



**Final draft**

**Government of Nepal**

**Ministry of Federal Affairs and Local Development**

**Office of the District Coordination Committee**

**Dhading**

**Earthquake Housing Reconstruction Project**

**(EHRP)**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**(ESMP)**

**Sub project Katunje-5, Katunje**

**PREPARED BY:**

**District Level Project Implementation Unit (DL-PIU)**

**Dhading District**

**Submitted on:11 August 2017**

**Abbreviation:**

CBS	: Central Bureau of Statistics
CBOs	: Community Based Organizations
CF	: Community Forest
CFUG	: Community Forest User's Group
CL- PIU	: Central Level Project Implementation Unit
CUM	: Cubic Meter
DCRN	: District Core Road Network
DCC	: District Coordination Committee
DCC-ENRC	: District Coordination Committee- Environment and Natural Resource Committee
DL- PIU	: District Level Project Implementation Unit
EHRP	: Earthquake Housing Reconstruction Project
ESMP	: Environmental and Social Management Plan
ESSR	: Environmental and Social Screening Report
Ha	: Hectare
HH	: Household
ICS	: Improved Cooking Stoves
IPs	: Indigenous People
PA	: Participatory agreement
PO	: Partner organization
NGOs	: Non-Governmental Organizations
RM	: Rural Municipality
VCDP	: Vulnerable Community Development Plan
VDC	: Village Development Committee

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## ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

Finding from environment and social screening (ESS) of the Katunje Sub-Project indicates that there will be no significant adverse environmental and social impact on the settlement due to sub-project activity. However, there are some environmental issues for which require minimal and known mitigation measures as per the recommendation of the screening report Environmental and Social Management Plan (ESMP) has been prepared. Similarly, majority of the beneficiary households are from Indigenous People's group in the sub-project area thus a separate Vulnerable Community Development Plan (VCDP) has not been prepared but the mitigation measures have been included in the ESMP. (Please see ESS report for baseline information)

### 1 Identification/Assessment of Impacts and Mitigation Measures

#### Issues Related to Reconstruction of Earthquake Damaged Houses

(I) Increased Risks of Landslide and Erosion due to Construction Material Quarrying (stone and slates)

The area is a hilly terrain. Some spots are prone to landslide and erosion if disturbed. There is risk of possible slides, erosion and mass wasting and expansion and acceleration of existing slides if the construction materials as for e.g., soil, sand, gravel and stones are, sourced/ quarried inappropriately from these areas (Thanthi Danda and Katunje Danda landslide area).

#### Mitigation Measures

Avoid sourcing construction materials from existing landslide (*Thanti Danda* and *Katunje Pani Danda*) area;

Encourage re-use of salvage stones and slates;

Additional raw materials such as stone and aggregates will be purchased from the local market. Local market would source the materials from DCC/Rural Municipality approved quarry site and have undergone environmental clearance and hold permits. These quarry sites would be monitored by the DCC/Rural Municipality. (Details on construction materials required for the re-construction of three different models of house is presented in Annex-III.

(II) Lack of Sand Deposits

Majority of the residents in the sub-project area are planning to construct new house building with sand-cement mortar, thus sand requirement quantity is estimated as 4,040 cubic meters. According to field investigation and locals, there are no any sand deposits in near vicinity of the sub-project area.

#### Mitigation Measures

Sand for house construction should be sourced from market. District Coordination Committee/Rural Municipality (DCC/RM) approved and licensed issued site for sand, gravel and stone on nearby

Akhu Khola river bank deposits could be used as a source for materials. These quarry sites will be monitored by the DCC/RM. Raw material supplier will be responsible to reinstate the sites in original condition. Quarry site reinstate condition is obliged to contractor as a conditional clause prior to approval of license issue.

Alternative selection of house reconstruction models to use readily available mud as mortar construction of houses should be adopted.

### (III) Forest and Wildlife

The construction of 101 housing of different design requires 16,997cft of timber where 2,424cft is salvaged from debris and demolished houses. This will likely to increase pressure in *Dhadpakha Mahavir* Community Forest. The forest area consists of mixed tropical vegetation with *Sal* as dominant vegetation. The species is prohibited by the government for commercial logging and selling. But for the earthquake house reconstruction timber supply permission is granted from District Forest Office and Community Forest.

