HRRP

Housing Recovery and Reconstruction Platform

18 Moderately Affected Districts

Updated Overview, July 2018

About HRRP

The Housing Recovery and Reconstruction Platform (HRRP) was established in December 2015 to take over supporting coordination of the post-earthquake housing reconstruction from the Nepal Shelter Cluster, as it returned to the pre-earthquake format as a standing cluster. The platform provides coordination support services for the National Reconstruction Authority (NRA), Building and Grant Management and Local Infrastructure (GMALI) Central Level Programme Implementation Units (CLPIUs), other relevant government authorities, and Partner Organisations (POs). Phase 3 of the HRRP was approved by the Government of Nepal (GoN) at the beginning of March 2017 and will run until the end of February 2019. HRRP3 is primarily funded by DFID Nepal and CRS Nepal. Other financial contributors and implementing partners include Oxfam, Caritas Nepal, Plan International, National Society for Earthquake Technology-Nepal (NSET), and Habitat for Humanity.

The HRRP has 12 District Coordination Teams (DCTs) primarily focused on the 14 districts most affected by the 2015 Gorkha earthquake (1 team covers the three districts in the Kathmandu Valley) and providing support to the 18 moderately affected districts where feasible. The DCTs are made up of a Coordinator, a Technical Coordinator, and an Information Management Officer. The DCTs are supported by a District Management Team (DMT) made up of a Coordinator, Technical Coordinator, and Information Manager. The DMT provides day to day guidance and support to the DCTs as well as targeted capacity building and has a roving presence across all districts. The national team includes general coordination, technical coordination, and information management expertise and supports the link between national and district level.

Areas of Focus

The HRRP has four main areas of focus:

- Monitoring and documenting the housing reconstruction process
- Improving coverage and quality of socio-technical assistance
- Addressing gaps and duplications
- Advocacy and Communications

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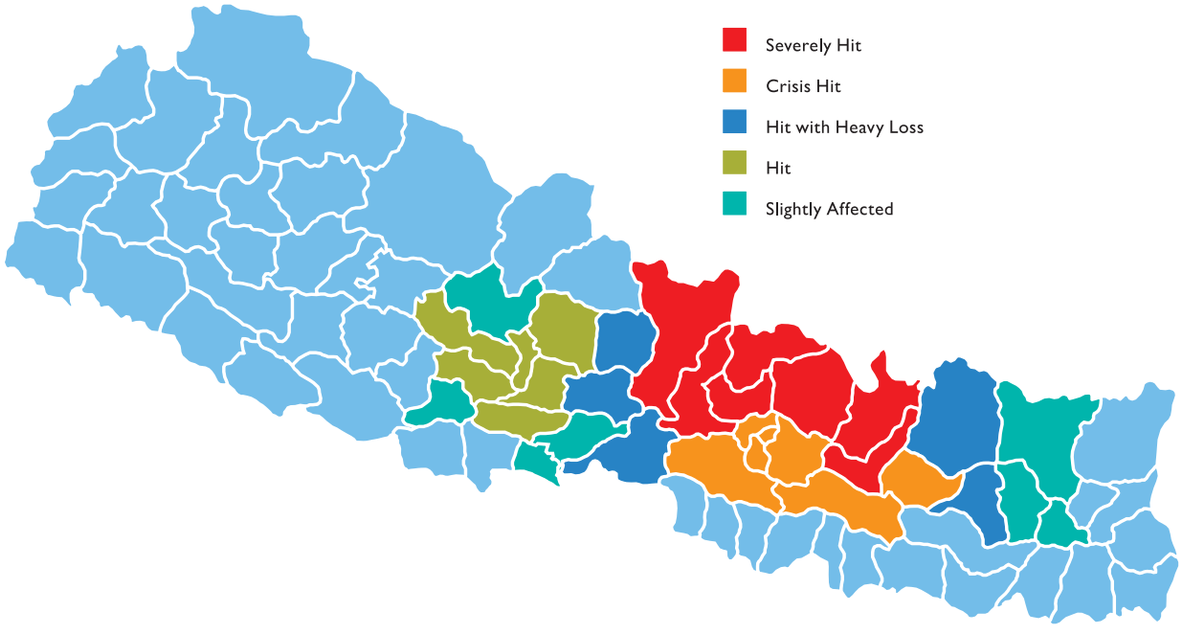
1.0 Introduction

The Gorkha Earthquake, which struck Nepal on 25 April 2015, caused widespread damage and loss of life across almost 50% of the country. The Post Disaster Needs Assessment (PDNA) identified 32 districts as earthquake affected, across five different categories of impact:

- Severely Hit: Gorkha, Dhading, Rasuwa, Nuwakot, Sindhupalchok, Dolakha, and Ramechhap
- Crisis Hit: Kathmandu, Bhaktapur, Lalitpur, Kavre, Okhaldhunga, Sindhuli, and Makwanpur
- Hit with Heavy Losses: Lamjung, Tanahun, Chitwan, Solukhumbhu, and Khotang
- Hit: Kaski, Parbat, Syangja, Palpa, Gulmi, and Baglung
- Slightly Affected: Myagdi, Arghakhanchi, Nawalpur, Parasi, Bhojpur, Dhankhuta, and Sankhuwasabha

