



GOVERNMENT OF NEPAL
NATIONAL RECONSTRUCTION AUTHORITY

Nepal's Recovery and Reconstruction after the 2015 Gorkha Earthquake: **Lessons and Way Forward**

SUMMARY REPORT: PART A



Governance
and Financing

The Gorkha
Earthquake

Heritage
Structures

Public Buildings and
Infrastructure

Recovery and
Reconstruction



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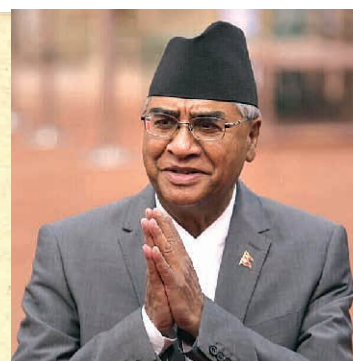
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The Prime Minister



MESSAGE

It has been over six years since the Gorkha earthquake of April 2015 and its aftershocks had kept Nepal on the edge for weeks. Amidst the tragic loss of life and the widespread devastation, it was not surprising for citizens to wonder whether or not their lives would ever return to anything resembling the normal, let alone think about building back better.

As soon as the Post Disaster Recovery Framework (PDRF) was launched in May 2016, the NRA worked to put the framework into practice quickly and efficiently to enable affected communities to return to normalcy as rapidly as possible, while also being increasingly resilient to future risks.

We have succeeded in every aspect. The two volumes (Compendium Parts A & B) document the progress made in reconstruction and recovery – the thousands of homes that were rebuilt and communities that were renewed; schools and health facilities that have risen from the rubble; and livelihoods that have been restored in the face of many challenges which were exacerbated by the 2015 earthquake. We are particularly proud of the restoration of so many of our cultural treasures, the visible manifestations of our rich and diverse heritage. We have made efforts to prioritize the recovery of the poorest and most vulnerable members of our society and to promote gender equality in reconstruction. But as the Compendiums show we still have some way to go before we complete reconstruction.

The NRA is proud of the progress achieved in reconstruction. We can build on the lessons derived from the experience in future efforts to strengthen risk-informed development planning, disaster risk management and recovery. The NRA has recorded the lessons learned from experience that can help us to improve reconstruction policies and operations, as we plan for future disaster events.

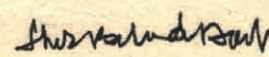
Nepal is among the high risk and most disaster-prone countries in the world. Given this reality, I urge readers to examine this Compendium closely to learn from the lessons to help us in our efforts to become a more resilient nation.

I congratulate the NRA for its leadership of reconstruction. I also congratulate and thank all national and international partners who contributed to the achievements of post-Gorkha earthquake reconstruction and recovery.

Finally, I would like to pay tributes the many citizens of Nepal who have recovered from their losses and have found the courage to move on.

Jay Nepal.

29 Nov. 2021


Sher Bahadur Deuba



National Reconstruction Authority



PRELUDE

Over the last year, the NRA has guided a process of reflection on the many lessons from the post-Gorkha earthquake reconstruction and recovery experience that it led since late 2015. Its operations would have been impossible without the dedication, imagination, determination and cooperative spirit of the Nepali citizens in whose communities we have had the privilege to work, and of the many national and international partners who had joined hands with us in the effort.

When we embarked on the reconstruction and recovery journey in 2015, our task was daunting – as a newly-formed Authority we had to organize ourself, amidst increased public demands for immediate action to assist them in rebuilding their homes and communities. With solidarity and support from our partners, we were quickly able to mobilize resources and get reconstruction underway.

We are proud of what we have achieved in the last six years. The Compendiums (Vol. A and B) have recorded the experience, not just the successes but also areas where we could have done better. We hope that the lessons would be useful and help us as a society to remember the experience to work towards better preparedness.

The results recorded in these pages speak for themselves, but I would like to highlight a few important features of the reconstruction and recovery operation. Recovery solutions are context-specific and one solution does not work in all situations, especially in a country with the topographic, cultural and social variety like Nepal.

One of the most important lessons we have learned is the importance of preparedness. Better national preparedness to face disasters would have greatly facilitated the process of post-earthquake recovery. We therefore need to make development planning much more disaster risk-informed, and disaster preparedness must be integral to the National Disaster Risk Reduction and Management Authority, the new institution for managing disasters.

The NRA's tenure will end in January 2022 but the remaining tasks of reconstruction will continue, as will national resilience-building, both of which are essential for sustainable and risk-informed development. I urge those assuming the responsibility after the NRA phases out to take lessons from the learnings and the challenges faced to complete the reconstruction.

I thank everyone – all our national partners in civil society, the private sector and government, and international partners who supported us in reconstruction. This volume is also about your successful efforts. I also thank my colleagues at the NRA since 2015, because it was your work that helped us to help fellow citizens rise from the rubble.

Sushil Gyewali
Chief Executive Officer
National Reconstruction Authority



National Reconstruction Authority



ACKNOWLEDGEMENTS

It is our pleasure to have Rt. Hon. Sher Bahadur Deuba as Chair of the NRA Steering Committee after assuming the post of the Prime Minister of Nepal. We wish him a successful tenure and hope to comprehensively conclude the NRA's operations under his guidance.

The reconstruction activities are in the concluding phase and the NRA has been documenting the experiences and lessons learnt for effective disaster management, with the preparation of several thematic documents. Both international and national experts and other individuals were involved in the preparation of this document under the guidance of the Chair of the ICNR Organizing Committee and NRA CEO Mr. Sushil Gyewali. I express my gratitude to everyone involved.

Based on the thematic learning report in Compendium Part B, a number of national and international experts were involved in drafting this volume, Compendium Part A. I would like to particularly acknowledge the contributions of Dr. Nigel Fisher, Mr. Vivek Rawal and Mr. Jitendra Bothara, the international experts and Mr. Surya Narayan Shrestha, Mr. Ranjan Dhungel, and Mr. Dhruba Gautam, the national experts.

The NRA also acknowledges the commitment and efficiency of the ICNR Secretariat, led by Dr. Chandra Bahadur Shrestha, Executive Committee Member, NRA; and Mr. Manohar Ghimire, Under Secretary, who served as the Member Secretary of the Secretariat. Ms. Sulochana Nepali, Mr. Janardan Nepal and Mr. Sandeep Gurung facilitated the Secretariat's work. The efforts of Mr. Chandan Rana Magar for layout and design, including sketches for the cover and title pages, are highly appreciable.

We are grateful to the various agencies that supported us in the preparation of this document. Particularly, I would like to extend my heartfelt appreciation of the World Bank (WB), and the United Nations Development Programme (UNDP) for fielding the international and national consultants.

I hope that the document will benefit all stakeholders, by providing evidence to learn from the experiences for improving disaster preparedness and response in the coming years.

Thank you all.

Sushil Chandra Tiwari
Secretary
National Reconstruction Authority



National Reconstruction Authority



ABOUT THIS PUBLICATION

The NRA has extensively documented learnt lessons in reconstruction through scientific papers, as well as through institutional and open route papers. This Compendium deals with the NRA's institutional memory and is a record of recovery and reconstruction in the years after the 25 April 2015 Gorkha earthquake.

This report, Compendium Part A, is based on the Compendium Part B and is a part of the consolidated learnings from the reconstruction experience. The purpose is to share the learning from the Gorkha earthquake reconstruction with larger audiences. The three chapters in Part A discuss the basic principles frame and design of Gorkha earthquake reconstruction, major lessons learned and way forward for future disaster reconstruction and recovery.

The first chapter summarizes the damage caused by the earthquake, the challenges faced and discussions on the preparation for reconstruction and recovery work. The institutional gap and the required institutional arrangements took significant time to resolve in the immediate post-disaster period. The formation of the NRA and its institutional mechanisms was a major achievement in laying the groundwork for reconstruction and recovery, which along with the financial arrangements, are discussed in this chapter.

The second chapter synthesizes learnings detailed in the Compendium Part B. Crosscutting issues and their implications on sectoral reconstruction are also evaluated and discussed. During the reconstruction and recovery period, Nepal changed to a federal structure of governance from a centralized one that caused the NRA to align reconstruction with the new reality, which is also discussed.

The last chapter discusses the way forward and preparedness for future disaster events. It is intended to provide guidance for future reconstruction and recovery. The engagement of NRA with the newly-formed National Disaster Risk Reduction and Management Authority (NDRRMA) and other line agencies is critical for mainstreaming the best practices in reconstruction in planning and public policy.

The NRA has handed over the residual reconstruction tasks to the NDRRMA, the Ministry of Urban Development (MoUD), Ministry of Culture and other relevant line agencies and local governments. And it hopes that this document will serve as a reference for policy makers, implementing agencies, academicians, researchers and the general public as they seek to address the challenges of strengthening risk-informed development planning, disaster preparedness and post-disaster recovery.

Dr. Chandra Bahadur Shrestha
Member, NRA Executive Committee
Convener - ICNR

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ABBREVIATIONS

BBB	Build Back Better	MoHA	Ministry of Home Affairs
CBS	Central Bureau of Statistics	MoUD	Ministry of Urban Development
CEO	Chief Executive Officer	NDRRMA	National Disaster Risk Reduction and Management Authority
CLPIU	Central Level Project Implementation Unit	NGO	Non-governmental Organizations
CSO	Civil Society Organization	NNBC	Nepal National Building Code
DACFC	Development Assistance Coordination and Facilitation Committee	NRs.	Nepali rupees
DLPIU	District Level Project Implementation Unit	NRA	National Reconstruction Authority
DoA	Department of Archeology	ODR	Owner-Driven Reconstruction
EC	Executive Committee	OUV	Outstanding Universal Value
GLOF	Glacial Lake Outburst Flood	PDNA	Post Disaster Needs Assessment
GMALI	Grants Management and Local Infrastructure	PDRF	Post-Disaster Recovery Framework
GoN	Government of Nepal	SC	Steering Committee
HRRP	Housing Reconstruction and Recovery Platform	UN	United Nations
ICNR	International Conference on Nepal's Reconstruction	UNESCO	United Nations Educational, Scientific and Cultural Organization
MoEST	Ministry of Education, Science and Technology	US\$	United States dollar
		WASH	Water, Sanitation and Hygiene

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EXECUTIVE SUMMARY

This document is Part A of the Corporate Report of the National Reconstruction Authority (NRA) on Nepal's recovery and reconstruction after the 2015 Gorkha earthquake. It contains three chapters.