### Mitigation Measures

To reduce the likely impact on forest and bring it down to acceptable level the following measures has been proposed:

- Re-use timber that was salvaged from debris (2,424cft);
- Use own farm land timber, maximize the utilization of government distributed (Nepal Timber Corporation, government entity) relaxation quota and purchase from licensed local market Take permit from Community Forest User Group/ District Forest Office (CFUGs/DFO) before felling of trees;
- Selection and clearing of tree will strictly abide with Guidelines issued by Ministry of Forest and Soil Conservation regarding timber production, supply and management for earthquake affected people 2072 BS.
- Compensatory plantation will be carried out at 1:25ratio i.e. for each felled tree, plant 25 saplings in and around the sub-project area, on any adjoining forest/barren/corridor developing area; and plantation area site location approval will be taken from CF and DFO.
- Prohibit hunting of wildlife and collection of their parts.

### (IV) Debris and Solid Waste Management

The earthquake has damaged 101 houses in the sub-project location and debris generated is managed in-situ after salvaging quality materials for reconstruction of individual houses. Since, the debris generated from the sub-project area does not require any further treatment or disposal site the issue of debris, solid waste management is not considered significant, and hence mitigation measures are not proposed.

**(V) Water Requirement for Reconstruction, Drinking and Sanitation**

Water availability for drinking and sanitation purpose is insufficient. Sanitation and hygiene situation is not satisfactory. However, the shortage of water supply is not a project induced impact; increased water demand for construction of houses will put additional stress on the community. Considering the increase in water demand due to project activities and resultant impact on water availability for drinking purpose and personal hygiene is considered as significant, site specific and short term impact of sub-project.

**Mitigation/ Enhancement Measures**

- Re-assess repair and maintenance of existing damaged water supply structures.
- Collect unused discharged water in poly tanks, or plastic ponds.
- Promote awareness on water use efficiency and WASH by project team, Partner Organization/Non-governmental Organization (PO/NGOs/Individual)
- Explore other alternatives for improving water availability in the settlement like rain water harvesting, etc.

**(VI) Indoor Air Quality**

Indoor air quality on existing temporary residential structures on sub-project location seems poor due to use of fuel wood and poor ventilation. The use of fire wood in such poor ventilated system has impact in long exposure resulting respiratory problems mainly to infants and woman. The impact is considered of high significance, reversible, long-term and site specific.

**Mitigation Measures**

During the house reconstruction, DUDBC- technical team needs to provide technical assistance in integrating design features for indoor air pollution mitigation (DL-PIU safeguard specialist need to coordinate and facilitate this). Other mitigation measure for indoor air quality improvement includes:

- Training/awareness and demonstration by Project team,Partner Organization/Non-governmental Organization (PO/NGOs/Individual) on indoor air pollution and subsequent health effects;
- Installation of improved cooking stoves (ICS) and incorporate ventilated construction approach using Government grant; and
- Promote environmental friendly alternative energy that generates little or no smoke in comparison to fuel wood through coordination with other agencies including government and NGOs/INGOs which are already engaged in these sectors in the district. List of organizations working in the district in alternative energy sector is presented in Annex I.

**VII) Indigenous Peoples and other Vulnerable Groups**

100 out 101 households belong to indigenous community. 34 households are female headed households. Considering the presence of IPs in the sub-project area World Bank Policy OP

4.10 on Indigenous Peoples is triggered. For this sub-project as majority of the households belong to Indigenous Peoples community a separate VCDP is not be prepared but mitigation measures and cost is included as a part of this ESMP.