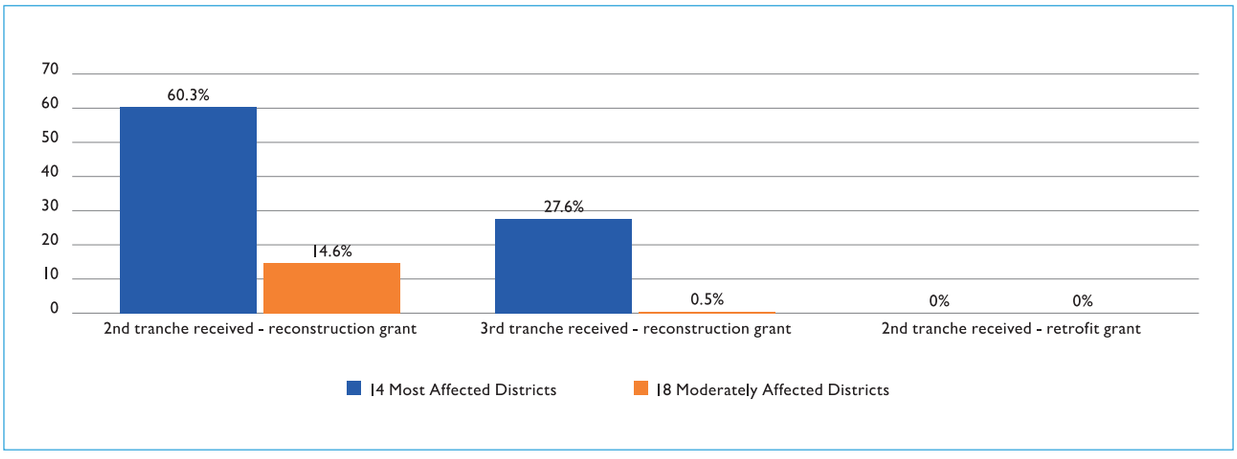


This report focuses on the moderately, or less, affected districts; those in the 'hit with heavy losses', 'hit', and 'slightly affected' categories.

As of 8 July 2018, the status of the disbursement of the Government of Nepal (GoN) housing reconstruction and retrofit grants in the 18 moderately affected districts is as follows:

Reconstruction Grant							
District	**Total Eligible HHs**	**HHs with Signed PA**	**Received 1st Tranche**	**Applied for 2nd tranche**	**Received 2nd tranche**	**Applied for 3rd tranche**	**Received 3rd tranche**
Arghakhanchi	1036	940	933	299	191	15	13
Baglung	2375	2115	2001	538	374	56	0
Bhojpur	5749	5159	5051	1473	441		0
Chitawan	7335	7335	5590	2613	2140	238	165
Dhankuta	2796	2461	2461	967	911		0
Gulmi	4144	4000	3901	1432	1220	138	222
Kaski	6026	5375	5326	611	116		0
Khotang	8443	8173	8173	2097	1050	10	0
Lamjung	13959	13188	13120	4751	2929	719	0
Myagdi	868	780	780	245	143	16	0
Nawalparasi	872	872	870	470	260	106	57
Palpa	4652	4100	4050	458	364	58	71
Parbat	5269	4790	4774	505	651		4
Sankhuwasabha	1953	1679	1583	365	218		0
Solukhumbu	11979	11194	11134	2757	1044	126	0
Syangja	8766	8766	8485	962	696		0
Tanahu	13821	13821	12740	3059	1846	83	0
Total	100043	94748	90972	23602	14594	1565	532

Retrofit Grant				
District	**Total Eligible HHs**	**HHs with Signed PA**	**Received 1st Tranche**	**Received 2nd tranche**
Arghakhanchi	67	31	31	0
Baglung	82	28	28	0
Bhojpur	453	87	0	0
Chitawan	593	593	429	0
Dhankuta	70	41	41	0
Gulmi	195	0	0	0
Kaski	242			0
Khotang	253	253	91	0
Lamjung	539	413	293	0
Myagdi	7	6	6	0
Nawalparasi	8	8	8	0
Palpa	384	10	6	0
Parbat	417	110	83	0
Sankhuwasabha	326	110		0
Solukhumbu	456	325	325	0
Syangja	567	282	282	0
Tanahu	466	466	224	0
Total	5125	2763	1847	0



Comparing the grant disbursement data for the 14 most affected districts and the 18 moderately affected districts it is clear that there is a big difference in the progress between the two groups. This is understandable as the grant disbursement process started more than one year later[1] in the 18 moderately affected districts and the coverage of socio-technical assistance has been negligible. However, it is now time to look at ways to better support housing reconstruction in these districts.

Due to funding gaps, HRRP does not have a presence in the 18 moderately affected districts but in February, March, and April 2018, HRRP conducted field visits to all of these districts to document the reconstruction status and identify opportunities to address issues related to housing reconstruction. This updated overview is based on the information collected during those field visits (field visit reports are available here), information collected in July 2018 through a survey with NRA, Building DLPIU Engineers, and further analysis conducted by the HRRP team at national level. The previous overview document for the 18 moderately affected districts, from April 2018, is available on the HRRP Google Drive.

[1] *The Path to Housing Recovery, HRRP, May 2018*

2.0 Housing Typologies

Similar to the 14 most affected districts, this group of 18 districts cannot be viewed as one context. The 18 districts include Tarai districts and hill districts, and cover a multitude of different contexts, languages, and ethnicities, and the approaches to housing reconstruction reflect this. In many areas new construction trends are appearing with hollow concrete blocks and steel frame structures becoming prevalent. In other areas traditional housing typologies are being used, or are being modified, e.g. hybrid construction. This section presents a selection of the housing typologies documented during HRRP field visits to the 18 moderately affected districts.