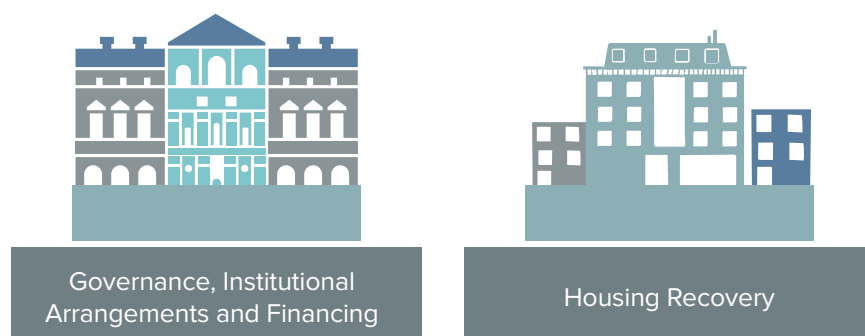
Chapter 1 – Laying the groundwork for reconstruction highlights the context and extent of earthquake effects, damage, and losses. It explains the importance of rapidly undertaking a Post-disaster Needs Assessment (PDNA) to compile and summarize losses, damage, recovery priorities and financing requirements for reconstruction. This provided a basis for marshalling necessary financial resources. Delays in the creation of the NRA, the agency to lead and coordinate the reconstruction effort, delayed the start of recovery. However, recovery gained momentum once the recovery principles, policies, frameworks, and institutional mechanisms were created.

Chapter 2 – Achievements, lessons learned and recommendations summarizes the lessons learned from the six years spent on rebuilding after the 2015 earthquake. The reconstruction operations have been successful in achieving the goals set for housing, heritage conservation, public infrastructure and livelihoods support. The lessons learned focus on what worked well and what could have been done differently and are aimed at contributing towards strengthening disaster preparedness and disaster risk-informed planning.

The chapter groups the lessons in five thematic areas, which are relevant to policy- and decision-makers responsible for future disaster preparedness, response, and recovery. The main thematic areas covered are:

- **Governance, institutional arrangements and financing:** The emphasis here is on the need for speed, clarity of lead agency mandate, a consensus of concerned parties on its responsibilities, relevant reconstruction standards, systems and procedures; as well as clear roles and accountability mechanisms for partners. Under Nepal's federal system, it is extremely important to build disaster preparedness and management capacities and resources of all levels of government.
- **Housing recovery:** This section discusses the positive impact of the owner-driven housing reconstruction approach and how special provisions were instituted to address the special needs of vulnerable households. The housing standards and designs have to be suited to both cultural and topographical contexts and for this it is crucial to train engineers and other construction specialists in the use of traditional building designs and materials. The link between the restoration of livelihoods and the ability of owners to rebuild of their homes is important, as is the importance of extending banking to isolated communities and/or of providing the poor and vulnerable innovative and affordable access to finance. Federalization also meant increased expectations of municipalities to assume responsibility for oversight of local reconstruction and to be able to inform citizens of structural risk mitigation strategies, building codes and even settlement risk and resettlement policies.

FIVE THEMATIC AREAS



- **Heritage structures and communities:** This section presents lessons learned on the complexities in this sector regarding governance, restoration approaches, technologies and materials, institutional accountability, decision-making responsibilities and procurement policies. Limited archival documentation on heritage sites and structures had posed challenges in recovery planning and design. In addition, it was evident that lack of maintenance was a major cause of vulnerability of heritage structures. Therefore, an appropriate system for regular maintenance and restoration needs to be devised to address the issue taking care to ensure community engagement in the reconstruction of heritage monuments, given relations communities have with both the tangible and intangible cultural heritage.
- **Social and public infrastructure:** This section discusses the centrality of public infrastructure to safety, economic and social well-being of citizens. These include schools, health facilities, trails and transportation infrastructure, for example. Infrastructure reconstruction in Nepal faces unique logistical challenges resolving which demands good coordination at all levels of government, each level requiring reinforced governance, financial and risk assessment capacities. The need for compliance with building codes and for risk-informed land use are other lessons, as is engagement with communities in hazard mapping and land use planning. Access to land for infrastructure development is also a challenge that requires careful planning and engagement with local communities.
- **Livelihoods and economic recovery:** The importance of engagement with and involvement of communities in designing and implementing livelihood support activities, and the need for the support to be context-appropriate, was the most important lesson. Further, women-focused livelihood measures were important for responding to the particular challenges faced by women and also for challenging gender stereotypes prevalent in society. Collective livelihood activities – particularly cash-for-work schemes – were welcomed by earthquake-affected people. Livelihood support activities had sought to address long-term economic self-sufficiency as well as short-term measures. The former contributed towards restoring the dignity, self-sufficiency and independence of disaster-affected households and communities.
- **Cross cutting issues:** The lessons from the reconstruction and recovery experience that cut across all sectors were: Disaster preparedness and post-disaster reconstruction cannot be isolated from any attempt to plan for sustainable development and that development planning must be disaster risk-informed. Together, all are parts of one continuum of actions required for managing risk, promoting sustainable development and strengthening national resilience.



Further, it was also evident that special measures are needed for addressing the particular needs of the vulnerable and marginalized populations. Even though sectoral approaches help to manage delivery, what was also evident was that interdependencies between strategies and activities in different sectors need to be taken into account while preparing recovery interventions in order to optimize the outcomes. This can be supported by effective communication among agencies and with affected people and their communities, and their inclusion in reconstruction planning and decisions.

The earthquake of 2015 was a reminder of one major disaster risk that Nepal faces. It also underscored the importance of the need for preparedness for responding to the multiple disaster risks we face, including threats of climate change and global pandemics.

Chapter 3 – Conclusion: The way forward – This section bases on the experiences and lessons drawn from reconstruction to make suggestions for policy and practice in the years ahead. The first recommendation is the organization of a national consultation to ensure immediate follow-up on actions based on the lessons learned. The purpose of such a consultation would be to reach agreement on responsibilities for the next steps and for developing a road map for renewal. This would require integration of disaster preparedness and risk-informed development planning, without which strategic post-disaster reconstruction planning will always remain a challenge. However, this is not a task the government can accomplish on its own and would need meaningful engagement with affected people and communities, which has emerged as one of the most important factors that determines the effectiveness of reconstruction and recovery efforts.

Finally, it is recommended that a research or academic institution be designated to serve as repository of all documentation on the reconstruction experience to inform future disaster preparedness and response. The repository can also serve as a research cell for the National Disaster Risk Reduction and Management Authority (NDRRMA) and institutions related to disaster risk reduction and management.



CHAPTER 1

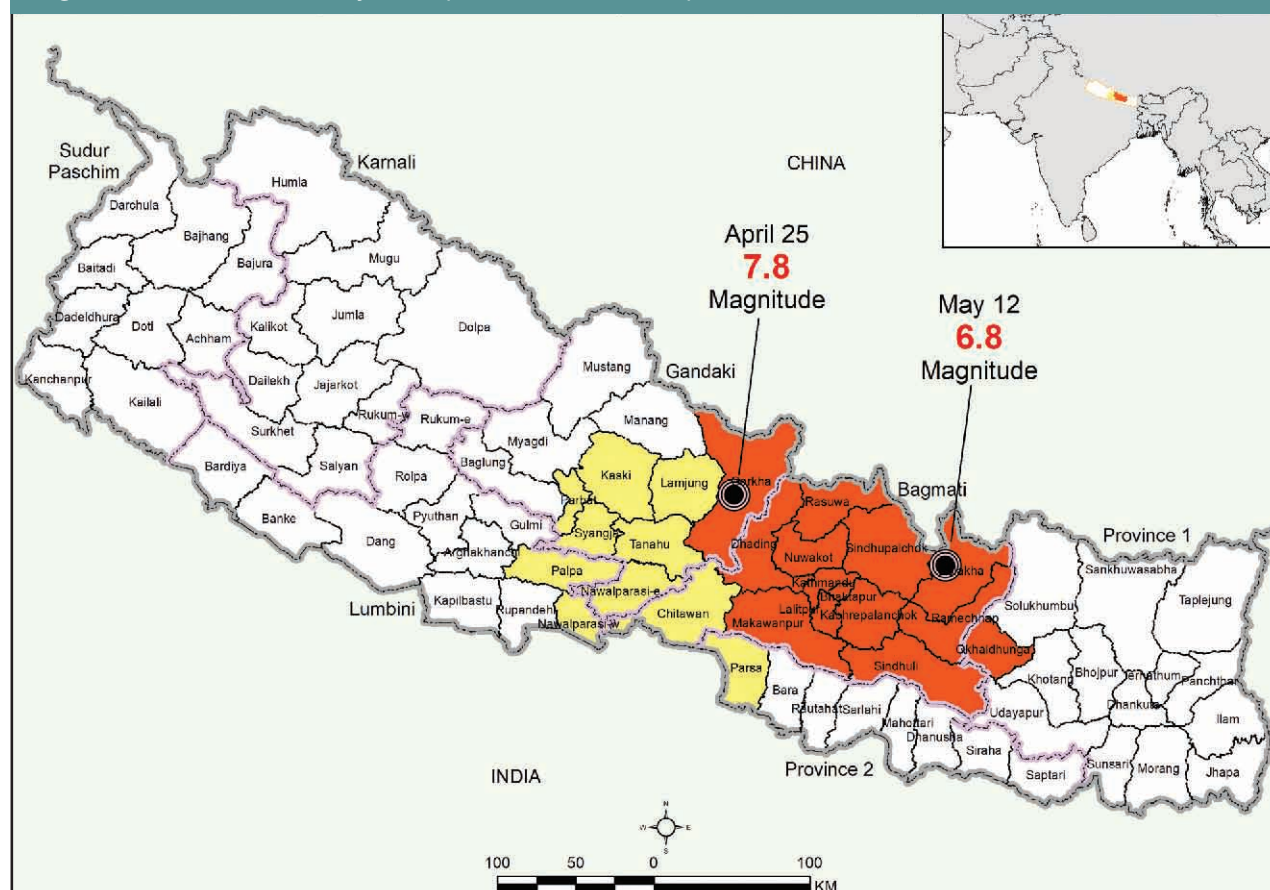
LAYING THE GROUNDWORK FOR RECONSTRUCTION

The context: The earthquake and damages

Nepal, located in the mountainous region of South Asia, has an area of 147,516 km² and a population of about 29 million people. The country is prone to multiple natural hazards such as earthquakes, landslides, avalanches, floods, windstorms, hailstorms, fire, and glacial lake outburst floods (GLOFs). On average, the country is affected by about 900 disasters of varying severity each year that cause loss of life and property and prolonged impacts on livelihoods (MoHA, 2009).