### Mitigation Measures

Until the Government finalizes the Vulnerable Community Support package and resources required for implementation, following measures will be implemented in the sub project by the EHRP:

- Targeted communication and awareness to vulnerable group on For e.g. organizing consultation in areas accessible for women and people with disabilities.
  - Information about the project, grant, training opportunities
  - Awareness campaign on indoor pollution and its health effects
  - Awareness on efficient usage of water and WASH
- Target vulnerable groups while providing trainings to construction workers, supervisors, social mobilisers;
- Target female-headed households and other vulnerable groups during social mobilization process and provide them with additional technical assistance during construction period (masonry, carpenters, etc.); and
- Ensuring their participation during consultation process throughout project implementation cycle;
- Provide additional assistance in accessing housing grants (e.g.- facilitate opening bank account, paperwork for installments/tranche, etc. )

### **2. Build Back Better Opportunity (Enhancement Measures)**

- As the individual residential houses in the settlement/ subproject area are using firewood is the traditional cooking fuel, this project provides an opportunity to build Improved Cooking Stoves (ICS) or bio-gas etc. using housing grant
- Improved sanitation and hygiene situation in the settlement by toilet construction using housing grant allocated for sanitation purpose;
- Increasing water availability by rehabilitation or constructing new water supply system through coordination with line agencies working in water supply sector in the area Promote coordination and develop linkage with district level government, NGOs and INGOs working in WASH sector, alternative renewable energy sector, etc.

### 3 Environment and Social Impact and Mitigation Plan

Environmental impact and mitigation plan for Katunje sub-project is presented below in Table 1.

**Table 1: Environmental and Social Impact and Mitigation Plan**

Issues	Mitigation Measures	Timing of Action	Mitigation Cost	Responsibility	Remark
Risk of landslide and erosion due to construction materials quarrying	Avoid sourcing construction materials from existing landslide area (Thanthi danda and Katunje Pani danda). Collect from local market that holds quarry site clearance/permits from DCC/RM.	During house reconstruction	NA	Mobile team/All house reconstruction beneficiaries	
Lack of sand deposits	Source DCC/RM approved /licensed quarry sites and local market. Alternative selection of house reconstruction models to use mud mortar construction of houses should be adopted;	During housing reconstruction	NA	Mobile team/All house reconstruction beneficiaries	Quarry site reinstate condition is obliged to contractor as a conditional clause prior to approval of license issue)
Forest and Wildlife	Reuse timber that was salvaged from debris (2,424c ft); Use own farm land timber, maximize the utilization of government distributed (Nepal Timber Corporation, government entity) relaxation quota and purchase from licensed local market. Take permit from Community Forest User Group/ District Forest Office (CFUGs/DFO) before felling of trees; Selection and clearing of tree will strictly abide with Guidelines issued by MoFSC regarding timber production, supply and management for earthquake affected people 2072 BS. Compensatory plantation will be carried out at 1:25 ratio i.e. for each felled tree, plant 25 sapling area site location Prohibit hunting of wildlife and collection of their parts.	During reconstruction	NRs. 300,000	Mobile team/All house reconstruction beneficiaries CFUGs (for compensatory plantations.)	Plantation approval will be taken from CF and DFO.



Issues	Mitigation Measures	Timing of Action	Mitigation Cost	Responsibility	Remark
Indoor Air Pollution	<p>Training and awareness program on indoor air pollution and subsequent health effects</p> <p>Construction and Installation of improved cooking stoves and ventilated construction approach</p> <p>Promote use of environmental friendly alternative energy</p>	<p>Within three months from the date of approval of safeguard plan. During and after construction</p>	<p>NRs. 200,000 (for training)</p>	<p>Mobile team/All house reconstruction beneficiaries</p>	<p>For awareness programs and training the DL-PIU/safeguard team will coordinate with other line agencies working in this sector. The ESMF of the project has provisioned cost for mitigation at settlement level</p>
Water requirement for reconstruction , drinking and sanitation	<p>Repair and maintenance of existing damaged water supply structures.</p> <p>Collect unused discharged water in poly tanks, or plastic ponds</p> <p>Promote awareness on efficient usage of water and WASH</p>	<p>During and after construction</p> <p>During Construction</p>	<p>Project will cover mitigation cost. (NRs. 300,000)</p>	<p>Mobile team/ DL-PIU /User Community/ Beneficiaries</p>	<p>For awareness programs, repair and maintenance of water supply system, the DL-PIU/safeguard team will coordinate with other line agencies working in this sector. The ESMF of the project has provisioned cost for mitigation at settlement level on case by case basis, however the final amount will be decided based on the structure or mitigation measure that is found to be best suited for the project and settlement</p>
Build back better opportunity (enhancement measures)	<p>Coordination and linkages with other line agencies including government and NGOs/ INGOs which are already engaged in these sectors in the district.</p>	<p>During and after construction</p>	<p>This project will not incur mitigation measure cost.</p>	<p>DL-PIU/Mobile team/ Partner organisations</p>	<p>Agencies working in different sections are listed in Annex I</p>
Indigenous Peoples and	<p>Mitigation measures include:</p> <ul style="list-style-type: none"> <li>Targeted communication and awareness to</li> </ul>	<p>During house reconstruction</p>	<p>This will not require</p>	<p>DL-PIU/Mobile team/ Partner organisations</p>	<p>The Government/Project is drafting a guideline for</p>