Santoki Kumar, Sandhikhark 7, Markakhola, Arghakhanchi: *hybrid structure with stone and brick masonry and a mix of mud and cement mortar. The owner brick masonry in the corners to reduce labour requirements and constructed the rest of the house himself. The wall to roof connection is poor and the DLPIU engineer listed the house as non-compliant. However, the engineers are not able to support with implementing correction and exception techniques as they have not received any training on this.*

Arghakhanchi: *stone and mud mortar masonry house of 2.5 storeys and therefore non-compliant.*

Arghakhanchi: *hybrid structure using multiple materials.*

Jayamuni Municipality (Ward-9), Baglung: *non-compliant stone and mud mortar masonry house constructed without technical guidance. The household have received the first tranche of the GoN housing reconstruction grant but they now need to apply corrections based on the Corrections and Exceptions Manual to receive the remaining tranches.*

Jayamuni Municipality (Ward-3), Baglung: *non-compliant stone and mud mortar masonry house constructed without technical guidance. The household have received the first tranche of the GoN housing reconstruction grant but they now need to apply corrections based on the Corrections and Exceptions Manual to receive the remaining tranches.*

Khairahani Municipality 2, Ladari, Chitwan: *home owner has received all three tranches of the GoN housing reconstruction grant.*

Sunawal 9, Bankattiya, Parasi: *RCC frame structure house under construction. As per the comments from the DLPIU engineers during the visti the house will be eligible for next tranche immediately after the roofing is completed (third tranche does not require roof to be released).*

Sunawal 2, Mukhiya Tole, Parasi: *the home owner has received the 2nd tranche but vertical and horizontal reinforcement has not been properly implemented and so the house has not been recommended for the third tranche. During the visit the DLPIU sub-engineer said they had been providing regular follow up to the household but the home owner has not been willing to follow the guidelines and their suggestions.*

Chitwan: *RCC frame structure under construction. The home owner has applied for the second tranche of the housing reconstruction grant and the application has been forwarded to the municipality.*

Diktel Rupakot Majhuwagadhi Municipality ward-1, Khotang: *non-compliant hybrid structure with ground floor having stone and mud mortar masonry walls on three sides with one open side and the first floor walls are constructed with timber and CGI sheets. The home owner built the house in early 2017 with no technical support. They have applied for the second tranche of the reconstruction grant but will not be able to receive it without carrying out corrections.*

Lekhnath Municipality, Pokhara, Kaski: *more than 600 houses have been constructed using hollow concrete blocks in Kaski. Households regularly ask the GoN engineers for designs and they have been providing the designs from the DUDBC Design Catalogue Volume 2, but households are not building according to these designs. There is a lot of hollow concrete block production in Kaski, with many of the biggest and oldest producers in the district. Blocks from Kaski are sent to Tanahun, Lamjung, Gorkha, and Parbat.*

Modi Rural Municipality, Ward No. 6, Parbat: *the home owner started construction of this 5-room house, with steel frame structure and hollow concrete blocks for the infill walls, just 1 month after the 2015 earthquake. He is still going through the grievance mechanism and he didn't know that this house would not be in line with government standards as there was no guidance available previously and the inspection engineers had just been deployed at the time of the visit.*

Modi Rural Municipality ward-6, Parbat: *this two storey, stone and cement mortar masonry house is non-compliant and the home owner has only received the first tranche of the housing reconstruction grant. NRA, Building DLPIU engineers are facing challenges to provide correction solutions for these types of houses.*

Modi Rural Municipality ward-6, Parbat: *this hybrid structure has a semi-RC frame with 6 rebar in 9"x12" column and is a 2 room, 1 bay house. The home owner has been seeking technical support from the NRA, Building DLPIU engineers on whether to construct a rigid slab or flexible roof with CGI. People were very conscious after the earthquake of the need to construct and strong and safe house and some contractors influenced people to construct this type of house based on this. In this area 15-20 houses were built in this way.*

Khandbari Municipality, ward-8, Sankhuwasabha: *RCC frame structure with 998 sq. ft. plinth area, and 16 nos 12" *12" Columns. The house is 3 storeys with underground. The NRA, Building DLPIU engineers are confused about whether it is compliant or not but the structure has been approved by the municipality office.*

Khandbari Municipality ward-8, Sankhuwasabha: *non-compliant house constructed with stone and mud mortar masonry on the ground floor and sun-dried bricks for the first floor. This house was constructed before technical assistance in the district. The home owner has received the first tranche and applied for the second.*

Chainpur Municipality ward-11, Sankhuwasabha: *non-compliant Hybrid Structure with ground floor built in stone in mud mortar masonry and first floor with timber frame and open walls for now. The house was completed in early 2017 with no technical assistance. The home owner has received just the first tranche of the housing reconstruction grant.*

Khandbari Municipality ward-8, Sankhuwasabha: *a brick and mud mortar masonry house with RC banding under construction. This house is being constructed under the supervision of NRA field engineer with the help of trained masons. The beneficiary has received the first tranche and is waiting for the second tranche. The house is considered compliant so they should receive the second tranche.*

Solu Dudhkunda Municipality ward-11, Tignasa Solukhumbu: *non-compliant Hybrid Structure built in early 2016 with no technical assistance. The ground floor is stone and mud mortar masonry and the first floor is timber frame with CGI sheets. RCC bands have been used at the plinth and timber bands at the lintel and sill level and the openings are not appropriate. The home owner has just received the first tranche of the housing reconstruction grant.*

Solu Dudhkunda Municipality ward-6, Dorpu Solukhumbu: *this two room, single storey house was built immediately after the earthquake with stone and mud mortar masonry foundation and walls of timber planks with timber frame. The design was approved by the municipality. The home owner has just received the first tranche. According to the engineer, the majority of houses in this area are built in this way.*