Nepal lost a large number of lives, and property, on 25 April 2015 when the devastating earthquake of magnitude 7.8 Mw, with epicenter in Gorkha district, had occurred. The main shock and the subsequent aftershocks, including one of magnitude 7.3 Mw on 12 May 2015, affected about one-third of the country, including Kathmandu, the capital.

Figure 1: Areas affected by the April 25, 2015 earthquake and aftershocks



The earthquake killed 8,790 people and injured another 22,300. It also destroyed or damaged over 800,000 private houses, and caused widespread damage to public infrastructure, including health facilities, schools, roads, and government offices, including buildings used by law enforcement agencies. The earthquake had affected 32 of Nepal's 77 districts, with severe damage in 14 districts. After losing their homes, food supplies and livelihoods many people were displaced and forced to live in temporary shelters in deplorable conditions. There were shortages of food, water and sanitation facilities at the temporary shelters where the people were forced to stay for almost a year after the earthquake.

The Government of Nepal (GoN) had immediately mobilized all agencies, equipment, and rescue and relief resources to respond to the emergency. It provided affected people shelter in tents, public buildings, and open spaces and supplied relief materials. The government had lacked both preparedness and the experience of coordinating the massive rescue and relief operation that had resulted in problems in the immediate aftermath of the earthquake. In the matter of days, the GoN was able to revitalize rescue and relief efforts and was able to save lives, establish interim shelters and distribute relief materials, particularly food, water and medicines more effectively. Building on the successful rescue and relief response, the GoN committed to accelerate post-earthquake recovery and reconstruction to restore normalcy as soon as possible.

Recovery Needs: Post Disaster Needs Assessment (PDNA)

Following the earthquake of 25 April and the major aftershock of 12 May 2015, the GoN had mobilized all national and international resources available for urgent relief and life-saving humanitarian actions. Simultaneously, it had prioritized the preparation of the Post-Disaster Needs Assessment (PDNA), as the first step towards long-term recovery and reconstruction planning.

The PDNA was based on a standard, internationally-established methodology, and provided a sound basis for resource mobilization and for establishing recovery priorities. The PDNA process was led by the National Planning Commission (NPC), with support from Nepal's international development partners (donors). The process had drawn participation of various government departments, international development partners, civil society organizations and the private sector who provided inputs to the sector reports. The objective of the assessment was to take stock of the damage and losses inflicted by the 25 April earthquake and its aftershocks, estimate recovery and reconstruction needs, outline the core recovery principles and strategies and recommend implementation arrangements for long-term recovery and reconstruction. The assessment was completed in less than a month, and had involved extensive consultations with diverse stakeholders, including the participation of over 250 national and international experts. The PDNA provided the GoN a basis for mobilizing resources for the multi-year recovery process that lay ahead.

The PDNA had estimated the total damages and losses of NRs. 706 billion (US\$ 7 billion). The damage caused by the earthquake directly in terms of housing and infrastructure was estimated to be around US\$ 5.174 billion and the additional losses across the social, productive and other sectors about US\$ 1.89 billion. It had also taken into account the cross-cutting issues of governance, disaster risk reduction, environment, and forestry-related concerns. The document had estimated that around NRs. 669 billion would be required to reconstruct the damaged buildings and infrastructure and to support recovery in different sectors that had been affected by the earthquake.

Table 1: Total Disaster Effects and Recovery Needs

	Disaster Effects (NRs. million)			Distribution of Disaster Effects (NRs. million)		Losses in personal income (NRs. million)
	Damages	Losses	Total	Private	Public	
Social Sectors	355,028	53,597	408,625	363,248	45,377	-
Housing & Human Settlements	303,632	46,908	350,540	350,540	-	-
Health	6,422	1,122	7,544	1,394	6,150	-
Education	28,064	3,254	31,318	2,365	28,953	-
Cultural Heritage	16,910	2,313	19,223	8,948	10,274	-
Productive Sectors	58,074	120,046	178,121	158,079	20,043	17,124
Agriculture	16,405	11,962	28,366	25,813	2,553	4,603
Irrigation	383	-	383	-	383	-
Commerce	9,015	7,938	16,953	16,953	-	2,667
Industry	8,394	10,877	19,271	19,271	-	3,654
Tourism	18,863	62,379	81,242	75,105	6,137	6,200
Finance	5,015	26,890	31,905	20,937	10,969	-
Infrastructure Sectors	52,460	14,323	66,783	17,281	49,502	
Electricity	17,807	3,435	21,242	15,569	5,673	-
Communications	3,610	5,085	8,695	1,712	6,983	
Community Infrastructure	3,349	-	3,349	-	3,349	-
Transport	17,188	4,930	22,118	-	22,118	
Water & Sanitation	10,506	873	11,379	-	11,379	-
Cross-Cutting Issues	51,872	1,061	52,933	1,755	51,178	-
Governance	18,757	-	18,757	-	18,757	-
Disaster Risk Reduction	155	-	155	-	155	-
Environment & Forestry	32,960	1,061	34,021	1,755	32,267	-
Total	517,434	189,027	706,461	540,362	166,100	17,124
Total (US\$ million)	\$5,174	\$1,890	\$7,065	\$5,404	\$1,661	\$171

Source: NRA, 2016

Affected
32 Districts



Private houses
damaged
866,207



Loss of lives
8,790 persons



Injured
22,300 persons



Government
buildings
2,656 destroyed
3622 damaged



Health posts
1,164



Cultural
Heritage sites
920



Financial Loss
NRs. 706 billion



Schools
7,583



Classrooms
49,681

LOSS FROM THE EARTHQUAKE

International cooperation and aid for recovery and reconstruction

On June 25, 2015, the GoN organized the International Conference on Nepal's Reconstruction (ICNR) in Kathmandu, with the theme Towards a Resilient Nepal. Its goal was to mobilize and coordinate international assistance for reconstruction and recovery to complement national resources. The ICNR was attended by over 300 delegates from 60 nations, and had resulted in commitments to provide US\$ 4.1 billion (1.97 billion as grants and 2.14 billion as loans) for reconstruction. The GoN signed financing and project agreements with a wide range of international development partners for its reconstruction priorities: private housing, education, health, livelihoods, cultural heritage, resilience-building and disaster management. In addition, many bilateral and multilateral organizations, UN agencies, non-governmental organizations (NGOs) and private charities continued to support ongoing emergency relief, which included interim shelters, food and nutrition, cash-for-work, water and sanitation (WASH), health and education support and other early recovery needs.

National Reconstruction Authority (NRA): Establishment, provisions and objectives

The GoN issued an ordinance in June 2015 to set up the NRA as a special institutional mechanism to lead and coordinate the country's post-earthquake recovery and reconstruction effort. It was announced before the ICNR. However, the parliament did not endorse the ordinance as required by law causing the institution to cease to exist, owing mainly to political negotiations that were focused mainly on promulgating a new constitution. The Constitution was promulgated in September. The Legislature-Parliament passed the bill related to the Reconstruction of Earthquake Affected Structures on December 16, 2015 and the NRA was established on December 25, 2015, eight months after the earthquake.

The NRA was provided a comprehensive five-year mandate, with a possible extension of one year, for completing recovery and reconstruction. The Reconstruction Act laid out the functions, duties, and authority to the NRA, including both implementing and coordinating roles. It was made responsible for allocating reconstruction funds, approving plans, budgets, and programs; managing relocation and rehabilitation; collaborating with key stakeholders; building implementation capacity; monitoring and quality control; and ensuring accountability and transparency. The law had spelled out the following objectives:

- To reconstruct, retrofit and restore partially- and completely-damaged residential, community, and government buildings and heritage sites, to make them disaster-resistant, using local technologies as appropriate.
- To reconstruct (restore) damaged cities and ancient villages to their original form, while improving the resilience of the structures.
- To build resilience among people and communities at risk in the earthquake-affected districts.
- To develop new opportunities by revitalizing the productive sector for economic opportunities and livelihoods.

-
- To study and research the science of earthquakes; their impact, including damages and effects; and post-earthquake recovery, including reconstruction, resettlement, rehabilitation and disaster risk reduction, and
 - To resettle the affected communities by identifying appropriate sites for relocation.

Framework for recovery and reconstruction

After formation, the NRA set out to prepare the Post-Disaster Recovery Framework (PDRF) to guide its work for five years by engaging multiple departments and partners. The framework was completed and adopted in May 2016 and it specified the policies, institutional arrangements, financial resources, financial management strategies, as well as implementation and monitoring systems that needed to be put in place for effective recovery and reconstruction. It also laid out the sector priorities and projects required for attaining the recovery objectives.

The vision for recovery was “Well-planned, Resilient Settlements and a Prosperous Society”, and the specific objectives were to:

- Restore and improve disaster resilient housing, government buildings and cultural heritage, in rural areas and cities.
- Strengthen the capacity of people and communities to reduce their risk and vulnerability, and to enhance social cohesion.
- Restore and improve access to services and improve environmental resilience.
- Develop and restore economic opportunities and livelihoods and re-establish productive sectors, and
- Strengthen the capacity and effectiveness of the state to respond to the people’s needs and recover from future disasters effectively.