Issues	Mitigation Measures	Timing of Action	Mitigation Cost	Responsibility	Remark
<p>other vulnerable groups including marginalized, poor, woman headed households, disabled people</p>	<p>vulnerable group(e.g. organizing consultation in areas accessible for women and people with disabilities.) on:</p> <ul style="list-style-type: none"> <li>○ Information about the project, grant, training opportunities</li> <li>○ Awareness campaign on indoor pollution and its health effects</li> <li>○ Awareness on efficient usage of water and WASH</li> </ul> <ul style="list-style-type: none"> <li>● Target vulnerable groups while providing trainings to construction workers, supervisors, social mobilisers;</li> <li>● Target female-headed households and other vulnerable groups during social mobilization process and provide them with additional technical assistance during construction period (masonry, carpenters, etc.); and</li> <li>● Ensuring their participation during consultation process throughout project implementation cycle;</li> <li>● Provide additional assistance in accessing housing grants (e.g.- facilitate opening bank account, paperwork for installments/tranche, etc. )</li> </ul>		<p>additional mitigation cost.</p>	<p>(The team will ensure that vulnerable groups are targeted and their participation in ensured through district project team mobilization)</p>	<p>Vulnerable Community Support Package equivalent to NRs 50,000 for vulnerable households to be provided through partner organisations. The project (NRA) including the district team will coordinate with NGOs/INGOs and donor partners to provide the package to the vulnerable groups in the concerned settlement</p>

#### 4. Monitoring and Reporting Mechanism

Monitoring will follow guidelines outlined in ESMF prepared for the project. Mobile team's social mobilizer and environmental officer will submit supervision and monitoring report to DL\_PIU. DL\_PIU's safeguard team, with necessary support from PO/SA, will manage periodic (monthly) site monitoring and submit monitoring report to DCC/RM. Consolidated quarterly environmental and social monitoring report will be submitted to the central PIU's and also shared with the world bank. The central- PIU's environmental and social specialists are responsible for the overall compliance with ESMF. A third party, commissioned by the PMU, will monitor the environmental and social compliance, initially six-monthly and later on an annual basis. Details on monitoring frequency are presented in Table 2 and details on monitoring cost are presented in Table 3.

#### 5. Environmental and Social Monitoring Plan

A monitoring checklist will be developed to facilitate and make uniformity in monitoring. The frequency of monitoring will be conducted as per the provision made in ESMF.

**Table 2: Environmental and Social Monitoring Indicators and Plan**

S N	Level	Monitoring Indicator	Monitoring by	Location	Frequency	Remarks
1	Household (HH) level	<p>Location of individual reconstruction HHs (landslide/erosion/flood prone/ slope failure area etc.)</p> <p>Sourcing of reconstruction material like timber, sand, aggregate, water and stone.</p> <p>Debris management</p> <p>Provision of ICS/toilet in house design or facilities etc.</p> <p>Awareness level of project provisions including GRM and training opportunities, housing designs and minimum standards</p> <p>Participation in</p>	<p>Mobile Team, DUDBC Engineer, DL-PIU</p> <p>Third party Monitor</p>	Construction sites, quarry site and market	<p>Regular</p> <p>Twice a year for first year of implementation and then after once a year</p>	<p>During Screening and Site selection, foundation excavation,</p> <p>Third Party monitoring will be done on a sample basis.</p>

S N	Level	Monitoring Indicator	Monitoring by	Location	Frequency	Remarks
		public consultations  Vulnerable HHs receiving Vulnerable community support package				
2	Settlement level	location of reconstruction settlements (land slide/erosion/slope/flood prone area, debris management, etc)  Compensatory plantation  Public consultation and awareness campaigns	DL-PIU/CL-PIU  Third Party Monitor	Settlement level reconstruction HHs	Monthly  Twice a year for first year of implementation and then after once a year	Third Party monitoring will be done on a sample basis.

