

Inclusion of the Poor and Vulnerable: Learning from Post Earthquake Housing Reconstruction in Nepal

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Abstract

The poor and vulnerable people are the most affected in any disaster and find recovery extremely challenging. As 'leave no one behind' was one of the key principles for reconstruction and recovery after the 2015 Nepal earthquake, the need for inclusive and targeted policy provisions and socio-technical facilitation was well identified. Nepal's post-earthquake housing reconstruction is world's largest and probably the most complex recovery program under which nearly 700,000 houses are being constructed. This paper examines policies, and implementation mechanisms to ensure social inclusion in this post-earthquake housing reconstruction process in Nepal. Provisions of inclusive recovery were introduced late in the process as the issues of the poor and most vulnerable became more prominent during the course of reconstruction programme. The paper analyses provisions and delivery mechanisms for finance, land, design and technology to address the recovery needs of the most vulnerable house-owners (e.g. single women, persons with disability, old aged, terminally ill, landless, etc.) in terms of achievements, effectiveness, and challenges of implementation. Top-up grant assistance and subsidized loan scheme have not yet benefited the vulnerable households despite the policy provisions. At the same time, housing reconstruction process in Nepal has helped a significant number of landless households get ownership of homestead land, which is a remarkable achievement. While policy provisions are the first step for the inclusion of the vulnerable, the desired outcome is difficult to achieve without enabling environment for their own agency and targeted socio-technical facilitation.

Keywords: *Nepal earthquake, vulnerable households, social inclusion, housing reconstruction, owner driven, disaster recovery*

Introduction

Vulnerability may be understood as lack of resilience. Sendai framework defines resilience as ability to resist, absorb or recover from the effects of hazards (UNISDR, 2015). In other words, vulnerability can be defined as sensitivity to stress and shocks due to disasters and lack of abilities to mitigate, respond, cope or recover. Vulnerable people are likely to have more difficulty in recovering to resume pre-disaster functionality as compared to other community members. (Cutter et al., 2003). Vulnerability in disasters is essentially a construct of interactions between socio-economic attributes and geo-physical environment (Blaikie et al., 1994; Morrow, 1999). People's ability to cope or recover after a disaster is dependent on a complex set of factors such as physical capacities, caste, class, gender, social network, income, land and other assets, information, legal entitlements, government policies and mechanisms, among others. Unequal physical and financial capacities and access to resources can make

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certain groups of people more vulnerable than others (Blaikie et al., 1994). Disasters can further worsen the capacities and conditions necessary for coping and recovery and hence result in increasing vulnerabilities (Bates and Peacock, 1989).

Nepal is highly prone to multiple natural hazards and falls under high risk seismic zone of Himalayas. The 2015 Nepal Earthquake affected 31 districts of which 14 were severely affected. While 8790 persons died and 22300 were injured, over 500,000 houses collapsed or were severely damaged (NPC, 2015). Post Disaster Need Assessment (PDNA) by Government of Nepal highlighted the significant impact of earthquake on the poor and vulnerable accentuated by pre-existing inequities due to geography, income, and gender. Nearly 700,000 persons were estimated to have been pushed below poverty line. The loss of housing could further amplify the shock pushing people below poverty line for extended periods (NPC, 2015). Taking cognizance of the critical needs of the earthquake-affected people, Government of Nepal (GoN) created a new entity in the form of National Reconstruction Authority (NRA) through a Statutory Act of the Parliament. Subsequently, the government brought out various policies and established regulatory and implementation mechanisms for inclusive and resilient reconstruction and recovery.

Reconstruction of more than 700,000 houses after the 2015 Nepal earthquake is the largest housing reconstruction program globally. Confronted by extremely difficult mountainous terrain with very limited access to road networks to reach to the house-owners and lack of institutional and financial capacities, Nepal faced unprecedented challenges in implementation of such a large recovery programme. Concurrently, Nepal adopted the new Constitution and made a complex political transition towards new federal system of governance. Facing the formidable task of strengthening the nascent administrative layers at sub-national and local levels, Nepal undertook substantive devolution of power to municipalities with the mandate of playing a direct role in disaster recovery.

With this backdrop, this paper delves into the key research question of effectiveness of the reconstruction policies, implementation modalities and challenges pertinent to the poor and vulnerable particularly in terms of access to financial support, homestead land and guidance on safer technology for housing reconstruction.