The PDRF reinforced the PDNA’s proposals and specified project implementation features to be applied in the reconstruction process: owner-driven housing reconstruction; community outreach, consultation and communication with affected communities; cash transfers and social inclusion. It also came with directions on assuring equity in the recovery process, including gender equity, for ensuring environmental and social safeguards. Initially, PDRF had estimated a total recovery fund requirement of US\$ 8.38 billion. Later, after the increase in housing reconstruction grant from US\$ 2000 to US\$ 3000 per household, this increased to US\$ 9.38 billion. This was updated regularly based on the progress of reconstruction and financial resource availability of the government and other donors. The latest updated version of PDRF estimated the financial resources of about US\$ 4.7 billion to be channelled via GoN’s treasury. Subsequent evaluations of reconstruction have shown the need for more diligence in future post-disaster reconstruction efforts, particularly for ensuring the targeted goals and prioritization of environmental and social protection in all financing, including that by implementation partners.

Basic principles adopted for recovery

Owner-driven reconstruction

Nepalis have traditionally built their own houses; hence, it was logical to adopt the owner-driven reconstruction (ODR) approach for rebuilding them. The proposed framework essentially meant enabling the affected house owners to reconstruct houses with supportive policies, financial assistance and technical guidance.

The NRA assisted affected families identified for housing support using a detailed damage assessment, the Household Registration for Housing Reconstruction Survey (HRHRS). Eligibility of households was determined on the basis of the damage suffered. Cash assistance was provided for building disaster-resistant housing with technical guidance, material supplies (as needed), supervision, skills training, and social facilitation through government-instituted mechanisms. Local construction materials were recommended for use whenever and wherever practicable. Tax concessions were also granted for a limited time to facilitate the supply of building materials, including cement, bricks, corrugated iron sheets and iron rods.

The ODR approach was instrumental in providing people the space to select the building type and size, and construction materials, within the constraints of available financing and the requirements of prevailing building standards. It also helped to ingrain a culture of resilient reconstruction, by making homeowners and household members aware about safer construction practices. The approach also allowed for incorporating measures to meet the needs of vulnerable households such as top up grants providing assistance to local authorities to identify vulnerable population groups and their needs, and for training masons and other artisans to support reconstruction.

Build Back Better

Post-disaster recovery and reconstruction offered Nepal an opportunity to enhance the resilience of communities by integrating disaster risk reduction measures with the restoration of housing, services and infrastructure and revitalization of livelihoods, economy and the environment (UN General Assembly, 2016). The GoN adopted the Build Back Better (BBB) principle to work towards making communities resilient during reconstruction.

The NRA enforced compliance to the National Building Code by requiring inclusion of earthquake-resistant features in all houses, public buildings, and social infrastructure built under the reconstruction program. It worked to strengthen policies, laws, and programs to promote, guide and support BBB in recovery, rehabilitation, and reconstruction.

An important lesson drawn from the ODR is that it should be complemented by adequate socio-technical assistance to ensure the realization of the BBB principle. In order to ensure Nepal built back better, the NRA had included all stakeholders – bilateral government agencies, international multilateral institutions, development banks, international and national non-government organizations (I/NGOs), and the private sector, in planning and strategizing. It had also established strong links with both federal and local governments to reduce communication gaps for ensuring widespread adoption of the principle.

Social inclusion

Poor and marginalized families face far greater challenges to recover than others and therefore, the need for specially-targeted support and policy provisions. Operating on the principle of “leave no one behind”, the NRA developed several solutions to support the poorest and marginalized families.

The NRA made efforts to organize community groups to support the reconstruction of houses of single women, differently-abled people, senior citizens, marginalized groups, and communities living in remote and inaccessible areas, and to help them access recovery and reconstruction assistance. Mechanisms were also developed to form Reconstruction Community Organizations (RCOs) and prioritize assistance to disadvantaged people for rebuilding houses. The NRA had also set up other mechanisms for interacting with NGOs and CBOs and for implementing specific measures in partnership with these agencies.

Decentralisation

Nepal’s federal policies provided the basis for decentralized implementation of recovery and reconstruction that encouraged the use of local materials and knowledge. The NRA delegated authority for decision-making and service provision to the rural and urban municipalities, the lowest government level to enable local authorities to address the unique needs related to recovery and reconstruction through local planning and resources.

With the start of federalization in 2017, the NRA amended its policies to devolve and decentralize decision making and other authority to local levels and supported capacity building of municipalities. It ensured realistic and efficient sequencing of recovery and reconstruction by aligning with other sectors (such as community infrastructure reconstruction), and clarifying policies and guidelines for non-governmental contributions through decentralized implementation modalities, while keeping an oversight on quality assurance and compliance with established criteria.

Summary

In summary, the NRA experience has underscored the importance of preparedness and pre-disaster plans, and rapidly initiating reconstruction planning after disasters events alongside humanitarian support. Nepal was successful in coordinating the needs assessment (PDNA) and hosting the international donor conference within just two months of the earthquake. But valuable time was lost in establishing the NRA, owing mainly to the prevailing national political climate. The NRA was formed eight months after the earthquake. The inevitable knock-on effect was the delayed launch of the PDRF, a year after the earthquake. Such delays can be overcome by clarifying the jurisdiction of the new disaster management authority in advance by all parties, especially within the government.

The mandate of the NRA was comprehensive and its responsibilities were far-reaching. The mandate was largely adequate for facilitating the reconstruction and recovery process. That said, the Reconstruction Act 2015, together with the mandate and responsibilities of the NRA need to be reviewed to ensure that future disaster management agency leadership and coordination mandates are inclusive of all likely recovery challenges.



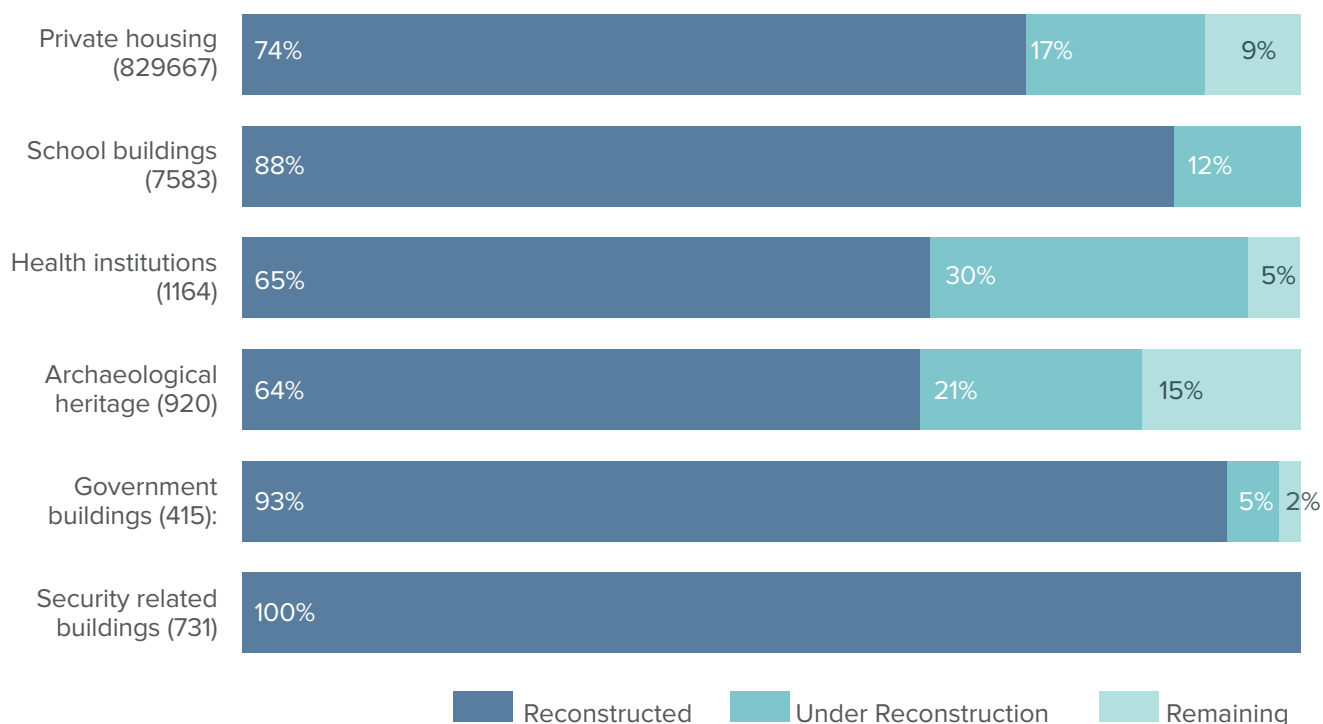
CHAPTER 2

ACHIEVEMENTS, LESSONS LEARNED & RECOMMENDATIONS

Overall progress

Nepal's reconstruction and recovery process has been summarized in five thematic areas: i) governance, institutional arrangements and financing, ii) housing reconstruction, iii) heritage reconstruction, iv) reconstruction of public buildings and infrastructure, and v) livelihood recovery. As seen in Figure 2, all sectors had exceeded 60 percent progress as of November 2021 and the remaining tasks were expected to be accomplished within the remaining months of the NRA's tenure. The responsibility for any outstanding recovery operations, will be transferred to the National Disaster Risk Reduction and Management Authority (NDRRMA) and to sector-specific entities such as the Ministry of Urban Development (MoUD), Ministry of Education, Science and Technology (MoEST) and Department of Archeology (DoA).

Figure 2: Physical progress of reconstruction (November 2021)



Governance, institutional arrangements and financing

The NRA execution of post-earthquake recovery and reconstruction was guided by its strategic framework, institutional arrangements and management structures as outlined by the law and the governance and financial framework.

The NRA was headed by a Steering Committee chaired by the prime minister. The Steering Committee received strategic counsel from the Advisory Council, which had multi-party and multi-agency representation. The Steering Committee was entrusted with making policy decisions and providing guidance and instructions to the Executive Committee. The Executive Committee was made up of thematic experts from four different sectors (management, engineering and social development) and was headed by the Chief Executive Officer. An Appellate Committee within the NRA, led by a high court judge with other expert members, was put in place to ensure social justice during the reconstruction process. Respective Central Level Project Implementation Units (CLPIUs) related to Buildings, Education, Grants Management and Local Infrastructure (GMALI) were formed under the NRA for the reconstruction work. Reconstruction District Coordination Committees provided oversight on the reconstruction efforts undertaken at the district and local levels, through District Level Project Implementation Units (DLPIUs) and local governments.