## 6. Environment and Social Mitigation and Monitoring Cost

**Table 3: Mitigation, Enhancement and Monitoring Cost**

		Qty	Unit	Rate	Amount
<b>1</b>	<b>Mitigation Cost</b>				
A	Training on WASH/Sanitation	1	Nos.	50,000	50,000
B	Training of Trainers (ToT) on Alternative Energy/ICS(Targeted to IPs and other vulnerable HHs)	1	Nos.	200,000	2,00,000
C	Mitigating existing water stress	1	Nos.	LS	3,00,000 <sup>1</sup>
D	Compensatory Plantation @ 1:25	3,000	Nos.	LS	3,00,000
	<b>Sub Total (in NRs.)</b>				<b>8,50,000</b>
2	Monitoring Cost			LS	50,000
	<b>Total Cost Including VAT</b>				<b>9,00,000</b>

Note: The project (EHRP) has set aside budget for safeguard activities at project level. Budget for the sub-project/settlements will be allocated case by case on need basis.

<sup>1</sup> The final amount will be decided based on the structure or mitigation measure that is found to be best suited for the project and settlement

## 7. Grievance Redress Mechanism

The GRM will follow the mechanism developed for the overall project.

The institutional setup of the project's GRM system will include: (i) VDC (Former) /Municipality Grievance Management Committee (VGMC/MGMC); (ii) DDC (Former) (DCC) Grievance Management Sub-Committee (DGMSC); (iii) District Level Grievance Management Committee (DLGMC); (iv) PMU Grievance Monitoring & Recommendation Committee (PGMC); (v) Central Grievance Monitoring and Policy Reform and Recommendation Committee (CGMPRRC) for the upward flow of grievances.

## 8. Conclusion and Recommendation

Environmental impacts identified and mitigation measures suggested in this sub-project area are: pressure on *Dadapakha Mahabhir* community forest due to additional demand of timber and sourcing of other raw material such as stone/sand and aggregates, effect on sanitation and hygiene of the community because of increased demand of water for construction on already water supply deficient settlement. Mitigation measures and monitoring suggested in this ESMP should be implemented from respective stakeholders that are indicated in mitigation/monitoring table.

In relation to vulnerable households including Indigenous People's group, a vulnerable support package as an overall approach to earthquake recovery project by the National Reconstruction Authority in all the 14 earthquake affected districts including three districts considered by EHRP is under design. The government is drafting guideline for this package to be provided through POs. NRA will coordinate with NGOs/INGOs and donor partners to provide the package to the vulnerable groups. Mitigation measures for vulnerable group that has been included as a part of ESMP will be implemented in line with the Vulnerable Support Package the government is coming up with.

The project also promotes "Build Back Better Opportunity" approach through coordination and facilitate linkages of the settlement with various agencies working different sectors in the area like water supply and sanitation, alternative energy, etc. The total cost for implementing this ESMP including ToT cost targeted to IPs and cost for monitoring is **NRs. 9,00,000**. This cost will be borne by the Project.

## Annexes

## Annex I: District Level Institutions Involved in ICS, Sanitation, Water shed and Forest Conservation and other Environment Safeguard Sectors

Working Sector	Institutions	Description of Activities	Coverage Area	Collaboration/Remarks
ICS	District Environment Energy and Climate Change Sections(DEECCSs)/DCC	-ICS Promotion & installation		I/NGOs Local Bodies
Water & Sanitation	DWSSO	- Water Supply and Sanitation promotion	In most of the VDC of the district	I/NGOs, Local Bodies
	DCC	-Water Supply and Sanitation promotion	In most of the VDC of the district	I/NGOs, Local Bodies
	Action Nepal	-Water and Sanitation -DRR	In most of VDC's of District	I/NGOs, Local Bodies
	Nepal Redcross Society	-Water & Sanitation promotion DRR, Livelihood	-Kalleri and Katunje	I/NGOs, Local Bodies
	Helvatas/UMN/PAF/Unicief	-Water supply and Sanitation	Aginchowk,Bhumesthan,Gogane Pani, Khalte,Khari, Nalang, Tasarpu, Thakre	CIRDS, INGO,N GO
Watershed Management	District Soil Conservation Office	-Gully, Landslide Mitigation measures		I/NGOs, Local