Data and Methodology

This paper draws upon information and data collected from primary and various secondary sources during the course of socio-technical facilitation of housing reconstruction by UNDP. Primary data sources include i) houseowner surveys undertaken during last three years in six rural municipalities and two urban municipalities of the Gorkha district - the epicentre of the 2015 earthquake, ii) community meetings, and iii) case studies. The houseowner surveys were conducted using a mobile application linked to Reconstruction Information Management System (RIMS) developed by UNDP for the purpose of socio-technical facilitation and monitoring progress of housing reconstruction. The surveys covered 26,912 houseowners being supported by UNDP with funding from Government of India. Depending on stages of construction, individual houseowners may have been surveyed upto 6 times in past three years. This database from the surveys has been regularly checked for discrepancies and validated.

Various meetings with the community, ward members and municipalities were conducted during the same period. Many case studies have also been documented.

In addition to the above, reports and publications from NRA and Central Bureau of Statistics (CBS) have been used to understand formulation of various policies and analyse the progress in reconstruction. The policy documents and sectoral reports from NRA and other institutions involved with reconstruction were studied. Also, literature review was conducted to understand the socio-economic issues, land rights and vulnerability, specifically in context of Nepal. The paper also uses the database from NRA's reconstruction helpline which received more than 30,000 calls by the homeowners from 31 affected districts during past 3 years.

All the data has been analysed within a framework encompassing issues identified in the PDNA (NPC, 2015) and Post Disaster Recovery Framework (PDRF) (NRA, 2016) that have informed the housing reconstruction policies.

Vulnerable Households: A Brief profile

While occurrence of hazards is a natural phenomenon, the coping capacities depend, to a great extent, on the socio-economic conditions and environment variables within a community (Brooks, 2003). It, therefore, is important to understand the key socio-economic attributes that identify the vulnerable in Nepal. Besides being a low-income country, Nepal also ranks low (147) in the Human Development Index (UNDP, 2019). Almost one-fourth of the households have at least one member who has migrated outside Nepal for employment. About one-fourth households in Nepal are women headed families. With more than 120 ethnic groups, the vulnerability of households also increases due to social exclusion and caste and gender discrimination (Aksha et al., 2019). *Dalits*, *janjatis* and female-headed households are comparatively poor having low literacy, marginal social status, negligible political participation, unfavourable work conditions, and high debt burden (GSEA, 2006; Prasad, 2014). The *dalits* and *janjatis* are 13.6% and 36% of the total population respectively (CBS, 2014). About 25% of Nepal's population is landless or near landless (Wickeri, 2011). Exclusion from land is another key indicator of vulnerability (Blaikie et al., 1994). Landlessness amongst the *dalits* and *janjatis* is much higher as compared to the other castes of social hierarchy. Nearly 50% of the *dalits* in Nepal do not have land ownership certificates (Biswakarma, 2018). 25.7% of the total households are women headed (CBS, 2012). 2.2% of the total population has some sort of disability with a higher concentration in the mountains and rural areas and amongst people with lower literacy (CBS, 2014).

Policy Framework for Housing Reconstruction

Nepal adopted 'owner driven reconstruction' framework for the housing reconstruction. Effectiveness of owner driven reconstruction in the context of developing countries has been well documented in past similar recovery experiences (Duyne, 2006). Nepal's policy framework is quite fascinating and progressive in many ways. Noting concerns of the vulnerable identified in PDNA, strategic objectives of PDRF included specific points to guide policy formulation.

The GoN policy framework was based on a uniform approach to support and implement with universal coverage irrespective of funding sources (NRA, 2016). Initially GoN committed to

provide assistance of NPR 200,000 in three tranches which was later increased to NPR 300,000 to each houseowner whose house had fully collapsed or was damaged beyond repair. These tranches were provided at the stages of i) participation agreement with NRA (NPR 50,000), ii) completion of plinth level construction (NPR 150,000), and iii) roof level (NPR 100,000) through bank transfer. Certification from NRA engineers indicating compliance with technical norms and building codes was made mandatory at the time of the release of second and third tranches and finally after completion. NRA prepared a two-volume catalogue of sample designs to communicate the approved standards and technologies. The design and technologies included in the catalogue were vetted by a technical committee of experts at the Department of Urban Development and Building Construction (DUDBC), NRA also formulated a scheme to provide loan upto NPR 200,000 at 2% annual interest rate through the commercial banks.

To address the needs of the vulnerable households such as single women, people with disabilities, children at risk and senior citizens, a top-up grant assistance of NPR 50,000 was included in the financial assistance package for the most vulnerable at a later stage of implementation. PDRF also identified adoption and expansion of social protection particularly cash transfer or cash-for-work schemes as a means to support the poor and vulnerable groups (NRA, 2016). However, no such policy provisions were instituted.