Together with its establishment, the NRA had to build its institutional structure and human resource capacity, develop standards and guidelines for reconstruction, lead real-time reconstruction operations and coordinate the work of many others who were involved in the task. This had created enormous stresses initially on all involved. Based on the NRA experience, there are several lessons, which are discussed below:

- Preparedness is mandatory. Nepal's development plans must be hazard- and disaster-risk informed. Without risk analysis in development planning, the GoN will not be able to incorporate disaster resilience in its efforts to attain sustainable development goals, or be able to develop the necessary standards and institutional arrangements for disaster management. Low preparation before disasters will make management and recovery difficult.
- A permanent disaster management authority requires the necessary authority, autonomy and capacity commensurate to the expectations from the agency. A whole-of-government consensus on the agency's mandate and powers, and the relationship with government departments would be required to enable the institution to manage funds, institute necessary financial controls and develop the special measures for financial management and disbursements, including coordination of donor financial inputs. This can facilitate human resource management and encourage secondment by public servants when career opportunities are created. These lessons must be a basis for a review of the autonomy of the recently-formed NDRRMA, which must be explicitly spelled out and its working approach must be broadened beyond immediate relief, to include longer-term recovery and reconstruction.
- A simple but effective governance structure is necessary to provide timely oversight, guidance and effective implementation. The NRA had to coordinate with and oversee a number of agencies and organizations, while the relationships with the authority had not been clearly delineated. An analysis of the effectiveness of the organizational arrangements made by the NRA can provide insights in designing the appropriate governance system.
- For effective reconstruction there must be agreement of relevant parties on relevant standards, codes, and practices, including special measures and authority related to financial governance,

budget management, contracting, procurement and recruitment, and project approvals, for example. These prerequisites apply equally to the design of information management systems, preparation of survey instruments, monitoring and assessment protocols, and personnel training.

- Political consensus is vital for disaster recovery and reconstruction at various levels of government. The provisions of advisory council, steering committee, and district reconstruction coordination mechanisms proved effective for the NRA's success.
- All standards, codes, and practices developed for disaster management and recovery need to incorporate measures to reinforce resilience to disasters and the measures need to be rigorously enforced.
- During natural disasters, fast-track emergency procurement procedures need to be invoked immediately as they are critical to the success of post-disaster recovery programs. Procurement procedures applicable for normal times can cause substantial delays in the response. This also applies to finance and accounting procedures, which need to be fast-tracked with the required flexibility for delivering the needs of reconstruction projects.
- Central to success in Nepal's reconstruction has been the NRA's communication strategy and associated consultation processes with stakeholders, and particularly with affected people and communities. The mechanism in place had allowed affected people to express their concerns, articulate their needs, register grievances and provide feedback on reconstruction priorities and approaches. Communication and consultations facilitated community-based reconstruction management, helped in stepping up the pace of housing reconstruction and also provided feedback for improvements, for example, the areas that needed strengthening such as systems for providing accessible and affordable housing construction loans. Further, the consultations need to be local to better understand the specific needs and contexts.

The NRA was able to meet the needs of changing governance arrangement and environment. During the NRA's tenure, Nepal transitioned from a unitary government to the federal republican system that culminated in the elections of all three levels of government in 2017/18. While advancing reconstruction, the NRA also transitioned from a centralized, to an increasingly decentralized agency and localized reconstruction management. Every effort was made to reinforce and support municipalities to assume local oversight, with reconstruction management and service delivery responsibilities. However, the limited experience and capacity of the municipal institutions constrained the transition. Thus, moving forward, priority has to be given to enabling and equipping municipal authorities to fulfill their responsibilities in disaster preparedness, management, and recovery – and to support communities in local reconstruction efforts.

The government benefitted from the contributions of many partners during reconstruction – bilateral government agencies and international multilateral institutions, development banks, I/NGOs, NGOs and CBOs, and the private sector. All of the agencies had their own disaster-related policies, systems and procedures. Therefore, the NRA was required to put in place consultation mechanisms and prepare guidelines for streamlining the participation of all in the reconstruction process. The NRA had formed the Development Assistance Coordination and Facilitation Committee (DACFC), chaired by the CEO, to coordinate its efforts with development partners. The DACFC was effective for communicating the concerns of development partners to the government and vice versa. This provided a platform for the government, development partners, I/NGOs and the private sector to better understand each other's' concerns and to address them effectively.

Finally, the NRA's experience has underscored the importance of establishing early agreements with partners on a range of regulatory mechanisms covering, for example, the financing of reconstruction, procurement procedures, management information systems, monitoring and evaluation, and for aligning the systems of the development partners with those of the GoN. Based on the lessons learned, the government and the development partners need to work together to make improvements in procedures for authorizing the presence, and approving projects of non-governmental partners, in particular, and for monitoring performance, and for reporting and evaluating progress and results.

Housing recovery

Housing was the most pressing need of a large majority of affected-people after the 2015 earthquake. The GoN established principles, institutional mechanisms, and partnerships to enable people to rebuild their homes based on their own needs, resources and preferences. The GoN also established the goal of ensuring that people-built earthquake-resilient houses through the use of appropriate technologies. The key principles and strategies for reconstruction were enunciated in the PDNA that had opted the ODR approach.

To enable people to rebuild houses, the GoN decided to provide reconstruction assistance (financial, technical and social) and supported the affected households in recovery. The average construction cost of a rural house was estimated to be about NRs. 400,000 to NRs. 500,000 (US\$ 4000 to US\$ 5000). The estimate for urban areas in Kathmandu Valley, was between NRs. 1 to NRs. 1.5 million (US\$ 10000 to US\$ 15000) at a minimum. The GoN decided to provide partial support of NRs. 300,000 (US\$ 3000) to all eligible homeowners identified through a detailed damage assessment. The GoN had also made policies to facilitate subsidized housing loans with a guarantee of loan repayment for the banks.

The provisions required eligible beneficiaries to open bank accounts for direct transfer of housing grants, which had enabled many women to open bank accounts that also contributed towards their financial inclusion. Many of them were first-time bank account holders. Their interaction with the banking sector has thus enhanced both financial literacy and empowerment.

Notwithstanding these achievements, there were challenges to loan disbursement, which inhibited households' ability to benefit from the provision. The affected households had limited capacity to pay back, and this added to the skepticism of commercial banks about loan recovery, hampered the loan initiative. The limited access to formal loans forced a portion of beneficiaries to seek high-interest, privately-funded loans that significantly added to their debt burden.

The reconstruction policy had a provision for providing NRs. 50,000 (US\$ 500) as top-up grant to households identified as vulnerable. The beneficiaries were selected based on the findings of the Damage Assessment Survey done by the Central Bureau of Statistics (CBS). The government had also provided land or financial support for land purchase to facilitate house reconstruction by landless families and the families residing in risky areas. The grants were disbursed after the signing of the Grant Agreement – also known as Participation Agreement—by the local government and the eligible house owner.

Achievements

As provided in Figure 2, housing reconstruction had progressed, despite the many challenges that were faced. The transition of governance from unitary to a federal arrangement was complex – even

in mid-2021, when roles of the three government levels were still being defined. The NRA had to continuously review and define reconstruction approaches and procedures to match the changed context. Some of the key achievements were:

- The ODR approach pursued by the NRA enabled people to reconstruct houses to match their needs and preferences and was also pivotal for making communities aware of disaster resilience and risk reduction.
- An effective, transparent, inclusive, and credible damage assessment method and systems were established at the federal and local levels. This helped to properly assess the needs, and identify the beneficiaries.
- Post-earthquake reconstruction became an opportunity to enhance financial inclusion of many first-time account holders who were required to have bank accounts for receiving government grants for housing reconstruction. This also ensured a leakage proof and transparent grant assistance disbursement system that can be used by the GoN in the future.
- A robust awareness campaign, training of engineers, technical staff and craftspeople, application of earthquake resistant housing technologies with local construction materials, as well as practical local-level demonstrations, assisted in strengthening people's confidence in safer reconstruction practices, and
- The development of a combined workforce of more than 600,000 engineers, masons and other workers – including a large number of women - was another major achievement in the housing sector.

Table 2: Housing recovery progress

	Total	Completed	Ongoing
Landless (beneficiary)	12757	12337	420
Resettlement beneficiaries	4720	2756	Remaining beneficiaries supported through different routes.
Integrated settlement (settlement)	128	68	60

Lessons learned

The process of facilitating housing reconstruction resulted in many important lessons that are discussed below.

Successful housing recovery depends on the prompt, accurate and comprehensive survey of damages, clear classification of damage parameters based on the severity of damage, and clear standards for inclusion or exclusion, with regard to eligibility for financial assistance. These can facilitate prompt start of housing reconstruction, provide a basis for educating affected people on the options of rebuilding or retrofitting, and also in minimizing the number and type of grievances of homeowners.

A well-designed, comprehensive and clearly-defined reconstruction policy is essential for a successful reconstruction program. Central to Nepal's successful housing reconstruction were different practical

policies and operational guidelines issued by the NRA; financing provisions; seismic-resilient building designs; construction and retrofitting standards; provisions for land acquisition and recognition of land tenure rights and the development of guidelines for risk assessment, and in-situ risk mitigation and/or community relocation, as necessary. It is essential to codify and combine the guidelines into one standard policy for addressing post-disaster housing reconstruction and to facilitate the ongoing efforts to retrofit the existing housing stock to increase resilience to earthquakes and other disaster risks.