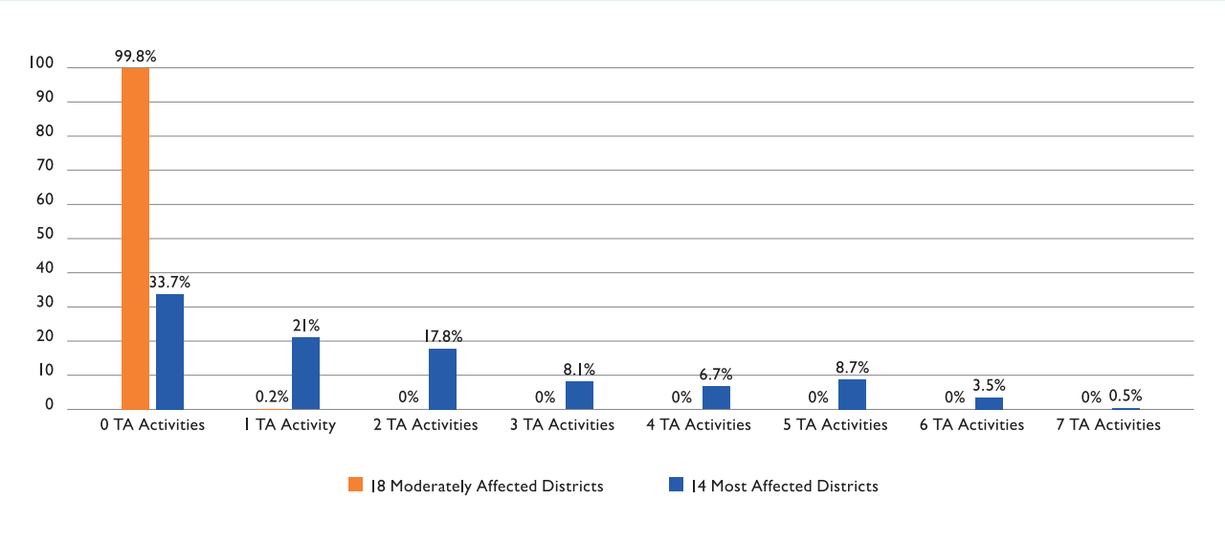
Waling Municipality (ward-5), Syangja: *this stone and mud mortar masonry house has survived three earthquakes; one in 1990 B.S., one in 2045 B.S., and one in 2072 B.S. The house is still standing despite the earthquakes and being more than 80 years old. The construction quality is quite good with support from timber bands at floor and roof level i.e. 2 bandings per floor.*

Waling Municipality (ward-5), Syangja: *the home owner reduced their circular 3 storey house to one and a half storeys after it was damaged by the 2015 Gorkha earthquake. They are now planning to construct a new house and the government technical staff have said that the damaged house will have to be demolished before the third tranche of the GoN housing reconstruction grant can be released.*

Bhanu Municipality, ward-2, Tanahun: *house reconstructed with RCC structure but due to road right of way conflict and formation of new municipality and its building requirements he home owner is not allowed to construct rigid floor and even they constructed RC frame structure beneficiaries were living by putting CGI roofs and brick infill walls.*

Bhanu Municipality, Ward No. 2, Tanahun: *Ujeli B.K. has received the first tranche of the GoN housing reconstruction grant and does not know anything about the process to receive the second tranche of the grant. He has already reconstructed this one room house with a steel frame and flexible roof structure and the house has not yet been inspected by the government engineers.*

3.0 Challenges



According to HRRP 4W data as of 25 June 2018, 99.8% of wards in the 18 districts have not received any socio-technical assistance. Whilst coverage in the 14 most affected districts is also low, the comparison presented above highlights the large difference between coverage in the 18 districts and the 14 districts.

The Government of Nepal (GoN), through the Poverty Alleviation Fund (PAF), has implemented short masons training across all 32 districts, but during the HRRP field visits in February, March, and April there were found to be significant issues with quality. This included trainings being reduced in duration by 1 or more days, training days being only a couple of hours, some participants were not skilled masons previously, and absence of coordination with local district actors (including NRA, Building DLPIU engineers in some cases).

As presented in the housing typology section above, many households built in 2016 and 2017 with no technical assistance and their houses are non-compliant. A high level of technical assistance is required to support these households to apply corrections and to support those that have not started reconstruction to build earthquake resilient houses.

3.2 Support to NRA, Building DLPIU Technical Staff

NRA, Building DLPIU engineers, sub-engineers, and assistant sub-engineers have been deployed across all 32 earthquake affected districts. They were deployed in the 14 districts in June 2016 and in the 18 districts in December 2017[2].

During the HRRP field visits in February, March, and April of this year, most of the technical staff reported that they had not been trained or oriented on the reconstruction process, policies, and technical guidelines and manuals before being deployed. They are therefore not able to apply these in their work or share relevant information with households and masons. The high level of non-compliant houses (see next section) and diversity of housing typologies (see section 2 above) are very challenging for the technical staff to handle with such limited back-stopping and training.

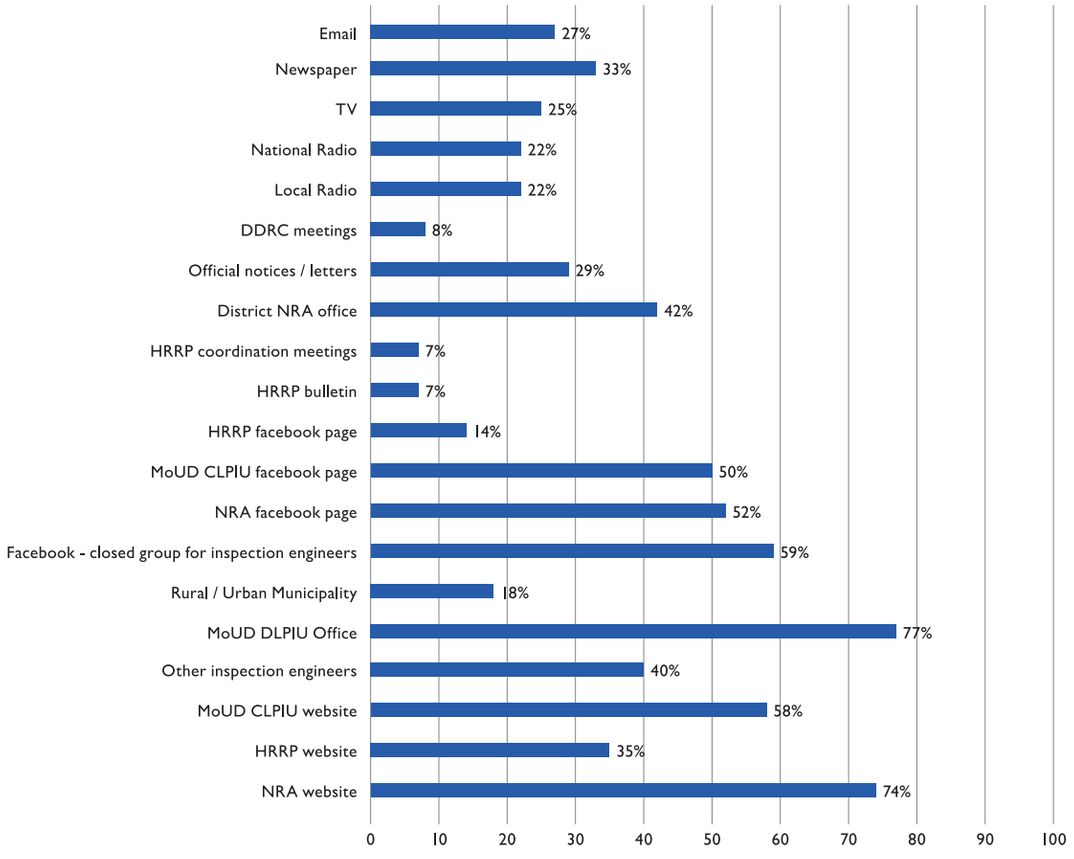
HRRP is conducting a survey with NRA, DLPIU Building engineers, sub-engineers, and assistant sub-engineers and