Ownership of homestead land was a prerequisite for receiving housing reconstruction assistance from the NRA. The policy provisions for providing land entitlement to landless were expanded to include three options - i) land regularisation at the same location where houseowner was residing, ii) provision of land at alternative location (minimum 6 *anna* i.e. 2,052 sq.ft. or iii) additional grant assistance of NPR 200,000 to purchase a new plot of land.

Similarly, a policy was also adopted to provide financial assistance of NPR 100,000 towards retrofitting of the partially damaged but repairable houses. PDRF also articulated intention of meaningful participation of women, vulnerable and marginalised groups through community-based organisations. However, no specific guidelines or operating procedures were developed and implemented.

Identifying the Earthquake Affected Vulnerable Households

The 2015 Nepal earthquake damaged 1,053,033 houses in 31 districts. The extent of damage is indicated in the following table.

Table 1: Extent of damage to the houses

Damage Grade	% of damaged houses
G1	9.7
G2	13.5
G3	19.4
G4	24
G5	33.4

Source: Damage Assessment NRA

Based on the detailed damage assessment of more than 1.0 million houses, 782,695 households were supported for house reconstruction. It turned out to be 28% higher than the number

estimated in PDNA. PDNA also identified the need for a special assistance package for the vulnerable households to ensure they were not left behind (NPC, 2015). The vulnerable households were identified through a socio-economic survey along with the damage assessment undertaken by the Central Bureau of Statistics (CBS). NRA considered gender, age, and disability for identification of the vulnerable. Similarly, orphan children needed protection and were also included in the list of the vulnerable. Landless were identified through a separate process and a separate policy provision to support their access to land was formulated. Though the criteria to identify the vulnerable adopted by NRA may not be comprehensive, these were specific enough to ensure the inclusion of significant number of vulnerable households. Despite detailed framework for the inclusion of the vulnerable, of 782,695 homeowners eligible for the housing assistance, only a small number of 18,505 households (2.4%) were finally designated as vulnerable.

Table 2: Vulnerable homeowners identified by NRA

Vulnerability Type	No. of homeowners
Orphan children (below 16yr)	91
Single women	9,024
Old aged (above 70)	9,147
Persons with disability	243
Total	18,505

Source: Socio-economic survey, NRA

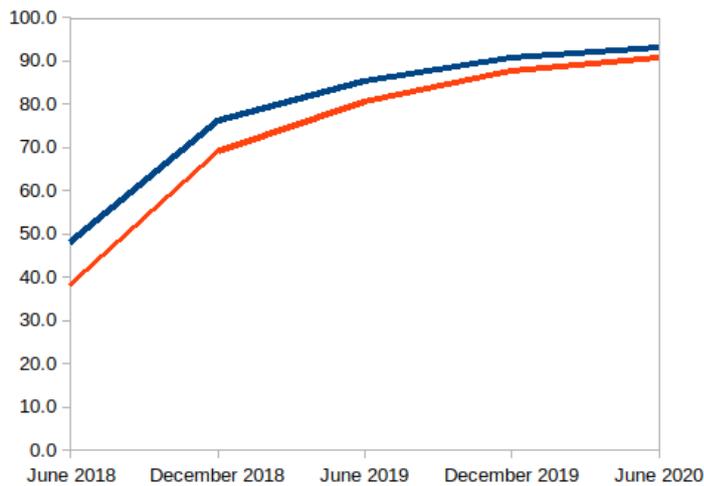
A review of social demographic indicators based on census 2011 (CBS, 2014), there seems to be likelihood that many vulnerable may have been left out. In six rural municipalities and two urban municipalities of the Gorkha district, where UNDP is providing socio-technical support to 26,912 families for housing reconstruction, NRA identified and approved 695 homeowners as vulnerable. However, the municipalities identified 1,115 homeowners as vulnerable using the same criteria that was used by NRA. However, only 100 households were found to be common between the NRA and the municipality lists. At the same time, using broader criteria to include left out vulnerable groups such as *dalits*, landless and chronically ill patients also, UNDP identified 8,062 homeowners as vulnerable for its socio-technical facilitation support. The lists of vulnerable by the various agencies identified different persons albeit using the same criteria. The disparities in terms of coverage and inclusion indicate how a lack of voice and influence tends to make inclusion more difficult despite having clear and specific criteria for identification of the vulnerable households.

Status of Housing Reconstruction by the Vulnerable

According to NRA, 64% of total houses had been reconstructed and 23% were under construction by the end of May 2020. By this period, more than 74% of house owners had received the third tranche as well (NRA, 2020).

