness about the high value economic activities of farmers' groups (e.g., honey, fresh fruit, organic vegetables), community-managed agricultural services, and the provision of equipment and materials for the storage of farm products and processed goods
- Promote product standardization for quantity and quality control and leverage markets for niche mountain products

- Introduce crop insurance to safeguard farmers in disaster-affected areas from crop failures due to disease or unforeseen risks
- Ensure that the information, technology and input packages address the specific needs and challenges of women farmers.
- Provide support for resuming fish breeding and fry production
- Provide soft-loans to large farmers for the replacement of livestock, and provide free livestock to small and marginal farmers who lost their livestock

10. Revitalize the tourism sector

The earthquake has severely affected the tourism sector. Revitalizing the tourism sector should be an integral part of the reconstruction and recovery process. The following strategies could be adopted:

- Rebuild tourism infrastructure using an eco-design approach and techniques to optimize the use of locally-available resources and expertise that generate employment for displaced people. Emergency employment schemes could be linked to the repair and rebuilding of some trekking routes and other infrastructure in safe areas
- Targeted marketing of other tourist destinations in Nepal, which have not been affected by the earthquake e.g., northwestern districts, eastern Himalayan districts, the Far West region, Chitwan National Park, Lumbini, etc. to facilitate the speedy recovery of the tourism sector
- Upscale communication using social media and travel forums to share a positive message about Nepal as a safe destination, including the use of international celebrities and by conducting direct interviews in key Nepali tourism hubs (e.g., the airport, key tourist attractions, key hotels, visitor's centres, trails, protected areas, etc.)
- Develop a special package to target potential clients including repeat international tourists, diaspora communities, expatriate communities, and domestic tourists
- Provide policy and financial support to entrepreneurs to restart their businesses (e.g., operational needs for hotels, restaurants, shops, tourism services, etc.) while promoting community-based tourism to maximize the local retention of generated through tourism income
- Establish safe trekking and safety information systems

11. Revitalize micro, small, and medium-sized enterprises

Many micro, small, and medium-sized enterprises (MSMEs) have been damaged and many people have lost their livelihoods. To revitalize the MSME sector, the following strategies and approaches could be adopted:

- Advance soft loans to affected MSMEs to restart their business, as well as to upgrade and diversify
- Promote inclusive private sector development through policy and financial support in earthquake-affected areas to create employment and income generation among earthquake-affected people by strengthening local production, business development services, and market systems
- Identify and support disaster-sensitive value chains in which market demand is substantial and in which disaster-affected people could be represented as entrepreneurs or employees
- Design interventions to strengthen the competitiveness of value chains while expanding the share of the benefits of value addition that reaches target groups
- Support value chain upgrading between farmers' groups and processors/traders for establishing value adding facilities closer to production pockets
- Provide economic incentives and regulatory support to the private sector for increased investment in renewable energy-based, off-grid electricity generation systems that can cater to smart village micro-grids in earthquake-affected areas
- Develop insurance mechanisms for the MSME sector with public-private partnerships to mitigate risk
- Rehabilitate and provide immediate support to cooperatives to resume their functions

Response matrix for revitalization of livelihoods

The following livelihood recovery programmatic response options elaborate short and long-term actions. Although it is in no way comprehensive, it is hoped that it will help in designing short - and medium-term activities for livelihood recovery.