Human resource requirements had created multiple challenges in housing reconstruction and also resulted in a number of important lessons: the need to develop a roster of appropriately-trained engineers for rapid mobilization; expand the training of architects, engineers and artisans to increase their knowledge of and competence in building houses with traditional materials, methods and designs for ensuring both the resilience of such buildings, and to minimize the loss of culturally-significant and location-appropriate vernacular housing types. Equally important was the creation of livelihood opportunities for women in engineering and construction-related vocations. This helped to expand the talent pool available, to build recognition of the capabilities of women, and in promoting gender equality. Another important input to housing reconstruction was the socio-technical assistance provided by different partners, and particularly between the NRA and NGOs in the housing sector, which was facilitated by a non-governmental organization.

Similarly, what has become clear is that ODR efforts must be accompanied by a well-designed communication strategy for facilitating effective and regular information exchange with affected homeowners, communities and other stakeholders. Collective community approaches for making reconstruction affordable through labor exchange and financing, for example, using community or municipal revolving funds, were other important learnings. While access to housing grants through the banking system was critical to the success of reconstruction, it was also clear that homeowners, particularly the most vulnerable, required additional access to affordable financing because they were considered un-bankable by commercial banks even though they were most needy. Finally, where male heads of household are absent or households are headed by women, they require assistance to prepare relevant documentation and also the recognition of their rights as equal citizens. Such measures can ensure prompt determination of eligibility of vulnerable groups for reconstruction assistance.

Other lessons from housing reconstruction program were as follows:

- Ensure the implementation of constitutional rights for housing provision to every citizen through the incorporation of comprehensive provisions in policy and legislation for post disaster reconstruction.
- Compile a reference collection of tools, guidelines, standards, and procedures for addressing housing, and land and property rights in post-disaster and crisis situations for use as a resource in disaster management, including the preparation of disaster response protocols.
- Ensure that all citizens have adequate documentation and identity cards, and that all three levels of government have updated information of citizens, including that of their integrated property, housing condition and socio-economic situation.
- Undertake hazard mapping and risk analysis as part of development planning.
- Integrate social protection provisions in reconstruction programs and provide clear definitions of vulnerability – disaggregated in terms of class, caste, gender, age, disability or vulnerability to natural hazards – and map the location of vulnerable individual, groups or communities, and make special provisions to assist them in reconstruction planning, financing and material support.

- Implement special legal provisions for providing land titles to women, female-headed households and widows more systematically.
- Address the issue of indebtedness and options for providing access to low-cost credit.
- Provide clear information on the terms and conditions of cash grant agreements as was made during housing reconstruction process.
- Develop clear procedures for access to housing grants, to low- or no-interest loans, to bank accounts or alternative avenues for cash transfers.
- Ensure early establishment of a range of channels for two-way communication between beneficiaries, communities, local and central level authorities.
- Ensure communication and advocacy of resilient housing and appropriate earthquake-resistant technology options in collaboration with communities, especially focusing on the districts that were not affected by the earthquake but are at risk in the future.
- Articulate clear policies and procedures for resolving grievances, complaints and disputes.
- Based on the housing designs, standards, specifications and technology options for reconstruction and retrofitting, make an understanding and mapping of the cultural, social, environmental and topographical variations in housing design; and the requirements of households.
- Train architects and engineers in seismic resilience of vernacular designs and traditional structures, including load bearing mud-mortar structures, in both urban and rural housing designs, structures and habitation patterns. Another important area for training technical personnel is retrofitting.
- Make provisions for proactively including women in professional and occupational training at all levels.
- Support measures to ensure competence, capacity and resources at the municipal level for managing reconstruction operations, and
- Place increased emphasis on physical, social and economic community infrastructure as well as on individual housing.

Heritage structures and communities

Cultural and religious heritage in Nepal encompass a vast array of intangible cultures, including local traditions, values and norms, personal and social lives, livelihoods and the economy. Heritage recovery is therefore a complex issue, and one that correlates directly with the recovery of the affected communities and of the country as a whole. Nepal's cultural heritage is not limited to UNESCO-designated World Heritage sites, but is embodied in the ways of life in the thousands of communities across the country.

Nepal's heritage sites and monuments are part of the lives and collective identities of citizens and carry significant religious, emotional, and cultural values. Citizens and their heritage are inextricably

intertwined and therefore, it is necessary to coordinate recovery efforts and secure the participation of people in the restoration of heritage sites and monuments.

Achievements

The NRA has made substantial strides in restoring and reconstructing damaged and destroyed heritage structures. Figure 3 shows the progress in the physical reconstruction of heritage sites and structures. There were various obstacles, however, and they included:

- Limited archival documentation on heritage sites and monuments.
- Complexities regarding the operational and decision-making responsibilities of different organizations and levels of government.
- Varying ideas on restoration approaches, methods, and materials.
- The “lowest cost” preference and complex public procurement system.
- Earthquake resistant technologies for the restoration of heritage monuments using traditional construction materials, technologies and architectures were developed and implemented. It has created a strong basis for the restoration and conservation of Nepal’s large number of archaeologically important monuments and heritage sites.
- The documentation of the restoration process has given the basis for conserving more monuments in the future.
- The NRA had adopted special procurement and legal provisions for engaging the local communities in heritage reconstruction. These provisions can also be applied in future conservation works.
- Enhanced tourism flow and support to Nepal’s economy.

Lessons learned

The process of restoring and reconstructing heritage structures and communities has provided many lessons for conservation of Nepal’s cultural heritage – both tangible and intangible – through adequate disaster preparedness and incorporation of measures to strengthen the resilience of heritage sites, monuments and communities. Some of the lessons are:

Figure 3: Physical progress on reconstruction of heritage sites and structures



Need for a comprehensive framework: One of the most important lessons learnt has been the need for a comprehensive framework to document all heritage sites and structures. Such documentation can help to avoid conflicts and delays in restoration that were observed after the Gorkha earthquake. Such documentation must be based on historical records and attributes of Outstanding Universal Value (OUV). The documentation should include – but not be limited to – measured drawings, photographs, archaeological notes and memoirs, observed damage to the monuments, and, where possible, geotechnical and foundation details. These must be stored in an accessible, commonly-used platform and in a form and format that is easily transmissible.

Engagement with local communities: Heritage sites and monuments are part of Nepal's living traditions. Recognizing that these provide social coherence and are sources of the personal and collective identities of citizens, communities need to be included in information-sharing and decision-making on repair, maintenance, restoration, or other interventions at heritage sites and monuments. This may appear to be a difficult as it involves effective coordination with the communities but this is the only way for ensuring community ownership of heritage sites and monuments and their sustainability.

Intangible heritage: The intangible heritage is the community fabric that protects and promotes tangible heritage, maintains the cultural importance and also contributes to the local economy. The role of the communities in protecting and preserving materials from damaged or destroyed heritage monuments and sites is crucial for reconstruction. At the Patan Durbar Square, for example, early community intervention was the key to preventing indiscriminate rubble removal and for preserving materials for reinstallation at the damaged heritage structures.

Repair and maintenance plan: Many heritage structures had collapsed because they were in already poor condition for lack of maintenance or use of inappropriate construction materials or for the inability to understand the structural systems employed. There is need for a comprehensive plan for regular repair and maintenance, seismic assessment, strengthening and restoration as part of disaster risk-informed development planning. This needs to be facilitated by appropriate, site-specific bylaws. It may not be possible to strengthen every monument, but a comprehensive plan can expedite repair and restoration if damaged or destroyed by future disaster events.

Procurement of reconstruction services: Repair, restoration, or reconstruction of traditional monuments is a complex and time-consuming task as it requires thorough understanding and a range of specializations. Cost is not the only factor. The preference for the lowest-bidder in the tendering process – the prevalent mode of awarding contracts – is inadequate for ensuring proper restoration of such structures as it can lead to cutting costs, and poor and culturally insensitive work. Work through contractors without engaging with the local population can also alienate the community, whose engagement is essential for protecting the tangible and intangible values of monuments. The Public Procurement Act needs to incorporate systems and procedures to address these issues. A policy is also required for setting standards of assessment and maintenance of the existing heritage sites and structures to ensure they are kept in good condition.

Use of appropriate materials and skills: There is need for agreement among stakeholders on the appropriate use of construction materials, skills and technology. Respect for structural and historical integrity is essential, but this should not exclude the use of appropriate modern materials and technology for stabilizing damaged structures, retrofitting monuments, or restoration, taking into account international charters and practices. Such use must be allowed while considering the values and belief systems of the relevant communities.

Governance for restoration: The governance arrangement for restoration, reconstruction and conservation of heritage sites and monuments requires further clarification within the boundaries set by the 2015 Constitution of Nepal. The governance arrangement needs to also clearly identify the roles of different levels of government and other stakeholders, their responsibilities and decision-making in order to avoid conflicts, and to facilitate smooth restoration and reconstruction.