Timeline study (figure 1) in the Gorkha district shows that the vulnerable households were slower in reconstruction of their houses as compared to the others. With targeted socio-technical support, the gap between vulnerable and non-vulnerable households has narrowed.

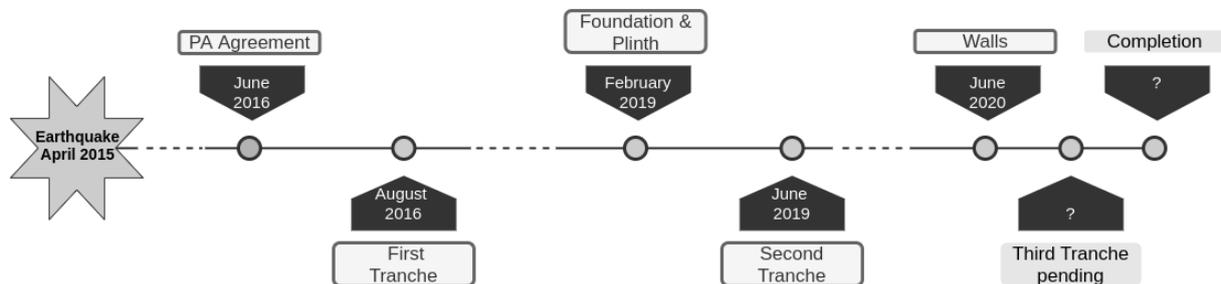
Figure 1: Timeline of housing reconstruction in Gorkha district (June 2018- June 2020)



Source: Reconstruction Information Management System (RIMS), UNDP

Even after starting the construction, the vulnerable houseowners took much longer to complete the construction. To gain insight into their challenges, a timeline based on an interview with a vulnerable household from the Gorkha municipality was drawn up. It spanned 5-year long period, taken for completing the house construction.

Figure 2: Timeline of house reconstruction by a vulnerable houseowner in Gorkha district



Once construction stage was completed, the tranches were received within 2-4 months. Progressing from one construction stage to another, required the vulnerable houseowners to cross many barriers related to the availability of the financial resources, land, design and technology. These aspects of house construction have been discussed below.

Access of the Vulnerable to Financial Assistance

The most common obstacle for the reconstruction was the gap in funds required for house construction. Nearly 30% of damaged houses continued to be used after the earthquake with or without repairs as of April 2017 (CBS, 2017). Only 7.5% of the surveyed houseowners were able to construct within the financial assistance provided by NRA.

Table 3: House Reconstruction Costs

Reconstruction costs of the house	% of houses
Less than NPR 300,000	7.5
Between NPR 300,000 to 600,000	51.2

Between NPR 600,000 to 900,000	21.8
More than NPR 900,000	19.4

Source: Reconstruction Information Management System (RIMS), UNDP

NRA grant assistance was received as per the progress of the construction. 80% of the vulnerable households identified by NRA have received NPR 300,000 in three tranches completing the house construction.

Table 4: Status of housing grant assistance to vulnerable households in 8 palikas of Gorkha district

Housing Grant Assistance Received	% of households	
	Other than vulnerable households in Gorkha district	Vulnerable households in Gorkha district covered by UNDP facilitation
Only 1st tranche (NPR 50,000)	6	11
Two tranches (total NPR 200,000)	6	9
Three tranche (total NPR 300,000)	88	80
Top-up tranche (additional NPR 50,000)	0	0

Source: Reconstruction update, GMALI, GoN and RIMS, UNDP as on 30 June 2020

The table 4 shows that percentage of vulnerable households (11%) unable to start construction of their house was almost double than other households (6%) not starting the construction. Similarly, percentage of vulnerable households (80%) as compared to other households (88%) having received three tranches is comparatively lesser. Most importantly, the above data shows that the vulnerable have not yet received top-up grant assistance. Though the identification of vulnerable houseowners is debatable on aspects of inadequacy of criteria, coverage and accuracy, none of the 18,505 vulnerable houseowners identified by NRA were able to receive top-up grant assistance of NPR 50,000 so far. This policy provision for the vulnerable has clearly not been effectively implemented.

Market survey conducted over the last 5 years indicated increasing costs of construction over last 5 years. Daily wages of unskilled labour had increased by 67% from NPR 600 per day in 2015 to NPR 1,000 per day in 2019. Similarly, the costs of building material such as bricks, cement, steel, had gone up by 20% to 30% in the last five years. The inflation in material and labour costs led to an increased requirement of funds to complete the construction of the houses.