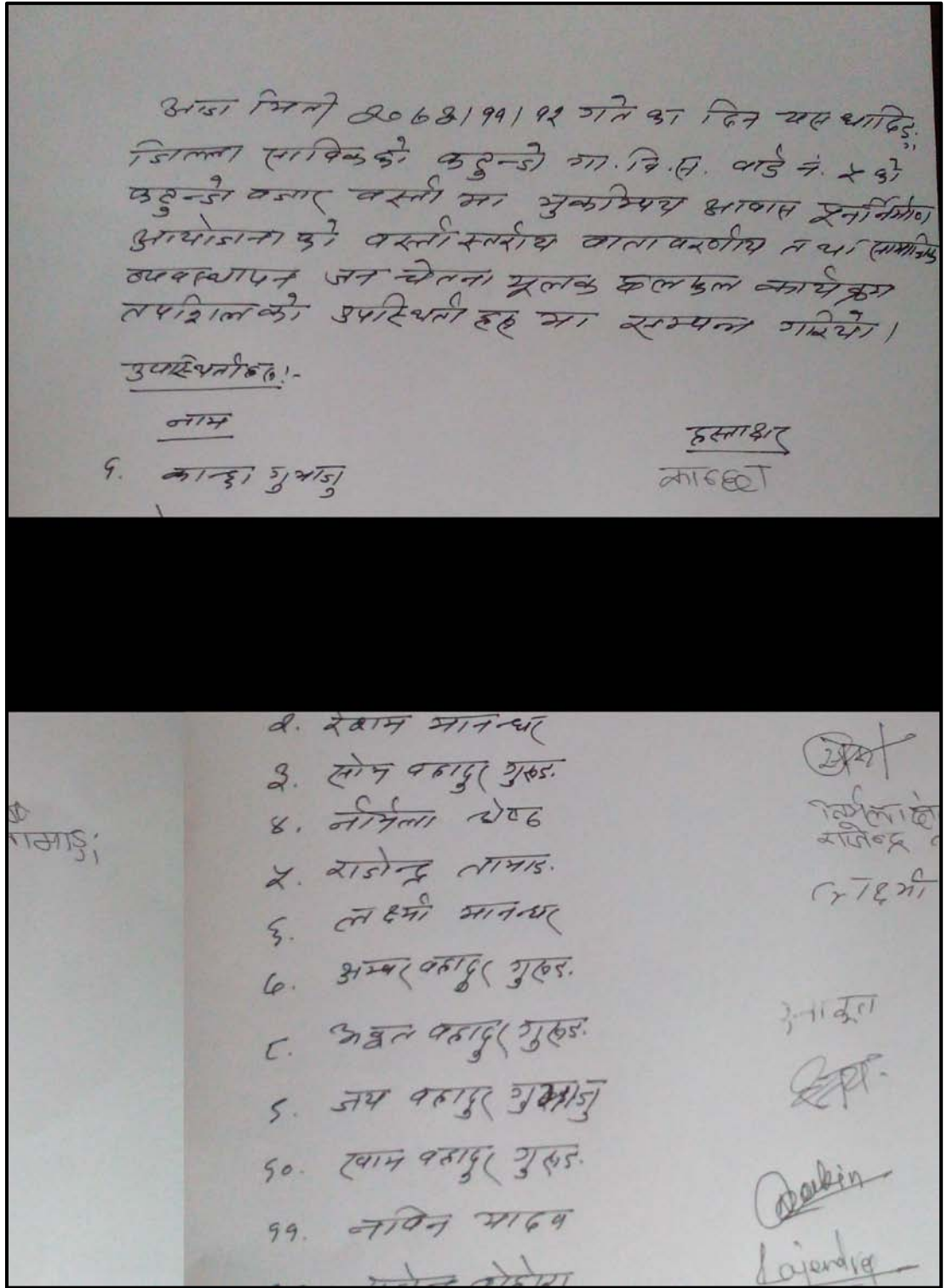
t		<ul style="list-style-type: none"> <li>-River and rivulets conservation (Application of Bioengineering technique)</li> <li>-Water source conservation</li> <li>-Roadside conservation</li> </ul>		Bodies
Forest conservation	Federation of Community Forest User of Nepal (FECOFUN)	<ul style="list-style-type: none"> <li>-Construction of Biogas with attached toilet</li> <li>-Plantation or Bioengineering for prevention/control at soil erosion site</li> <li>-Orientation/training on Disaster Risk Reduction (DRR) for users committee members</li> </ul>	In most of the VDC of the district	I/NGOs, Local Bodies
	DFO	<ul style="list-style-type: none"> <li>-Technical support and capacity building CFUGs members</li> <li>-Plantation of bamboo plant at highly earthquake affected areas</li> </ul>	Within district	I/NGOs, Local Bodies