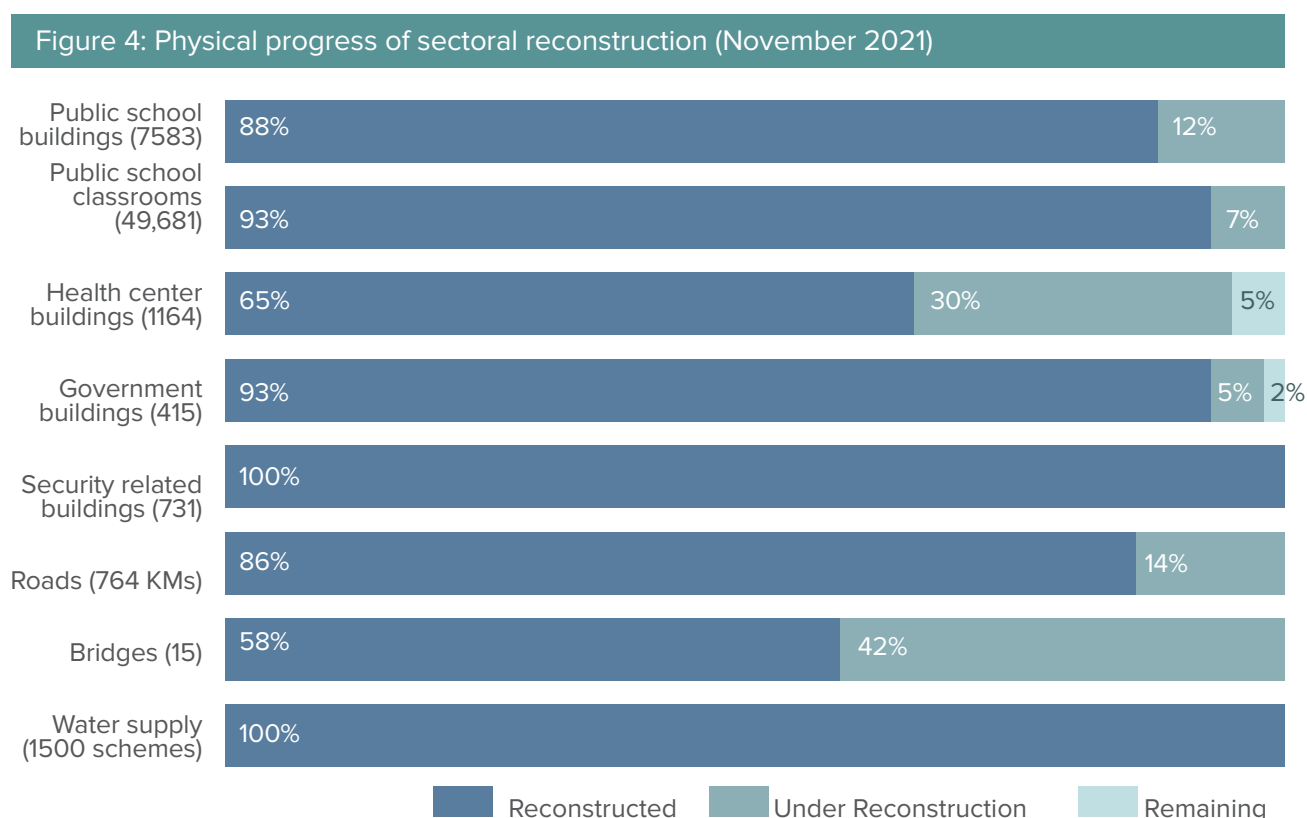
Research and documentation: Nepal needs to improve the research environment and facilities for supporting preservation of its rich cultural heritage. The research areas that need to be addressed include, (1) socio-cultural aspects of tangible and intangible heritage; (2) optimal ways for conserving both tangible and intangible heritage; and (3) vernacular construction materials, skills, and systems. Also needed is the development of an integrated real-time management system of heritage sites, monuments and artifacts. The results of such research and studies should be made widely available to all stakeholders in government as well as those outside the government system.

Social and public infrastructure

This thematic area included facilities associated with communities such as schools, health posts, government and security agency offices, rural trails and transportation infrastructure.

Achievements

NRA has made substantial progress in restoring and rebuilding social and public infrastructure, despite confronting numerous obstacles, including accessibility, challenging geographic and climatic conditions, complex logistics and inter-department coordination, and limited financial and human resources. Figure 4 shows the progress in physical reconstruction of various infrastructure and facilities:



Lessons learned

While switching to the federal structure of governance, the Constitution has delineated a list of concurrent powers of central, provincial, and local-level governments. Accordingly, all three levels of government have disaster management functions. Coordination among the three tiers of government was therefore essential for the completion of recovery and reconstruction of social and public infrastructure. The crucial lessons learnt during the recovery process of rebuilding community infrastructure are:

- Social and public infrastructure are not only essential for safer communities but also serve as key drivers of sustainable development. Most existing infrastructure in both rural and urban areas are vulnerable to hazards. The NRA's disaster recovery experience has underscored the need to consider both risk and resilience while planning development, including design, construction, regulation, and management of social and public infrastructure. Critical infrastructure must be built in strict compliance with relevant codes. However, in reality, while the codes existed, compliance was too often ignored and/or was infrequently enforced. In addition, where financial and technological limitations constrain compliance with relevant codes and standards, alternative plans to mitigate disruptions, reduce losses and strengthen resilience need to be explored.
- There was significant variation between the standards used for various public structures designed and constructed by different agencies. Most of the public structures designed and built by government agencies followed the NBC and other associated codes. However, the structures designed and built with support from bilateral agencies were designed following the building codes of the respective countries. This variation has raised a question of uniformity and equitable distribution of resources. Further, the building codes are presently enforced only in municipal areas. There is therefore the need to prioritize the enforcement of the building code also in rural areas.
- Timely assessments and periodic repair and maintenance are extremely important for the safety of public buildings and infrastructure. Most of the public structures damaged by the earthquake lacked proper and timely maintenance. Necessary steps should be taken for maintenance and seismic retrofitting of the priority structures before they suffer significant damage.
- Recognizing the country's geographic and topographic complexities and varied site-specific situations, it is essential to develop a wider range of technology options to ensure flexibility and appropriate use of both modern, traditional and vernacular methods. Necessary steps need to be taken for seismic strengthening and retrofitting of existing priority infrastructure, particularly in the health, education, and transportation sectors.
- In preparation for the reconstruction or retrofitting of historic Rana period public buildings, the NRA carried out the evaluation of structural integrity assessment through non-destructive tests, foundation exploration, geo-technical studies and detailed damage assessments. These were necessary to determine the appropriate design of retrofitting solutions that would respect the conservation requirements, while ensuring that the same architectural elevation and building footprint were retained, even when new materials and technologies were used. All reconstruction plans were subject to the approval of the Department of Archeology (DoA).
- Access to land for infrastructure development remains a significant challenge, given that the limited flat land available in the hills that is usually prioritized for agriculture by local communities. Sites in difficult locations incurred additional costs owing to the challenges of engineering design, logistics and transportation of construction materials. The process of land acquisition was also extremely complex and challenging, and required coordination with multiple ministries. Hazard mapping, identification of associated risks, susceptibility zoning, and risk-informed land

use planning are essential for disaster-resilient reconstruction and infrastructure development. The involvement of local communities in these processes can increase the effectiveness of these processes.

- To assure the effectiveness of infrastructure systems, governance frameworks, budgetary provisions, material supply chain management and supply of trained human resources needs strengthening at all levels. Shortcomings in these areas were among the most significant challenges faced during recovery and reconstruction of social and public infrastructure.
- Social and public infrastructure systems can be more resilient when their governance and day-to-day functions integrate disaster preparedness. With this perspective, school safety programs and school disaster management plans are now being integrated in the school management systems and curricula. Similarly, hospital preparedness programs are being implemented in public and private hospitals. Such initiatives need to be scaled up and standardized for nationwide implementation.

Livelihoods and economic recovery

The devastating Gorkha earthquake affected employment and livelihoods of about 2.29 million households and 5.6 million workers across 32 districts, resulting in the loss of 94 million workdays. The most affected sectors were agriculture, which lost 49 percent of the total workdays, followed by tourism (31 percent), industry (12 percent), and commerce that lost eight percent workdays.

Livelihood support was a key component of recovery and reconstruction. Its purpose was to improve the overall quality of life of people in the earthquake-affected areas. The livelihood support program had the following objectives:

- Meet immediate basic needs of the affected population such as securing food items (food & water) and non-food items (fodder, medicines, health, and clothes)
- Rebuild assets essential for the recovery of livelihoods
- Stimulate local economy through an economic grant, housing and occupational loans, cash-for-work, and financial services, and
- Enhance the employability of those affected by the earthquake.

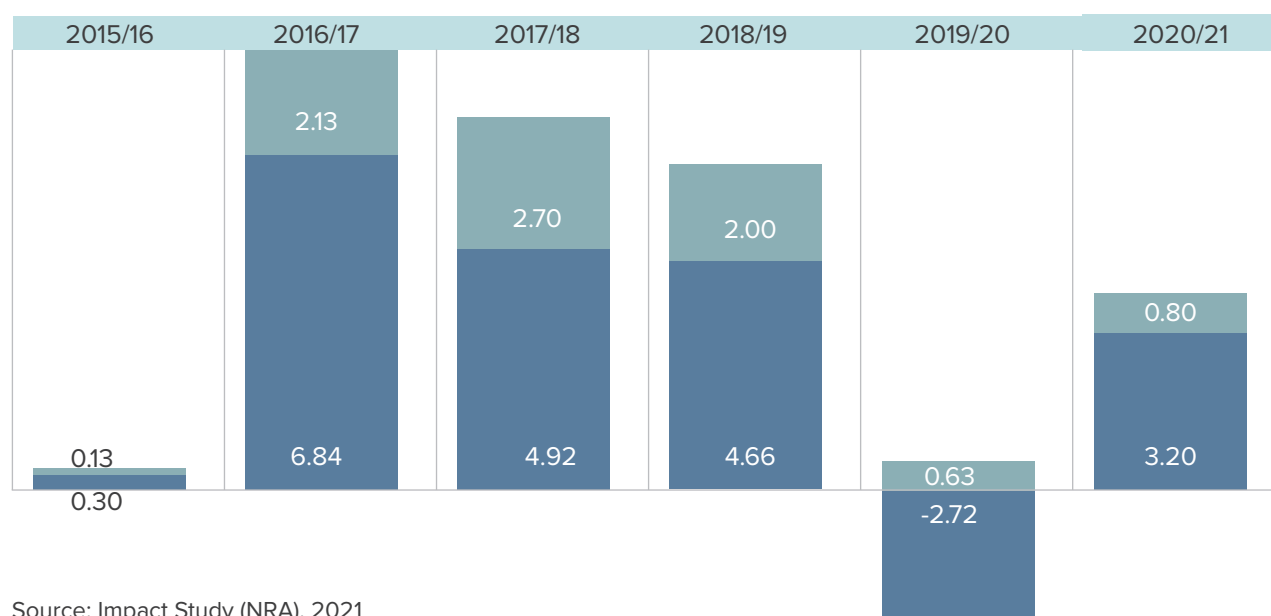
Achievements

In the past five years, the NRA, with support of relevant line ministries, development partners and local governments, employed different approaches and arrangements to reach out to communities affected by the earthquake.