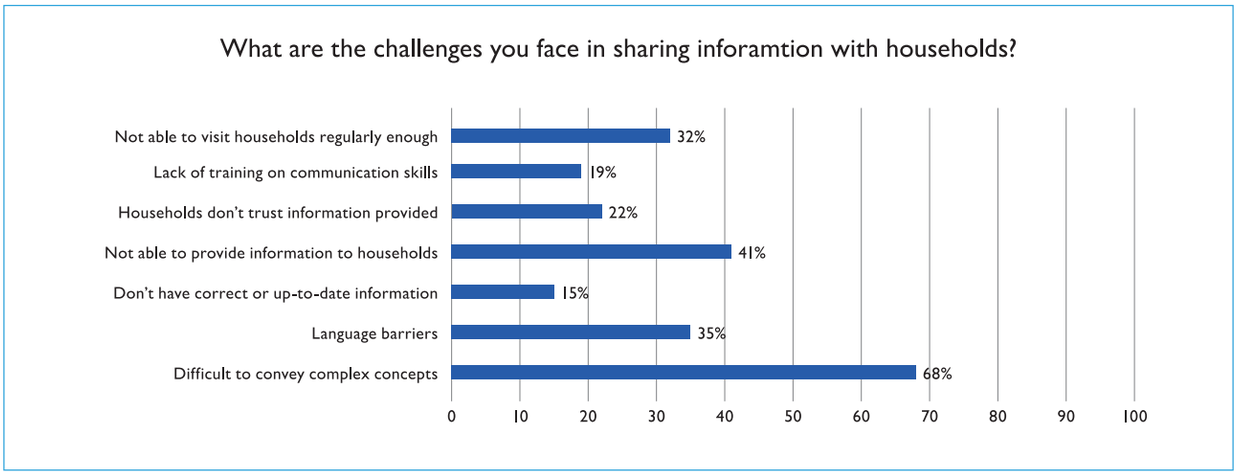
[2] *The Path to Housing Recovery, HRRP, May 2018*

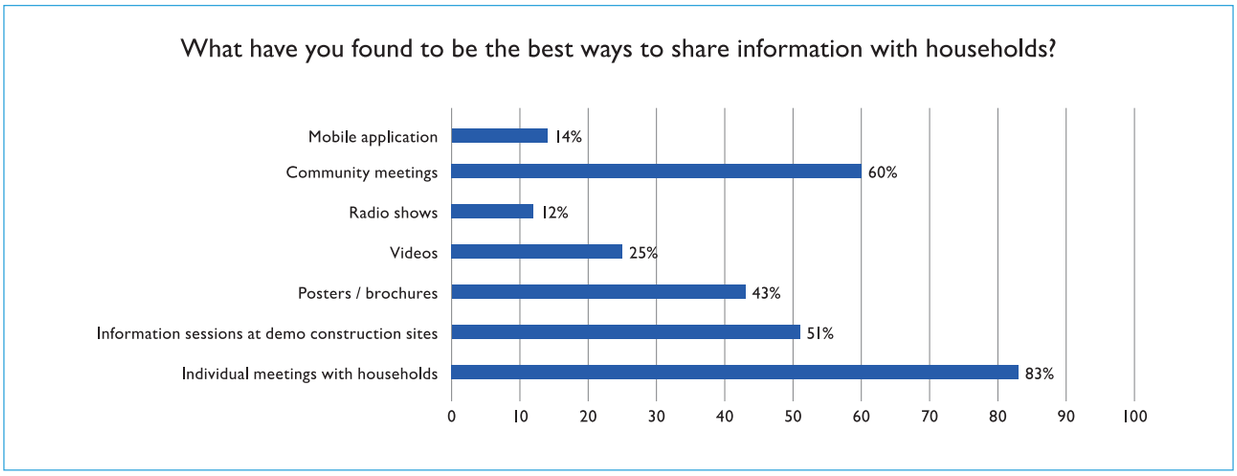
the initial findings are as follows:

- 47.5% hired in 2016, 31% in 2017, 21.5% in 2018
- 44% did not receive any training before deployment, 24% have not received training since deployment
- Conducting visits to an average of 46 houses per month, average time per visit just under an hour
- Walking is primary mode of transport for 94%
- 61% prepare plan for visits with municipality, 84% based on requests from HHs
- 50% have faced pressure from home owners to pass the house, and 37% have faced pressure from ward / municipal officials
- 36% receive updates from DLPIU once a month, 38% once a week, 11.5% once every two weeks, 14.5% other

How do you access information on reconstruction standards and policies, and any updates to these?