Table 15: **Livelihood recovery programmatic response options**

Response needs	Response options	Suggestions
Provision of seeds and other farm inputs urgently as seed stocks were destroyed	• Supply seeds and seedlings free so that farmers do not lose cropping season • Facilitate supervised soft loans for sourcing agriculture inputs including seeds, fertilizers, and tools • Introduce a contingency cropping plan (e.g., promotion of short duration crops such as legumes, lentils, and vegetables) if farmers are unable to grow their main crops	• Provide free seeds and seedlings for the first coming season • Establish community seed banks and storage facilities • Support start-up business for input suppliers (e.g., One Stop Farmers' Shop) specializing in the supply of seeds, fertilizers, pesticides, and agriculture tools through the provision of loans and storage facilities; loans need to be supervised to reduce the chances of fungibility • Provide in kind credit to farmers in the form of inputs, equipment, fertilizer, etc. • Introduce crop insurance to safeguard farmers in the disaster-affected areas from crop failures due to disease or unforeseen risks
Addressing farm labour shortages because of labour outmigration	• Promote the use of farm machinery (power tillers, furrowers, land levellers) by individual households or by communities	• Provide farm machinery on a cost-sharing basis • Promote community farm machinery service centres so that farmers can hire machinery at a reasonable rate
Repairing and rebuilding damaged irrigation canals and water storage ponds	• Rebuild damaged irrigation infrastructure by the government through private contractors • Rebuild damaged irrigation infrastructure using communities through support schemes (such as on the job vocational training for masonry and other cement works) • Promote the use of solar pumps to source spring water for irrigation	• Provide materials (pipes, cements, tools) free of cost from local manufacturers • Use emergency relief such as cash-for-work or food-for-work for repair and reconstruction • Promote alternative crops that require less water (e.g., millet instead of paddy) in areas where irrigation canals are damaged beyond maintenance (heavy landslides) • Repair and rehabilitate farmer manage small irrigation system by using cash/food for work programme • Form local water users associations for better ownership of facilities
Rehabilitation and resettlement of earthquake victims	• Proper identification of worst affected sites • Provide immediate relief materials (food, temporary shelter etc.) to hard-hit victims • Identify areas for resettlement of the victims	• Form a committee to sort out the affected VDCs based on damages as well as identify other vulnerable localities across the country • Coordinate with non-governmental as well as international relief agencies to ensure proper provision of food and other relief materials • Form a committee comprising a panel of experts and policymakers to suggest resettlement areas for earthquake victims • Develop mechanism for livelihood enhancement for newly settle people

Response needs	Response options	Suggestions
Replacement of livestock assets (cattle, buffalo, goats, sheep and fisheries) lost due to earthquake	• Provide livestock and fish seed on a cost-sharing basis • Facilitate soft loans to individual farmers or to farmer cooperatives to replenish their stock • Promote improved breeds with supplementary veterinary and artificial insemination services • Support rebuilding of local milk collection centres by providing cash for work to resume milk marketing • Support construction of fish ponds wherever needed	• Support livestock purchase and fish pond construction through cost-sharing mechanisms or by giving soft loans • Support mobilizing farmers into livestock groups and cooperatives to optimize profits from collective efforts across the livestock value chains • Support start-up businesses by providing supervised soft loans to make enriched feed blocks from crop-residues and by-products at the village level • Support village animal health workers through trainings and soft loans • Introduce livestock insurance to safeguard farmers' livelihoods from livestock loss due to diseases and other unforeseen risks
Rebuilding of damaged animal sheds	• Provide soft loans to buy local raw materials for animal sheds (zinc sheets, cement, bricks) • Mobilize community labour and local raw materials for reconstructing animal sheds. • Carry out reconstruction work on cash-for-work or food-for-work basis • Use cash/food-for-work for building animal sheds	• Use cash/food-for-work for building animal sheds and mobilize community labour • Promote construction of separate animal housing from human housing through awareness and regulatory measures for better health, hygiene, and sanitation • Support integrated livestock-biogas facilities through cost-sharing mechanisms
Replacement and rebuilding of poultry farms (broiler and layer farms)	• Provide local materials for shed construction and poultry equipment on a cost sharing basis • Provide soft loans for the purchase of day-old chicks and poultry feed • Provide free veterinary services (vaccination and deworming) for one production cycle • Set minimum support price for broiler and egg products	• Provide time-bound subsidies to local poultry hatcheries and local poultry feed manufacturers so that they can supply these inputs at a reasonable rate to farmers • Strengthen poultry value chains (feed suppliers, veterinary service providers, processors, and marketing agents) by providing soft loans and capacity building initiatives to various actors/ entrepreneurs • Introduce farm insurance to safeguard farmers from loss of poultry business due to disease outbreaks and unforeseen risks