Employment generation, acceleration of local economic recovery, training and capacity building, cash for work, commercial agriculture and livestock loans, and economic packages were the main interventions implemented for livelihood support. Both short-term and long-term trainings were effective in enhancing local capacity, as well as providing women and the differently-abled people with work opportunities. The mechanism developed to hear the voices of the disadvantaged was one of the main pillars of the

NRA's recovery approach. The cash-for-work schemes were welcomed by communities as these gave them independence of choice among the options available. Besides injecting much-needed money into the local economy, cash-for-work schemes helped communities to embrace a collective "group work" approach that was important to ensure sustainability of the activities undertaken.

Figure 5: Contribution of reconstruction to GDP



Source: Impact Study (NRA), 2021

Lessons learned

Some of the important lessons from the livelihood support initiatives undertaken are:

- Communities frequently perceived livelihood interventions as relief, rather than development activities, which tended to reinforce the prevalent dependency syndrome. Therefore, future interventions should seek to guide communities towards sustainable development to enhance self-reliance. Mapping the potential of locally-trained human resources and providing them job opportunities are essential. This should be a priority of local governments.
- Livelihood interventions have the best chance of being successful when affected people are involved in the design, have a say in implementation and when specific measures are included to encourage women's leadership. Livelihood strategies are effective when integrated with other reconstruction activities and when they consider contextual variations and the different characteristics of population groups.
- Collective livelihood initiatives can work particularly well when the focus is on the recovery of the community as a whole instead of individuals. Collaborative community efforts were very effective: membership of cooperative livelihood associations is an effective way of empowering vulnerable people and households. Such associations also provide a platform for promoting access to finance and markets. This was evidenced in "demand aggregation centers" for collective storage and marketing of local products. Private sector participation was also useful for strengthening access to markets.
- Communities appreciated cash-for-work schemes that encouraged collective effort, self-reliance, and sustainability. The injection of cash into the community and the opportunities to increase

income of individuals enhanced economic independence and empowered people to make choices for using their earnings, be it to upgrade their houses, to enhance their ability to access health care and medicines, or to pay for educating their children.

- Self-sufficiency and long-term sustainability of livelihoods are important for people living with disabilities and for women-headed households. These groups can benefit from livelihood programs aimed at addressing their particular needs. Training of women as masons offered them new avenues for immediate and medium-term employment, while also contributing towards challenging gender stereotypes. However, particular attention is needed to develop livelihood interventions to ensure sustainability of employment once the reconstruction programs end.
- Sustainability of livelihoods assumed greater importance after the Covid-19 pandemic that has disrupted traditional coping strategies of many earthquake-affected families, such as the flow of remittances to communities from family members working overseas. Many workers who have returned home will need to find means to earn and support their families. Cash-for-work schemes can offer longer-term development and employment opportunities even after the recovery process ends.
- The ODR approach of housing reconstruction along with the use of local construction materials and locally trained masons provided opportunities for local people and local entrepreneurs to get jobs. Housing reconstruction policy should seek to create jobs for local people.

Cross-cutting lessons

In addition to the thematic area-specific achievements and lessons outlined above, a number of cross-cutting lessons have also been learnt in the reconstruction process. They were:

Preparedness: A basic lesson learned is that preparedness for disasters, together with hazard mapping and planning for post-disaster recovery and reconstruction cannot wait until another disaster event. In countries that face multiple risks and hazards, it is a must to have medium- and long-term development plans to be disaster risk-informed. Development planning, at every level of governance, must therefore incorporate disaster risk-informed analysis.

Context-specificity: Reconstruction must be context-specific in terms of topography, culture, and socio-economic characteristics of population groups. Such context-specific considerations must be integrated into disaster preparedness. The entire recovery process can be delayed if the definition of context-specific strategies begins when reconstruction is about to start.

Vulnerable and marginalized groups: The particular needs of vulnerable and marginalized groups must be considered in advance of recovery and reconstruction. Once again, this demands that development planning at all levels incorporates analysis of the vulnerabilities of specific at-risk groups, whether defined by gender, age, disability, location, land ownership, ethnicity, socio-economic status, etc. By definition, vulnerable groups have special needs that are exacerbated during a crisis and therefore need to be addressed with specific, targeted measures. The NRA had developed a series of specific reconstruction provisions for vulnerable populations. The delays faced in implementing these provisions could be reduced by incorporating prior analysis of vulnerabilities in disaster risk-informed development plans and by identifying, in advance, the potential measures to address post-disaster vulnerability.

Inter-sectoral dependencies: Sector-specific disaster impact analyses, reconstruction strategies and operations will be deficient unless they take into account the dependencies between and across different sectors. For example, householders' capacity to reconstruct their dwellings requires context-specific, earthquake-resistant design standards, together with accessible and affordable measures for financing. It also requires restoration of livelihoods to enable households to manage their debts, while making choices about investing in housing, health care or education of children. These can be possible when there is functioning community infrastructure – among others, water supply systems, surface transport – and availability of raw materials for reconstruction, and price controls.

Communication and inclusion: Communication with affected people and their communities in reconstruction planning, establishing priorities, and decisions affecting their lives were cornerstones of Nepal's successful reconstruction. Lack of clear communication or miscommunication can create uncertainty, frustration, and delays. Culturally appropriate means of consultation and feedback, and for registering and resolving grievances were also central to the successful reconstruction. It is clear that reconstruction is most effective when the issues of both communication and inclusion are considered in pre-disaster planning and preparedness.

Risk and vulnerability: Future earthquakes remain a major risk for Nepal. But there also are other risks that the country could face in terms of other natural disasters that have been exacerbated by climate change. Nepal needs to begin planning for reducing vulnerability to the risks and for building resilience.

NRA handover and the way forward

Most reconstruction operations have been completed as planned. However, some recovery activities are still underway and need to be completed. These relate to urban recovery, retrofitting of partially-damaged houses and recovery of heritage structures. The NRA has handed over these responsibilities to relevant government agencies to ensure institutional continuity. The handover includes transfer of human resource capacities and institutional memory. The handover was done to the Ministry of Urban Development (MoUD), Ministry of Culture Tourism and Civil Aviation (MoCTCA), Ministry of Education, Science and Technology (MoEST), and the Ministry of Federal Affairs and General Administration (MoFAGA). All residual activities will be handed over to the NDRRMA.

Long-term risk reduction measures

One of the more successful elements of the post-earthquake reconstruction process has been the implementation of the BBB principle at both the national and sub-national levels. All infrastructure and houses have been built in compliance with building code requirements and other relevant guidelines. The enforcement mechanism for ensuring resilient construction was robust and included mobilization of trained human resources to perform compliance checks. The same model can be adapted for promoting resilient construction throughout Nepal by strengthening relevant institutions and implementing the practices tried-and-tested during reconstruction. This will require the development of a support mechanism for municipalities. Significant human resources were trained and mobilized for supporting local governments during reconstruction, and this workforce needs to be retained at the local level, which will require both proper policies and incentives.



CHAPTER 3

THE WAY FORWARD

Disaster preparedness and recovery

The NDRRMA is the logical institution to take forward the lessons learned from the recovery and reconstruction experience. The strengthening of NDRRMA needs to be informed by the institutional experience of the NRA to better prepare for facing and recovery from future disaster events.

The lessons learned from the recovery experience also need to be shared widely. A national consultation that brings together international and national partners, including CSOs, can assist in selecting priorities and planning the way forward. The NRA disengagement and the NDRRMA engagement process has already started and needs to continue to prepare action plans that can result from such consultations. The plans will need to address the needs for strengthening of institutions and streamlining relationships and procedures for disaster management and recovery operations.

Role clarity and road map for effective recovery

Many government institutions and other organizations can contribute in post-disaster recovery and reconstruction. All such institutions need to prepare road maps to guide their roles in recovery and reconstruction, particularly on matters under their jurisdiction and specialization, and coordinate the efforts with other stakeholders. The availability of resources will always be a challenge. Thus, the need to have clear priorities for recovery and reconstruction that would need to be integrated in regular development planning for effective implementation. The National Planning Commission and the Ministry of Finance can play key roles in advancing the initiative.

Integrated, risk-informed planning

Recovery and reconstruction efforts can suffer if not preceded by planning: For this, disaster preparedness must be a part of routine development planning. Nepal faces multiple hazards and disaster risks, including more recent phenomena such as the Covid-19 pandemic and the accelerating pace of climate change. Responding to such risks go beyond the capacities of disaster management specialists alone. They are – and should be – a priority of all citizens because addressing the risks is critical for both sustainable development and for building a more resilient Nepal.

Engagement with communities

Disaster risk management and planning for disaster risk-informed development has to be a joint initiative of both the government and affected communities. The continuous and meaningful engagement with communities and affected families from damage assessment to reconstruction was what made the reconstruction effort a success. The engagement must extend beyond one-way communication to active engagement with communities in project and activity planning, and in decision-making as such engagement can enhance the ownership of the reconstruction enterprise and also help towards enhancing local understanding on the need to enhance resilience, improve the ability to mitigate risks and face and recover from disasters. This does not need not wait until another disaster but needs to begin now to identify risks and devise mitigation strategies as part of regular governance.

Continuous monitoring of recovery and research

The lessons and experiences discussed in various reconstruction reports and research articles that have been published discuss Nepal's experience to great lengths. They not only provide evidence-based information on Nepal's successful recovery but also discuss areas that require improvements. It is recommended that a research or academic institution be identified to serve as a repository of all documentation on reconstruction. Such an institution can continue to track progress in preparedness and risk reduction and also function as a research extension for the NDRRMA. The lessons gathered so far are important but there will be long-term impacts that need to be monitored and documented for deriving more lessons. The research institution and/or other relevant organizations need to have resources and plans to continuously monitor and gather lessons learned from the remaining recovery activities, and from future disaster events.

Managing trained human resources

Significant human resource capacities have been developed as part of the Nepal's reconstruction, with substantial investments from both national and international organizations. It is likely that the people who were trained – both women and men – could disperse in their efforts to continue with their lives and this could result in the loss of their collective knowledge and expertise. Hence, it would be important to find ways to retain and continuously train more women and men on key skills at various departments, from federal to local levels, for building a pipeline of trained human resources for disaster risk reduction and management. Similarly, the continued use of the trained field-level experts such as supervisors, craftspeople, masons, and engineers need to be carefully planned to ensure optimal returns from the investment in building capacity.

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