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Comprehensive Disaster Risk Management Program

Chakupat, Lalitpur

FINAL REPORT
for

Providing support in conducting review of the project activities related to housing reconstruction, after completion of one-year of its implementation in Gorkha district

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EXECUTIVE SUMMARY

This report is prepared to provide the review of the project activities and approaches supporting housing reconstruction, after completion of one-year of its implementation in Gorkha district. It encompasses the meeting and discussion with different stakeholder , preparation of check lists for RCC frame building, Masonry buildings, IEC Materials, questionnaires to Engineer and sub engineer to know the technical capacities, household training evaluation form and site observation report along with conclusion and recommendation.

There are three stages of works for the project review done

Stage-I: Preparation of Review Documents, checklist preparation
Stage-II: Field Visit & discussion with stakeholder
Stage-III: Preparation of Project Review Report

It is herewith attached some further recommendations in order to continue the project activities effectively.

Based on the observation of the project activities, meetings and discussion with different stakeholders of project, different typology building construction site visit in Palungtar Municipality and Gandaki Gaupalika, it is recommended to continue the project with listed recommendations

1. INTRODUCTION

Gorkha Earthquake occurred at 11.56 a.m. on 25 April, 2015 with magnitude of 7.8 on the Richter scale. Many historical as well as dwelling, offices, apartment and other local buildings were destroyed and damaged. Continued aftershocks occurred throughout the country with a magnitude of 6.8 Richter scale. These big Gorkha earthquake and aftershocks damaged the buildings and huge loss of life and properties.

In Gorkha, UNDP is providing socio technical facilitation support for housing reconstruction after Gorkha Earthquake in erstwhile VDCs identified jointly by the GoN and the GoI. 25 VDCs and 2 municipalities in Gorkha were identified covering 26,912 house owners.

To effectively deliver high quality socio-technical facilitation services to 26,912 households in Gorkha, UNDP has partnered with the Owner Driven Reconstruction Collaborative (ODRC). ODRC is a network of registered institutions in India working to support national and state governments in instituting and facilitating the owner driven housing reconstruction process. ODRC comprises of four organizations collaborating with UNDP for facilitating Government of India funded housing reconstruction in Nepal. i) Hunnarshala Foundation. ii) UNNATI – Organization for Development Education. iii) SEEDS Technical Services and iv) Center for Eco centric Development and Peoples' Action (CEDAP). And currently, SEEDS functions as ODRC Secretariat with Executive Director of SEEDS as the current convener of ODRC.

The project intervention is on providing facilitation support encompassing 6 major components:

a) Facilitating administrative procedures regarding inclusion, grant release and certification;
b) On-site technical advice and guidance on construction technology, design options, disaster resistant features, government norms, material procurement and construction management.
c) Technical services of design drawings, preparation for building permit process.
d) Capacity building of all project participants, particularly house owners and masons.
e) Concurrent monitoring and quality assurance.
f) Facilitating use of Appropriate Disaster Resistant Technologies.

The review of project activity is expected to serve as important tool to evaluate the project approach and major activities in providing socio technical facilitation support to the house owner in Gorkha

This final report consists of the review of projects documents, preparation of check lists for RCC frame building, Masonry buildings, IEC Materials, questionnaires to Engineer and sub engineer, household training evaluation form and site observation report along with conclusion and recommendation

2. OBJECTIVE

The overall objective of this assignment is to provide support in conducting routine review of the project activities and approaches supporting housing reconstruction, after completion of one-year of its implementation in Gorkha district. An expert will review the project's approach and major activities in providing socio-technical facilitation support to the house owners that would lead to effective and efficient mobilization of the resources to support the reconstruction process in remaining project period.