**Annex II: Stakeholder consultation and Minutes****List of people consulted.**

<b>SN</b>	<b>Name</b>	<b>Designation</b>
1	Nabin Yadav	Engineer
2	Rajendra Bahadur Bohora	Sub Engineer
3	Rajendra Tamang	Asst. Engineer
4	Birendra Shrestha	Local Resident
5	Laxmi Manandhar	Local Resident
6	Nirmala Shrestha	Local Resident
7	Ambar bahadur Gurung	Local Resident
8	Som Bahadur Gurung	Local Resident
9	Aita Bahadur Gurung	Local Resident
10	Resham Kumar Manandhar	Local Resident
11	Laxmi Manandhar	Local Resident
12	Kancha Guvaju	Local Resident
13	Jaya Bahadur Guvaju	Local Resident
14	Kham Bahadur Gurung	Local Resident



Meeting Minutes from Consultation with Beneficiaries and other Stakeholders



इलकल तथा निर्णयहरू:-

- १) निजी आपास पुनर्निर्माण गर्दा पुरानो घरहरू बाह्र निस्कने काठ तथा कुडाको पुनः उपयोग मा लगाउने अन्य फोहोलाई व्यवस्थापन गर्नु पर्ने इलकल गरियो
- २) निजी आपास पुनर्निर्माण गर्दा वनजन्य काठको लागी साबुदाखि वन तथा डाल्ला वन कार्यालयको समन्वय गरी सो सापुडा उपाय खोज्नु पर्ने निर्णय गरियो।

निजी आपास पुनर्निर्माण गर्दा कालापरणीय तथा समाजिक प्रभाव मा धुने पनि नकरात्मक प्रभाव पर्ने गरी निर्माण कार्य गर्न निर्णय गरियो।

समुदायका बसोवास गर्ने सबै महिला तथा पिढीको वर्गहरूको आवश्यकता तथा आधिडालाई सम्बोधन गरी भौतिक/सांस्कृतिक/सैनिक/धरोह/बलाई अरु कारिने केन भने निर्णय गरियो।

प्रस वलीका पुनर्निर्माण तथा सरसफाई गतिविधीहरूलाई आगाडि उठाउने गरी को आभाव रहेको तथा गैरहेको स्रोत लाई व्यवस्थापन गर्ने नसकिने गर्दा यसलाई व्यवस्थापन गर्न को पहल गर्ने गरी विषयमा इलकल गर्ने निर्णय गरियो।

**Annex III: Construction Materials Required for Reconstruction of Houses (Models-SMM 1.1, SMC 1.1 and SMC 2.5)**

Construction Material Requirements							
Materials	Unit	Required /HHs	Av. salvaged Value/HHs	Total salvaged value		Net Required/H H	Net required for 101 HHs
Timber	cft	192	24	2424	0	168	16968
Stone	cum	76	19	1919	0	57	5757
Sand	cum	40	0	0	0	40	4040
Aggregates	cum	10	0	0	0	10	710
CGI Sheets	(sq. ft)	1026	215	21715	0	811	81911
Cement	(bag)	224	0		0	224	226624
Re-Bar	(Kg)	659	0		0	659	66559

Source: DUDBC Design List 2072 BS

Note: SMM= Stone Masonry in Mud Mortar and SMC= Stone Masonry in Cement Mortar