NRA had also drawn up a policy of subsidized credit through commercial banks to the affected houseowners to support reconstruction of their house. There were two schemes. Under the first scheme, an interest-subsidized loan upto NPR 1,500,000 (2,500,000 in Kathmandu valley) at an interest rate of 2% per annum was to be made available. Under the second scheme, an interest-free loan upto NPR 300,000 could be availed on the basis of collective collateral (NRA, 2017). However, these schemes failed to take off due to lack of willingness from the banks and were withdrawn in August 2018 (NRA, 2017; The Kathmandu Post, 2018). NRA replaced the earlier schemes with a new scheme of loan upto NPR 300,000 with repayment period of 5 years on the condition of property collateral. The new scheme made loans available with 5% subsidy on the interest charged by the bank. Implemented since 2018, only 200 houseowners had been

able to receive this loan totalling about NPR 58,630,000 till April 2020. All the various schemes for loans had benefited only 1,592 house owners so far (NRB, 2020).

In the Gorkha district, households borrowing from informal sources tripled to 52% within the first two years after the earthquake, with higher debt levels in remote locations (TAF, 2017). A survey in the Gorkha district completed in 2018 indicated that a staggering 68.8% of the surveyed house owners had borrowed money from the local moneylenders at 24 to 36 percent annually compounding rate of interest (RIMS, UNDP).

To enable the vulnerable homeowners with required finance, some innovative approaches were adopted by a few municipalities in the Gorkha district. Aarughat, Sahidlakhan and Gandaki rural municipalities set up *ghoomti kosh* (revolving fund). Through this fund, the municipalities provided interest-free loan of NPR 50,000 – 100,000 to the vulnerable house owners on the condition of repayment when the next tranche was released. Fifty-nine households had been supported so far through this revolving fund modality in these three rural municipalities with total assistance of NPR 4.5 million. A similar concept was also adopted by some municipalities in other districts, for example Chautara Sangachowkgadhi in Sindhupalchowk. In Palungtar, the municipality assisted with the supply of essential building materials for the vulnerable families whose housing reconstruction was stuck due to financial constraints. Though this approach has been implemented by municipalities at a limited scale, it provides a viable and evidence-based policy input for enabling vulnerable homeowners to reconstruct their house.

Access of the Vulnerable to Homestead Land

With more than 25% of the population being landless, unequal distribution of land has been one of the key political issue in Nepal for decades (Wickeri, 2011). One of the most significant aspects of Nepal’s housing reconstruction and recovery has been the acknowledgement of vulnerability of landless and formulation of policies to address the same. By making the first amendment to working procedures of housing grant distribution, provisions were made to include the option of either regularisation of existing land, or provision of alternative land or additional grant for the purchase of land. The policy for land assistance has benefited 11551 landless owners so far.

Table 5: Status of approval of land assistance for the landless as of 30 June 2020

Approval of land assistance	Houseowners (no.)
In-situ land regularisation	10,287
Additional grant assistance for land purchase	535
Allocation of alternative public land	105
Land procured by the owners on their own	236
Approved but land yet to be facilitated	367
Built on public land without awaiting approval	21
Total	11,551

Source: Update Report of Durable Solutions

Multiple steps through which landless had to navigate for this entitlement involved initial application along with citizenship documents and proofs of residence, affidavits by the neighbours (*muchulka*), verification of landlessness and recommendation by the ward committee, further verification by Grant Management and Local Infrastructure (GMALI), recommendation by Central Level Project Implementation Unit (CLPIU) at NRA and finally, decision by the NRA Executive Committee. To ensure that the grant assistance for land was not used for any other purpose, this amount was released directly to the seller by GMALI based on the agreement between the landless houseowner and the seller. Land registration fees were also waived on the recommendation of GMALI. However, collecting all the documents at each step of verification, approval, land measurement, and registration was a long and complex process making it extremely difficult for the vulnerable households with little resources they had. Looking at geographic constraints of households, each visit to district headquarters where GMALI, land registration office, District Coordination Committee are located involved significant time, effort and cost. Despite such difficulties, more than 10,000 landless have received land ownership, which indicates need, priority and effectiveness of the policy framework. Setting up of Land Rights and Recommendations Committee at District level to decide upon land registration was an empowering provision for the municipalities and effective for addressing this issue.

Access of the Vulnerable to Design and Technology

For the communities in Nepal, the house is not merely an engineering product, but it is a result of the socio-cultural and economic processes in interaction with local climate and environmental resources. While discussing the access of the poor and vulnerable households to design and technology, there is need to examine both dimensions – the engineering as well as the socio-economic. An approach towards design and technology in Nepal is an example of implementing stricter building norms with the changed perception of engineers towards seismic risks. Engineers remained biased towards ‘modern’ technologies based on industrial materials such as cement, steel, etc. Traditional materials and construction systems had limited adoption primarily due to lack of confidence in their strength, inadequate knowledge about them among the engineers.