3. SPECIFIC OBJECTIVE

The specific objectives of the assignment are as follows:

- Review capacity of the project team (Engineer, Sub-engineer, and Awas Nirman Sathi) in terms of their knowledge/understanding and the system in place to enable them to provide their service to the house owners effectively.
- Review how on-site socio-technical facilitation support is provided by the team, to the house owners, in line with project's commitments, that include both technical compliance and social/administrative processes, including intensity of engagement of the team during the construction process.
- Examine the construction practices in terms of adherence to the technical norms set by the government and quality of the construction/workmanship in the field, not limited to compliance.
- Observe the masons training events and provide feedback on
  i. effectiveness of these events to capacitate the masons thus enabling them to practice safer construction during construction and
  ii. Standardization of the training curriculums and its execution. - Review effectiveness of the IEC materials/activities and its utilization by the team, especially print materials and MTC van, in enhancing understanding of the house owners on reconstruction procedure and earthquake resilient construction practices and provide necessary suggestions - Provide support as and when requested by the CDRMP team.

4. METHODOLOGY

The following methodology was followed. There are three Stages of works for the project review

Stage-I: Preparation of Review Documents, checklist preparation

Stage-II: Field Visit & discussion with stakeholder
Stage-III: Preparation of Project Review Report

Stage-I: Preparation of review documents

During this stage, the following activities were carried out

1. Coordination with UNDP/CDRMP
2. Preparation and agreeing on checklist for reviewing the project activities related to housing reconstruction, after completion of one-year of its implementation in Gorkha district
   Checklist was prepared for:
   i. Capacity of the project team in the field to effectively deliver their service
   ii. On-site socio-technical facilitation support provided to the house owners
   iii. building construction techniques for RC frame buildings and masonry building
   iv. training capacity & its efficiency and quality assurance,
   v. effectiveness of IEC material/socio technical support

The following checklists were prepared period which are attached in ANNEX:

i. Checklist for RCC frame buildings
ii. Checklist for Masonry buildings
iii. Checklist for IEC material
iv. Checklist for household training evaluation

Stage-II: field visit & discussion with stakeholder

During this stage, the following activities were carried out

1. Coordination with stakeholders Such as UNDP/CDRMP, DUDBC, ODRC and VDCs
2. Construction Site visit in the following Nagarpalika and Gaupalika
   i. Palungtar Nagarpalika with 2 wards
   ii. Gandaki Gaupalika with 1 wards
3. Observation of on job Mason Training
4. Discussion with ODRC field team including Awas Nirman Sathi

Stage-III: Preparation of Review Report

After construction site visit, discussion with ODRC team and UNDP/CDRMP and collection of various data, reporting were prepared focusing on

- ❖ Capacity of the project team in the field to effectively deliver their service
- ❖ On-site socio-technical facilitation support provided to the house owners
- ❖ Quality of the reconstructed houses and compliance to the set norms
- ❖ Training of the house owner's masons on different technologies
- ❖ Effective use of IEC materials and medium

4.1. Meetings:

The meeting with ODR team, official of GMALI, DUDBC, Ward Chief, house owners were held to know about the usefulness of project, impact on the quality of construction work considering earthquake resistant technology.

4.1.1. Meeting with ODR team:

The meetings with district coordinator Er. Ram Sapkota and his subordinators were held in the ODR district office at Gorkha. During the meetings, District Coordinator highlighted the background of Owner- Driven Reconstruction approach (ODR), main activities, objective of the project and progress of project as below:

The main activities of the project are to provide the socio-technical facilitation to the house-owner who are having problem in receiving the tranches, reconstructing the houses, assuring the necessary materials and resources need for the reconstruction. So, the present status of the housing reconstruction is essential to provide the necessary support for those needy households.

The total beneficiaries of the project working area are 26912. On the basis of RIMSdata till May, 22224 numbers of houses were completed. Similarly, 3068 houses were under construction and 1620 houses were remained to be started which includes both agreement and non-agreement houses

After brief description of the project, discussion and activities done during the meeting, Dr. Purushotam Dangol raised the following issues and District Coordinator Er. Ram Sapkota and his team cleared the raised issue

1. What types of activities has been implemented

a) Facilitating administrative procedures regarding inclusion, grant release and certification;
b) On-site technical advice and guidance on construction technology, design options, disaster resistant features, government norms, material procurement and construction management.

c) Technical services of design drawings, preparation for building permit process.

d) Capacity building of all project participants, particularly house owners and masons.

e) Concurrent monitoring and quality assurance.

f) Facilitating use of Appropriate Disaster Resistant Technologies.