Response needs	Response options	Suggestions
Rebuilding of tourism sector as private hotels, homestays and trekking trails were damaged	• Provide soft loans to rebuild homestays and tea houses, and tourism-linked micro-enterprises such as handicraft shops • Promote cash-for-work or food-for-work to renovate trekking trails in safe areas by displaced and unemployed local people who were dependent on tourism activities (porters, guides, and cooks) • Market destinations not affected by the earthquake (e.g., northwestern districts, eastern Himalayan districts, Far West region, Chitwan National Park, Lumbini, etc.) • Provide soft loans to entrepreneurs to restart their businesses (e.g., operational needs for hotels, restaurants, shops, tourism services, etc.)	• Promote safe destination marketing through active communication, including the use of mass media and international celebrities • Support tour operators and travel guides to resume their business through the provision of favourable loans • Provide alternative vocational skills (plumbing, carpentry, electrician, masonry, etc.) for large numbers of local people who were dependent on the tourism sector, and link them to employment in the reconstruction of public and private infrastructure, as well as with authorized manpower agencies • Advance loans to existing small tourist establishments to restart businesses
Developing micro, small, and medium-sized enterprises (MSME)	• Promote agro-enterprise development (e.g., rice-mills, flour and grinding facilities, and agriculture cold stores) through cost sharing support • Provide soft loans to promote value addition, processing and agri-businesses (e.g., soybean tofu, banana chips, tomato sauce, fried red onion, pickles etc.)	• Provide policy and financial support with low interest to MSMEs in affected areas. • Develop insurance mechanisms for MSME sector with public-private partnerships to mitigate risk • Support standardization, quality control, certification, branding, and market linkages • Support infrastructure and equipment for value addition and processing through favourable loan terms • Support capacity development for entrepreneurship
Creating jobs in urban areas for migrating people	• Strengthen vocational training institutes/programmes to produce skilled labour force for various sectors (e.g., construction, hospitality, processing, manufacturing)	• Provide soft loans to help start self-employment in micro-enterprises (repair and maintenance shops, beauty salons, tailoring, plumbing, gardening, etc.) • Facilitate skilled labour recruitment in the international job market • Engage the Nepali diaspora
Creating livelihood opportunities for people affected by the earthquake	• Create employment through cash-for-work or food-for-work • Support skills development to enhance employment opportunities	• Engage displaced people in major public sector works (roads, bridges, buildings, hydropower)

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Annexes

Annex 1: **Socioeconomic factors of mountain vulnerability in 14 most affected areas districts (2011)**

District	Population ('000)	Economically active population in agriculture (%)	Migrant HHs (%)	Women-headed HHs (%)	Poverty (%)	Literacy (%)	Food balance (t)	Access to clean drinking water (%)	Kachi houses (%)	RCCa (%)
Mountains										
Dolakha	187	80	17	34	30	66.3	-21,965	81	97.6	1.9
Sindhupalchowk	288	78	21	24	31	62.5	22,753	81	97.6	1.9
Rasuwa	43	78	25	22	43	56.5	-3,294	89	97.5	1.8
Gorkha	271	80	32	37	39	68.8	21,313	70	94.0	5.5
Hills										
Ramechhap	203	82	19	28	23	65.9	26,027	79	98.2	0.7
Okhaldhunga	148	84	24	28	41	77.2	10,692	42.4	98.7	0.3
Dhading	336	76	23	28	18	65.4	-20,910	69	94.0	5.4
Nuwakot	277	78	19	21	19	63.4	25,692	78	97.0	2.0
Kavre	382	70	15	21	19	72.5	-5,808	82	92.5	6.3
Kathmandu Metropolitan										
Kathmandu	1,744	9	16	28	6	87.8	-305,220	93	57.5	40.2
Lalitpur	468	30	15	24	8	84.3	-57,674	89	65.6	31.0
Bhaktapur	305	21	12	22	14	83.4	-35,731	91	68.2	30.4
Inner Terai										
Makwanpur	420	65	16	23	20	70.5	-3,324	72	96.0	3.6
Sindhuli	296	78	21	25	31	63.7	13,355	62	97.3	2.1
National	26,494	60	25	26	25	66.0	408	80	90	10

HH = households; RCC = reinforced concrete

Source: CBS 2013, ILO 2015, CBS 2012b, CBS 2012a

Annex 2: **Pre-earthquake sources of livelihood in different ecological zones in the earthquake affected districts**

District	Livelihood sources of	
	Farm	Non-farm
Mountains (Dolakha, Sindhupalchowk, Rasuwa, Gorkha)	**Agriculture main source of livelihoods**, more than 80% of economically active population practise mostly mixed crop-livestock farming linked with forestry **Crops** • Small landholdings, e.g. in Sindhupalchowk >86% households have less than 1 ha of land • Crops mostly grown on rainfed land, with one crop annually; two crops possible on small areas of irrigated land (e.g. in Dolakha 18% of farmland); cropping intensity in mountain areas 1.63. • Principal crops maize, upland paddy, millet, and barley • Rice yield lower than country average, maize and millet yield average (e.g. in Dolakha, rice 1.7 t/ha, maize 2.0 t/ha, millet 1.1 t/ha) • About 70% households use local seed **Livestock** • Livestock are the main livelihood option. • Most farming households keep livestock (e.g. in Sindhupalchowk average household has 1 cattle, 1 buffalo, 2-3 sheep/goats). • In Sindhupalchowk 18% of cattle and 23% of buffalo kept for milk, remainder raised for manure , draught power, meat • Livestock yield very low. One milking animal produces less than 700 litres milk per lactation. • Livestock forage and fodder mainly from forest, rangelands and crop residues	**Key non-farm livelihood options** are internal and external migration, services to tourists, wage labour, and non-timber forest products (NTFPs). **Migration** • Higher proportion of migrant households, e.g. in Gorkha, >25% households have at least one migrant member; remittances contribute 20% of household income. **Tourism** • Promising sector, e.g. Langtang and Gosaikunda in Rasuwa were famous tourist destinations and source of livelihoods for local communities