Design and technology have been of significant focus for the Nepal reconstruction and were seen as a panacea for disaster risk reduction. PDNA identified maximum damage in low-strength masonry houses (NPC, 2015). Department of Urban Development and Building Construction (DUDBC) prepared two volumes of the building design catalogues that became the basis for house reconstruction in all the earthquake affected areas (DUDBC, 2017, 2015). Compliance with these designs and technologies was mandatory for receiving the instalments of financial assistance offered to the houseowners. Unlike other South Asian experiences in the past where only cement-based technology options were made available for housing reconstruction, Nepal’s approach included traditional materials and technologies to some extent. Though conceptually, the need to include traditional building typologies was understood, insistence was made to use only what could be vetted through the engineering models to meet safety standards of Nepal Building Codes. While the basis of stipulated norms remains a matter of debate, the approach of the design catalogues offered little flexibility for

customising the house designs as per the needs of the household, climatic conditions, site planning, functional use or owner’s affordability. When using reinforced cement concrete (RCC) and cement-based construction system, technical guidelines were made available to allow modifications in designs to suit people’s own preference and needs. However, traditional technologies were limited to be used only with pre-approved plans in volume 2 of the design catalogue. For any modifications in design when constructing with traditional technologies, structural analysis was made mandatory (DUDBC, 2017). In practice, any modification to the designs proposed in the catalogues was considered non-compliance if not supported by structural analysis. For many of the alternative designs prescribed in the catalogues, inspection norms were never developed and therefore, severely limited their use for reconstruction. This approach resulted in a shift in the building typologies for construction of houses. Table 6 based on the data collected from six rural municipalities and two urban municipalities provides an understanding on this shift and Table 7 below explains the typologies adopted by the vulnerable.

Table 6: Changes in Housing Typologies in 8 palikas of Gorkha district

Building Typologies	Prevalence % (urban)		Prevalence % (rural)		
	Pre-	Post	Pre-	Post	
	earthquake	Reconstruction	earthquake	Reconstruction	
Low strength masonry		76	11	95	41
Cement based load bearing		15	72	4	48
RCC frame structure		9	17	1	11

Source: RIMS, UNDP on 30 April 2020

Table 7: Adoption of different typologies by the vulnerable in 8 palikas of Gorkha district

Building Typologies	Prevalence % (urban)		Prevalence % (rural)		
	Vulnerable	Other affected	Vulnerable	Other affected	
	households	households	households	households	
Low strength masonry		13	9	44	34
Cement based load bearing		73	72	45	55
RCC frame structure		14	19	11	11

Source: RIMS, UNDP on 30 April 2020

Housing typologies, in accordance with the policy push, have drastically changed after the earthquake through the reconstruction program. The post-earthquake reconstruction policy framework has catalysed shift from low strength masonry houses to cement-based load bearing and RCC frame construction. Two factors that influenced this process were - i) bias in orientation of engineers who guided and certified for grant assistance, and ii) lack of clarity in compliance norms if traditional or alternative construction systems were adopted for the reconstruction. This shift in typologies has completely changed the architectural milieu in earthquake affected areas leaving them bereft of the rich cultural heritage that the traditional construction technologies resulted in. This raises issues about how desirable the change is in terms of hazard resistance, socio-cultural aspects and environmental sustainability. An increasing proportion of cement-based load bearing and RCC frame houses could be an

indication of improved hazard resistance of new houses. However, more detailed studies may be required to know the extent of hazard resistance achieved in the newly constructed houses. This is particularly complex. On one hand one would tend to assume the improved performance of houses during hazards with compliance to the building norms, on the other, there is a likelihood of greater risk if the quality compromises were made due to cost constraints, lack of timely technical guidance and unfamiliarity with technologies. At the same time, the loss of traditional typologies and technologies that sustained local communities in the past will have long-term socio-cultural and environmental impacts. Whether the poor and vulnerable will be able to sustain this shift in the housing typologies is a question. Further to this, issues of extensions, modifications and maintenance might ultimately lead to mixed and hybrid structures compromising hazard resistance in absence of appropriate technical advice and affordability.

Access of the Vulnerable to Administrative and Facilitative Mechanisms

Housing is not a merely product but also a process involving access and delivery of finance, materials, land, design, technology, information, and skills. Such a process needs navigation through each stage of damage assessment, participation agreement, banking, land procurement, approval for building design, building permit, compliance to construction norms, inspection and certification, completion report, and grievance redressal. These processes were very complex for the vulnerable exhausting the capacities of the earthquake affected vulnerable homeowners.