2. Approaches of implementing activities:

a) Preparation of Design Drawings as per requirement of house owner
b) Construction Site visit
c) Training to mason, house owner
d) Through social mobilize
e) IEC materials
f) MTC van
g) Political workers
h) Administrative process to get approval from government

3. Knowledge on code & guidelines

The discussion with Engineers and sub Engineers was done regarding the clauses in Nepal National Building Code and guideline for reconstruction of buildings. The discussion was focused on the following codes and guidelines

a) National Building Code
b) Guidelines, drawings of ERCP by NRA, DUDBC
c) Quality of construction materials
d) Mason training guidelines published by DUDBC
e) Safe construction video by UNDP

4. Way of delivering IEC materials to house owner

22 types of IEC materials have been distributing by the following ways:

a) Social mobilize distribute door to door
b) Distribution during mason training and on-job training.
c) MTC van during propagation.
d) Distribution during ward level meetings.
e) Distribution through Awas Nirman Sathi
f) Interested house owner came to collect in district coordinate office
g) RIMS Mobile App
h) Radio program **मेरो घरको पुनर्निर्माण मेरो नेतृत्वमा**

5. House owner' acknowledgement

a) Very popular program among house owners. Very warm response of house owners, local level governance, concerned government authorities and general public.
b) Excellent success rate. Considerable improve in earthquake resistance construction.

6. Communities' interest to get advices from ODRC

Community is more interested to get advices from ODR team on earthquake resistant building construction technology

7. Which part of the activities was irrelevant to project's objective?

All are relevant to the objective of project

8. Any suggestions to improve the project's activities

Require training on retrofitting construction technology to the Engineers Sub Engineers of the project in order to enhance the capacity on the retrofitting technology of the different type of building

4.1.2. Meeting with GMALI

The meeting was held in GMALI office with Project Manager Er. Ram Sharan Acharya. Project manager Er Ram Sharan Acharya from GMALI, Gorkha shared the overall reconstruction status and issues challenges of reconstruction. He has requested ODR project to include technical assistance for retrofitting of buildings in the scope of ODR project

4.1.3. Meeting with DLPIU, DUDBC

The meeting was held in DLPIU office with Chief Ms Sunita Shrestha. Dr. Purushotam Dangol raised reconstruction related issues, inspection process and filing system in DLPIU and role of ODR for execution of reconstruction project and Ms Sunita Shrestha chief of DLPIU cleared the raised issues. She also emphasized to include technical assistance for retrofitting of buildings in the scope of ODR project.

Further meeting with Gandaki Gaupalika ward no 2 Chief Dev Bahadur Gurung was also conducted at ward office, Tanglichowk on the following agenda.

- Discussion about reconstruction, issues and opportunities
- Discussion on Detail reason of not constructing by House Owner

4.2. Construction Site Visit

Construction site visit in different typology of building construction in Paluntar Nagarpalika and Gandaki Gaupalika was done which is briefly described below. Photographs of site visits are in ANNEX.

4.2.1 Retrofitted House:

4.2.2 RCC Frame house:

4.2.3 Stone Mud Masonry house:

4.2.4 CR stone Masonry house:

4.2.5 CBS block Masonry house:

TABLE 1:

PA ID	Owner	Case	Method/Building type	Remark
36-50-9-1-291	TilKumariGurung, Chepetar, Gorkha Municipality	Correction	WW Splint and Bandage /Single story Concrete Block in CM/Roofing CGI Sheet.	Plaster layer 20+20
36-47-9-1-64	SaraswotiThapa	Correction	WW Splint and Bandage / Single story Concrete block in CM/Roofing CGI sheet	Verandah roofing connection to be improved
36-47-9-19	DhanaBahadurTamang	Ongoing construction with tech. support	RCC framed Structure, infill material: BMCM	Stirrup ends not properly bend up
36-16-7-0-158	Ram BahadurMajhi	Correction	WWM splint and Bandage, Framed to large opening	Size and material of purlines un appropriate (40*40 rectangular Steel section, Bamboo of 50 mm size for span