3.3 Non-Compliances

Many houses were constructed early, in the absence of technical assistance and information on the requirements to be eligible for the second and third tranches of the housing reconstruction grant. As a result, these are mostly non-compliant and require application of corrections as per the Corrections and Exceptions Manual. As most technical staff have not had any training on the Corrections and Exceptions Manual they are unable to provide guidance to households and masons on what corrections are required and how to apply them.

Some common non-compliances seen in the districts include:

- 9"X9" columns in RCC structures
- Columns not in grid in RC frame structure
- Opening percentage exceeding MRs of Masonry Buildings
- No bandings (no lintel and plinth band) in load bearing
- Missing vertical reinforcement in load bearing structures
- Room size exceeding 144 sq. ft. in RC frame buildings
- Stone in mud mortar masonry structures of 2 or 2.5 stories
- Hybrid structures
- Hollow concrete block structures

3.4 Misinformation and Confusion

Misinformation and confusion are present at all levels – field, local, and district. There is no clear and uniform understanding on reconstruction policies, guidelines and processes. There is also limited coordination and communication between reconstruction related authorities specially between district line agencies and new local bodies.

Some examples observed during HRRP field visits were:

- NRA, Building DLPIU technical staff were not fully oriented on guidelines, policies, and procedures and they were facing challenges in communicating and providing uniform information to households during their visits. This is reflected in the results of the survey presented in section 3.2 above.
- In many places, households want to change their agreement from reconstruction to retrofitting but technical staff could not suggest them the procedures to do that.
- Where households need to carry out corrections to receive subsequent tranches of the reconstruction grant, the technical staff are not able to provide information on how to do this and households are confused as to how they can progress through the reconstruction process.
- Households, technical staff, and newly elected local officials were not fully aware where and whom to contact to get more detailed information about any issues related policies and procedure as NRA offices were not present in each district. Now GMALI-DLPIU office have been established in all 18 districts there should be more focus on interaction and coordination with municipal authorities.

3.5 Tranche Disbursement Deadlines

In late July 2017, the NRA announced deadlines for the disbursement of the housing reconstruction and retrofit grants as follows[3]:

- Grant agreement signed with local bodies within November 16
- First tranche must be disbursed by January 13, 2018
- Second tranche must be disbursed by April 13, 2018
- Third tranche must be disbursed by July 15, 2018

On 3 April 2018, the NRA Steering Committee agreed to extend the deadline for the disbursement of the second tranche to 16 July 2018. At the time of writing, this deadline has passed and no decision has been taken on extension as there has been a change in the NRA CEO and a new CEO has yet to be appointed.

The deadlines represent an unrealistic timeframe for reconstruction for many households, and the HRRP advocates for the deadlines to be extended for at least the next two building seasons in rural areas and the next four in urban areas to allow a realistic period for households to complete their reconstruction. This is especially relevant in the 18 districts where the grant disbursement process started 15 months after it started in the 14 districts.

Those that have not yet started their reconstruction, often due to confusion about the process and the lack of technical assistance available, will not be able to start and complete their reconstruction within the deadlines. There are also many households in the 18 districts who completed reconstruction of their house early and now find that it is non-compliant and they need to apply corrections to access the second and third tranches of the reconstruction grant. Considering the points highlighted in sections 3.1 and 3.2 above it is important to allow people a reasonable timeframe for reconstruction, and corrections.

3.6 Urban Reconstruction

There are 330 urban wards across the 18 moderately affected districts; 56% of the total number of urban wards across the 32 earthquake affected districts. Defining urban areas is challenging and these urban wards have been identified through discussion with municipal and district officials and engineers. Please share any feedback or suggestions on this with Resham Lal Phuldel, HRRP National GIS Expert, resham@hrrpnepal.org.

Urban housing reconstruction is complex and the costs involved can be much higher than in rural areas. There are also big variations in the type of houses being rebuilt. For example, in the housing typology section above there is a photo of a house in ward no. 8, Khandbari Municipality, Sankhuwasabha that has a plinth area of 998 sq. ft. but there is also a photo of a house in ward no. 2, Bhanu Municipality, Tanahun of a one room house. In some urban areas home owners are waiting for development and approval of an RC frame house design where they can use shutters on the ground floor so that they can have space for commercial purposes.