The process of damage assessment, which formed the first and foundational step for housing reconstruction, was too complex and earthquake affected communities remained uninformed about the classification and basis for eligibility for housing grant assistance. There were repeated appeals for grievance redressal by the people, and multiple rounds of verification and resurvey process were undertaken.

The building permit process at the municipality level ensures compliance with the building bye laws in accordance with the development plans. The homeowners had to get approval of the building plans which many urban municipalities made mandatory. As the availability of such engineering services in urban municipalities was limited, it resulted in either unauthorised construction or a significant expense of hiring private consultants. This was particularly challenging for the poor and vulnerable. Field studies in Gorkha municipality indicated that the costs for engineering services to obtain building permit from the municipality were between NPR 5,000 for load bearing house to NPR 25,000 for RCC frame house. A quick estimate shows that services offered by Gorkha and Palungtar municipality with assistance from UNDP helped nearly 2,600 homeowners so far with saving of NPR 27 million to the homeowners while ensuring authorised construction as per the municipal bye laws. Nearly 25% of total households assisted through these services were the vulnerable. A few building permits were rejected due to issues of lack of right of way, inadequate documents or unclear land titles. Many homeowners who had constructed the house without building permit also needed to be facilitated for rectification and approval. These needed to be resolved on case basis. However, such services have been limited and a large number of vulnerable families in other urban municipalities have to make this significant expense to obtain building approval.

Table 8: Building permission for house reconstruction in Gorkha and Palungtar

Building Permission Process	Gorkha	Palungtar
Total applicant homeowners	1,173	1,493
Applicant for new construction	427	763
Applicants for as built approval	720	717
Building approvals obtained	804	705
Building approvals rejected or cancelled	26	13

Source: RIMS, UNDP on July 6, 2020

One of the most challenging aspect of the administrative processes for the vulnerable has been technical guidance during construction and subsequent certification of stage completion. Lack of information and advice at the time of construction resulted in rejection unless rectified as per the feedback of the engineer. The modality of feedback after the construction was a problem for the vulnerable homeowners who had to spend significant costs on rectification (TAF, 2017). Providing on-site technical advice and certification after the completion of the construction stage needed two separate mechanisms. However, the NRA continued to rely on one engineer deputed at the ward level to fulfil both the tasks. This was not effective. Homeowners particularly the vulnerable depended on the petty contractors or the head masons to know technical norms and ensure construction accordingly. This gap was fulfilled by other agencies to some extent in the limited geographic area of their presence. Largely, the owners remained responsible to ensure compliance of technical norms in their houses without adequate information and technical inputs from the government. This could be one of the major cause of poor construction quality compromising hazard resistance of the newly constructed houses to any hazard in future.

Conclusions

Nepal's post-earthquake housing reconstruction offers many lessons relevant not only to Nepal but globally, particularly with regards to the inclusion of the vulnerable. First and foremost, the policy formulation with specific provisions for the vulnerable is essential but only a first step. Its effectiveness depends on people-friendly mechanisms so that the vulnerable households can be enabled to access their entitlements and recover. Housing reconstruction policies in Nepal have exceeded in terms of its scope than any other past such experiences elsewhere. Nepal's reconstruction process evolved slowly and refined policy framework and implementation mechanisms as it progressed with needs becoming more evident. Specific provisions for financial assistance to the vulnerable, and securing land ownership for the landless along with the use of instruments vested with municipal governments strengthened 'owner driven reconstruction framework'. However, the implementation mechanisms particularly for damage categorisation, identification of vulnerable families, disbursement of top-up grant assistance and subsidized loans could not be effective and hence, inclusion of the vulnerable though intended well in the policy framework remained rather limited in terms of tangible benefits on ground.

The security of tenure through ownership of the homestead land was a single unprecedented and remarkable inclusion in the policy framework and its implementation. Though fulfilling

land entitlement is a complex process, strengthening of local governments through the implementation of the Constitutional provisions made this process feasible and effective. Policy provisions for additional financial assistance to the vulnerable through top-up grant by the Government or subsidized loans through the banks were not effective at all and failed to reach the needy. As a result, a very large number of vulnerable families face the risk of falling into the debt trap.