District	Livelihood sources of	
	Farm	Non-farm
Hills (Ramechhap, Okaldhunga, Dhading, Nuwakot, Kavre)	**Agriculture main source of livelihoods**, more than 70% economically active population practise mostly mixed crop-livestock farming **Arable crops** • Landholding size lower than mountains (e.g. average 0.60 ha per household in Kavre) • <20% of land irrigated, remainder rainfed; two to three crops annually; cropping intensity 1.83 • Principal crops rice-wheat and maize • Higher rainfall means better crop yield (e.g. in Kavre average yield of rice 3.1 t/ha, wheat 2.5 t/ha, and maize 2.1 t/ha, comparable with national average). **Vegetables** Hill farmers close to Kathmandu (Kavre, Dhading, Nuwakot) moving from cereals to vegetable production (off-season and on-season) due to market access; vegetables grown on 9,000 ha (equal to paddy area) in Kavre, yield 15.5 t/ha. **Livestock** • Cattle and buffalo extensively raised • Cattle more productive than in mountains • Mid-hills (e.g. Kavre, Nuwakot, Dhading) niche areas for goats (e.g. 300,000 goats in Kavre consists, highest in all Nepal districts. • Especially close to Kathmandu mass poultry farming increasing; around 4 million poultry in Kavre, Nuwakot, and Dhading, 9% of Nepal total **Forest** • Most households members of community forest user groups (CFUGs) and benefit from NTFPs and other forest products. • In Kavre, for example, 14–22% income in community forest households from forest.	**Key non-farm livelihood options** are microenterprise, trade, shops, wage labour in road construction, skilled labour (carpentry and masonry), vegetable traders, meat suppliers (poultry and goat), migration **Migration** • Labour migration important source of household income; proportion of migrant households ranges from 15% (Kavre) to 23% (Dhading)

District	Livelihood sources of	
	Farm	Non-farm
Kathmandu Metropolitan (Kathmandu, Lalitpur, Bhaktapur)	**Agriculture minor source of livelihoods**, only 9%, 30%, and 21% of population in Kathmandu, Lalitpur, and Bhaktapur, respectively, involved in farm sector **Crops** • Landholdings mostly on outskirts of the city. • More than 60% of arable land irrigated, higher level of mechanization and intensive farming • Yield of cereals and vegetables high, (e.g. in Lalitpur, rice 5.7 t/ha, maize 3.2 t/ha, wheat 3.6 t/ha, and vegetables 20 t/ha) Livestock • Cattle and buffalo population fairly small but per unit productivity highest In Nepal • Poultry a promising livelihood option; around 5 million poultry in valley districts, more than 9% of national population.	**Non-farm options major source of livelihoods**, more than 70% of population in non-farm and informal sectors. **Formal and informal sectors** • 25% economically active population in Kathmandu in service and sales sector, 18% professional and technical, 17% craft related trade • Majority of poor people in the informal sector; includes daily wage labour, taxi driving, carpenters, masons, plumbers • Rate of labour migration lowest in Nepal
Inner Terai (Sindhuli, Makwanpur)	**Agriculture major source of livelihoods**, more than 65% economically active population involved in agriculture. **Arable crops** • Landholding size small (average 0.24 ha/hh in Sindhuli, 0.57 ha/hh in Makwanpur) • Higher proportion of land irrigated • Crop yield higher than mountains and hills (e.g. in Sindhuli rice3.2 t/ha, wheat 2.4 t/ha, maize i2.6 t/ha, comparable with national average) **Vegetables** • Vegetable is grown is smaller area in comparison to the hill and yield is also lower than the hill but comparable to national figure. **Livestock** • Inner Terai is equally suitable for livestock production especially cattle, buffaloes and goat are grown extensively. Both districts consists 400,000 buffaloes and cattle, 350,000 of goats and 2.8 million poultry. Both inner Terai district has significant contribution to national meat and milk production.	**Key non-farm livelihood options** are migration and wage labour **Migration** Labour migration important source of household income, 15–20% households have a labour migrant **Wage labour** Road construction important income option for marginal households, e.g. Banepa-Sindhuli highway, Kathmandu-Hetauda bypass roads

Source: Prepared by authors based on data from CBS 2012a, CBS 2012b, MoAD 2013

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