				3.5 m)
36-16-7-0-123	Krishna BahadurKumal	Ongoing construction with tech. support	BMCM	Problems in Line and level, unfilled vertical joints, mortar thickness

4.3. Observation of on job training:

On job training was observed in the construction site with CR technology in Gandaki Gaupalika. The questions based on the checklist were put to the mason and house owner involved. They are confident on the CR technology and well understand from the guideline and advice given by project site Engineer, Sub Engineers and Awas Niraman Sathi

5. CONCLUSION/RECOMMENDATION

- Very popular program. Very warm response of house owners, local level governance, concerned government authorities and general publics.
- Excellent success rate. Considerable improve in earthquake resistance construction.
- There is good knowledge of earthquake resistant construction technology, but gaps in the skill and quality of works

The followings are the recommendation after monitoring the project site and discussion with the different stakeholders of the project.

1. Supervision of building construction site considering no of mason employing in site so that no escaping of critical work.
2. Soil condition study in the mass movement site by Geo tech Engineer.
3. Focus on the rain water management system as building in slop and terrain area mostly.
4. Capacity enhancement in retrofitting is required.

5. Need to certification for NRA payment from NRA engineer, need close relation with NRA Engineer while deciding in field major activities.
6. Capacities enhancement of engineer on other disasters such as wind, flood, landslide, fire.
7. As ODR engineer, ASN involving to provide material to house owners in credit, before installment. Proper documentation on credit agreement between owner and material provider without involving ODR engineer and ASN is required.
8. Extension of project require as per discussion with Gaupalika ward chief DLPIU engineer, GMALI engineer.
9. Communities' views need to be surveyed on the radio program.
10. ODR involved reconstruction project in ward completed as most 80% seeing the reconstruction of building in other wards in only about 40% ward chief requested to extend it into other ward also.
11. Reconstruction app includes Google Earth so that easy to observe the status of reconstruction.
12. Changing situation in traditional construction materials and new construction materials. Traditional roofing material thatch roof detent rain water and reduce flow speed while CGI sheet speedup flow of rainwater. Soil scouring in newly exposed surface increased due to CGI sheet roofing. Land slide vulnerability increased due to the reasons. This can be balance by using bio-engineering methods. Need to aware technical staffs on bio-engineering and environmental control.
13. Intensive training enhanced seismic resistance of public residence. inclusion of seismic components in the area found very well. But workmanship of masons found not so improved. Certain deficiencies are observed in construction – in line and level of masonry, filling of vertical joints, avoid continuous vertical joints as such. ANS should give attention in workmanship improvement of grass level masons as well. Improvement in hand holding training required to improve.
14. Seemed three category of ANS. Those previously engaging as masons in previous has excellent performance. But, those who has started the responsibility without previous experience as masons and started the responsibility having training has lower performance rate. Require to enhance 3rd category ANS for handholding training.
15. Experience and knowledge shearing plays vital role in uniqueness in results. Found excellent solutions in raised problems in some sites, while found ingomerred same problems in other sites. Site specific problems have been announced in case studies. But this type of information shearing is not enough in such spread project. Recommended to conduct experience and knowledge sharing program among staffs at least in week interval.
16. Certain gap observed between building permit system and field engineer. Information in certain structure design concepts found not communicated to field engineers. Due to it, site engineers got problems to aware house

owners on design requirements. Knowledge sharing should be improved among design group and field technical groups.

17. Non compliance building constructed with load bearing wall and surrounding by column and beam in Gandaki Gaupalika could be retrofitted as confined masonry wall system by inserting the reinforced concrete columns with shear keys connecting brick wall

Based on the observation of the project activities and meetings and discussion with different stakeholders of project, it is recommended to continue the project with the above recommendations.

ANNEX

PHOTOGRAPHS OF PROJECT ACTIVITIES

SAMPLE OF CHECK LIST QUESTIONNAIRES