[3] *HRRP Bulletin, 24 July 2017*

Urban Wards in Earthquake Affected Districts

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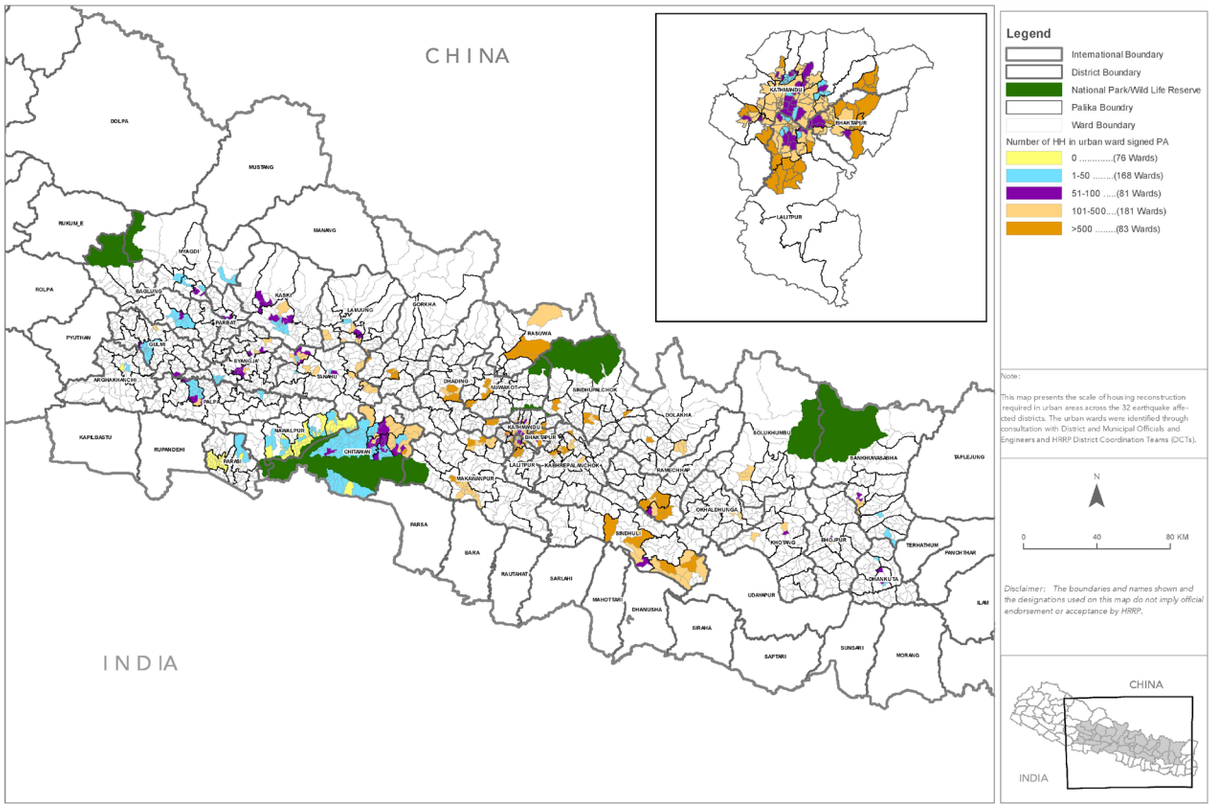

4.0 Positives

4.1 GMALI DLPIU Offices Established

During the HRRP field visits in February, March, and April of this year, one of the major challenges identified was that the GMALI DLPIU offices had not been established and so there was a major gap in coordination, information sharing, and information and data management. That these offices are now established is a real positive, but there is still a need for support to these offices for addressing the challenges outlined above.

4.2 MIS Established

Another challenge identified by HRRP during field visits in February, March, and April of this year, was that the Management Information System (MIS) was not in established in the 18 districts, district teams had not been oriented on it, and in some cases, did not have access to it. This caused problems for the data associated with the tranche disbursement for the reconstruction and retrofit grants. They were communicating with government staff they knew from 14 districts to get information on system and some districts were setting up system with influence from technical staffs who have already worked in 14 districts. HRRP in coordination with MoUD CLPIU worked with some of the districts to start using MIS system to upload data and information.

The MIS is now set up and functional in the DLPIU offices which is very positive. But, there remain issues around digitization of Partnership Agreements and inspection forms, the tablets that have been provided to some engineers (often they have problems with electricity and internet and they are required to do a paper copy of the inspection form anyway), and processing and management of files.

4.3 Engineers being more Creative and Responsible

As discussed above, the NRA, Building DLPIU engineers, sub-engineers, and assistant sub-engineers, have little or no back stopping support, and have not received any training before being deployed. There are however examples where the engineers are demonstrating great creativity to address this, and are taking on more responsibility.

- During HRRP field visits, in Baglung Cluster (Myagdi, Parbat, and Baglung), the NRA, Building DLPIU engineers and technical staff had formed a Facebook group in to discuss about system, to maintain uniform process and to provide support to each other with solutions to problems found in the field. Now other districts including Solukhumbu, Khotang, and Lamjung have also established Facebook groups for communication. As shown in section 3.2, the on-going survey with NRA, Building DLPIU technical staff shows that 62% access information on housing reconstruction policies and guidelines from these closed Facebook groups.
- Engineer from Kusma Municipality Parbat (who previously worked in 14 districts) took file inspection files to Kaski DLPIU and worked on second tranche recommendation process from DLPIU and then the files were sent to GMALI DLPIU. In this way, even when Kaski DLPIU have not been fully functioned engineers are being more responsible for beneficiaries to receive tranches fast.
- Engineers are providing technical assistance as well as doing inspection as there are no partners present in 18 districts to support with socio-technical assistance.

4.4 Building Code Implementation

The inspection process associated with the housing reconstruction and retrofit grants is building up the capacity of new municipalities to establish a system for building design approval. This is an opportunity to start developing capacity to implement the building code but more support is required at municipal level on this. Some positive examples include:

- In Pokhara Lekhnath Metropolitan City, Kaski, some of the house designs and houses were approved by the Metropolitan Building design department even though they did not fulfill the minimum requirements as set out in the inspection process. NRA, Building DLPIU engineers have influenced the Metropolitan

engineers to endorse the minimum requirements and building code fully. This means that the previous practice of approving RCC houses with no banding has now stopped.

- In Byas Municipality, Tanahun, the Building Code Implementation Project Nepal (BCIPN) led by NSET were building up capacity by conducting trainings to engineers and municipality staff before the 2015 Gorkha earthquake. Following the earthquake an exchange visit was conducted with engineers and local authority representatives from Gorkha visiting Byas Municipality to discuss building code implementation and to learn from RCC demonstration model that was constructed in municipality boundary. Byas Municipality has a good design registration process followed by government inspection to ensure application of building codes even before the earthquake. Byas municipality is also a good example of a well planned urban settlement with regulations setup and monitored by the municipality.

4.5 Extended Impact

There are numerous cases of people that were not affected by the earthquake adopting building techniques used by people that were earthquake affected for construction of their house. They are using the same designs and employing masons that have worked on reconstruction of houses for earthquake affected families. This is extremely positive and demonstrates the far-reaching impact the housing reconstruction can have on the construction sector in Nepal. However, with such high level of non-compliances and low coverage of technical assistance in these districts there are concerns that the building techniques adopted may not result in earthquake resilient houses.