It is also evident that there has been a major shift in housing typologies in earthquake-affected districts from low strength masonry to cement based construction. Though more evidence is still required, it is likely that potential hazard performance of new houses may have improved. However, the control of the design process which traditionally had been rooted within the communities through artisanal practices has been shifted to the domain of engineering experts. This has made the communities, artisans in particular, passive recipient of information on hazard resistant design and technology. This whole process flows against the basic tenets of 'owner driven reconstruction'. In the name of social welfare and safety, the disempowerment of the community is a major issue and poses challenges to sustainability of disaster risk reduction. Design and technologies particularly in owner-driven reconstruction approach have to be perceived within the framework of community empowerment and not merely seen through engineering perspective.

Bibliography

- Aksha, S.K., Juran, L., Resler, L.M., Zhang, Y., 2019. An Analysis of Social Vulnerability to Natural Hazards in Nepal Using a Modified Social Vulnerability Index. *Int. J. Disaster Risk Sci.* 10, 103–116. <https://doi.org/10.1007/s13753-018-0192-7>
- Bates, F.L., Peacock, W.G., 1989. Long-term Recovery. *Int. J. Mass Emergencies Disasters* 7, 349–365.
- Biswakarma, T., 2018. Citizenship and social security of landless Dalits in Nepal. *Globe J. Lang. Cult. Commun.* 6, 52–65.
- Blaikie, P., Cannon, T., Davis, I., Wisner, B., 1994. *At Risk: Natural Hazards, People Vulnerability and Disasters* 1st edition. <https://doi.org/10.4324/9780203428764>
- Brooks, N., 2003. *Vulnerability, risk and adaptation: A conceptual framework* (Working Paper No. 38). Tyndall Centre for Climate Change Research, Norwich, UK.
- CBS, 2017. *Nepal - Household Registration for Housing Reconstruction Survey 2016-2017* (No. NPL-CBS-HRHRS-2016-v01). Central Bureau of Statistics (CBS), Kathmandu.
- CBS, 2014. *Population monograph of Nepal, First edition.* ed. Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics, Kathmandu.
- CBS, 2012. *National population and housing census 2011.* Central Bureau of Statistics (CBS), Kathmandu.

- Cutter, S.L., Boruff, B.J., Shirley, W.L., 2003. Social Vulnerability to Environmental Hazards. *Soc. Sci. Q.* 84, 242–261. <https://doi.org/10.1111/1540-6237.8402002>
- DUDBC, 2017. Design Catalogue for Reconstruction of Earthquake Resistant Houses - Vol 2. DUDBC, MoUD, Government of Nepal, Kathmandu.
- DUDBC, 2015. Design Catalogue for Reconstruction of Earthquake Resistant Houses - Vol 1. DUDBC, MoUD, Government of Nepal, Kathmandu.
- Duyne, J., 2006. Housing reconstruction in post-earthquake Gujarat A comparative analysis. *Humanit. Pract. Netw. ODI, Network Paper 54.*
- GSEA, 2006. Unequal citizens: gender, caste and ethnic exclusion in Nepal : summary. The World Bank.
- Morrow, B.H., 1999. Identifying and Mapping Community Vulnerability. *Disasters* 23, 1–18.
- NPC, 2015. Post Disaster Needs Assessment, Vol A: Key Findings Nepal Earthquake. National Planning Commission, Government of Nepal, Kathmandu.
- NRA, 2020. 88% progress in reconstruction: Press Release by Sushil Gyewali, CEO, National Reconstruction Authority. Rebuilding Nepal.
- NRA, 2017. Procedures for providing interest-free loans in collective collateral for the construction of houses of the earthquake victims, 2074 (2017).
- NRA, 2016. Post Disaster Recovery Framework 2016-2020. National Reconstruction Authority, Government of Nepal, Kathmandu.
- NRB, 2020. Current Macroeconomic and Financial Situation of Nepal (Based on Nine Months' Data of 2019/20).
- Prasad, U.S., 2014. Poverty in Nepal. Researchgate.
- TAF, 2017. Aid and Recovery in Post Earthquake Nepal (No. Phase 4), Independent Impacts and Recovery Monitoring. The Asia Foundation.
- The Kathmandu Post, 2018. NRA ends concessional loans to rebuild homes [WWW Document]. URL <https://kathmandupost.com/national/2018/10/23/nra-ends-concessional-loans-to-rebuild-homes> (accessed 6.10.20).
- UNDP, 2019. Human development report 2019: beyond income, beyond averages, beyond today: inequalities in human development in the 21st century. United Nations Development Program, Kathmandu.
- UNISDR, 2015. Sendai Framework for Disaster Risk Reduction (2015 - 2030).
- Wickeri, E., 2011. Land is Life, Land is Power: Landlessness, Exclusion, and Deprivation in Nepal. *Fordham Int. Law J.* 34, 114.