5.0 Way Forward

The following are suggestions for the way forward in the 18 moderately affected districts. These have been developed based on the challenges and positives documented during HRRP field visits in these districts, as well as by drawing on experience to date in the housing reconstruction effort.

5.1 Invest in Socio-Technical Assistance

- Develop a collective strategy with agreed, common approaches for scaling up socio-technical assistance based on experience so far, including:
    - Mobile masons: several organisations (including JICA, NSET, and Save the Children) have found mobile masons to be an important component of technical assistance. They should be from the community so that they are familiar with the context and the households they are working with. Their role is to facilitate households to progress through the reconstruction process by carrying out door to door visits, providing supervision support, and sharing information and addressing questions. Their activities may include supervision and refresher training with local masons, preparing a schedule for the local masons' activities, and providing advice to house-owners on their construction site arrangement including material quality and procurement in cooperation with the technical assistance team. Recommend having 3 to 10 mobile masons per community.
    - Mobile technical assistance teams: these teams should include at least one engineer / sub-engineer and one social mobiliser. The mobile TA team will provide back-stopping support for mobile masons, conduct targeted door to door visits (e.g. to vulnerable households, to houses requiring corrections, etc.), support for preparation of house design and cost estimate, conducting training and orientations with households, masons, and local authorities, and implementing activities such as exchange visits between communities, working with material producers / vendors, and demonstration house construction. The TA team will also support development and implementation of reconstruction plans in cooperation with all other reconstruction actors in that area. The mobile TA team will also support research and study of the construction practices of the community and the approaches that need to be modified over the time. Recommend having one TA team for 1-3 municipalities.
    - Technical Resource Centres: these can be in a permanent location or may be a mobile setup in a cluster within one district or serving multiple neighbouring districts from a central point. There should be technical and social mobilisation staff available to facilitate reconstruction coordination, provide information and advice (technical, social and economic), backstop mobile TA teams with objective to provide support to beneficiaries to get technical information and support facilitation of access to quality construction materials, including ensuring timely supply of construction materials by managing storage and transportation of construction materials at local level. This should include working with material producers and vendors to engage them as agents of technical assistance as well as conducting awareness raising activities with households and masons on material quality.
- Invest in staff, particularly the NRA, Building DLPIU technical staff. Provide training as well as continuous back-stopping and mentoring support, strengthen coordination and information sharing, and where possible address operational issues such as transport, internet, etc.
- Regular coordination meetings, orientation, interaction and technical sessions to be conducted at municipality level to discuss technical issues, solutions, and standardized approaches and as an opportunity to continuously adapt technical assistance to changing needs and context
- Experience from 14 districts to be shared, especially through exchange visits
- District support engineers are urgently required to analyse cases which are not within minimum requirements and building code and to feed the

information back to national level for more in-depth analysis if required.

- Technical assistance to be provided regularly through community orientation and door to door technical assistance by Government engineers with back stopping support from NRA, DLPIU, New rural and urban municipalities and partners.

5.2 Invest in Coordination

- Develop and implement common approach for continuous capacity building support to municipal and ward officials on reconstruction
- Invest in strengthening DLPIU offices
- Regular coordination meetings, orientation and interaction sessions to be organized at district and local level.
- Establish system for accurate and timely dissemination of information on plans, policies, guidelines and procedures at local and district level.
- In four municipalities in Gorkha, a reconstruction focal point has been placed in the municipality with support from partners. The results are mixed, but where it works well this has been seen to have a positive impact. Potential option for coordination support in the 18 districts.
- HRRP has not been able to provide coordination support in the 18 districts to date due to funding gaps. There are options for HRRP to provide support at various levels and the rough outline of costs for each is as follows:
    - Surge IM support – 8 people, 3 months, plus logistics = 28,000 USD
    - Minimum level of coordination support – 2 roving coordination teams with information management, technical, and general coordination capacity, for 1 year = USD 150,000
    - Medium level of coordination support – 2 management teams supporting 18 staff (one in each GMALI DLPIU office) for 1 year = USD 455,000
    - Higher level of coordination support – 1 National Level Support Staff, 2 roving coordination teams + 24 staff (three in each GMALI DLPIU office) for 1 year = USD 1,2500,000

5.3 Strengthen Information Management System

- Orientation on overall Information Management and existing MIS systems to be provided to all relevant government agencies with continuous assistance to establish a standard and uniform system through coordination.
- Information management officer to be deployed to manage information at district and to share and present those information at national level reconstruction system and products. Examples: NRA 5W, training database, Maps, inspection data etc.
- Capacity building of municipal counterparts needs to be carried out to strengthen Information Management practices.

5.4 Research and Development for Technical Solutions

- New alternative construction materials and technologies need to be well researched and solutions to be provided as needed in field level, for example for hollow concrete blocks and light steel frame structures which are widely used technologies in many districts.
- HRRP conducted research in Hollow concrete blocks production and use in 14 earthquake affected districts. Through this 110 hollow concrete blocks have been tested to determine their breaking (or compressive) strength. 78% of blocks that were tested failed to meet the compressive strength requirements specified in the Nepal standards NS119:2042. This shows urgent focus is required in quality hollow block production through strengthening capacity of producers and formulation and dissemination of production regulations.
- People in many districts like Kaski, Parbat and Tanahun want to construct with hollow concrete blocks as they are cheaper, easily available, require less labour, and they are copying the trend they are seeing around them. The NRA, Building DLPIU engineers are recommending households use the two storey design from volume 2 of the DUDBC design catalogue but it does not meet people's living requirements and they are not following this. There is an urgent need for generalised design guidelines and designs to support households. In Kaski alone, more than 600 houses have been already constructed with blocks.
- As non-compliances represent a large technical challenge in the 18 districts, it is important to continue documentation of non-compliances. These should be raised to district level to be addressed, but in the absence of District Support Engineers in the 18 districts, it may be necessary to establish a framework to raise non-compliances to national level for review and development of solutions.

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