A Baseline Study of Hariyo Ban Program

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Abbreviation

ANSAB	Asian Network for Sustainable Agriculture and Bioresearches
BZUC	Buffer Zone Users Committee
CAP	Community Adaptation Plan
CARE	Cooperative for Assistance and Relief Everywhere
CBAPO	Community Based Anti - Poaching Operation
CC	Climate Change
CDM	Clean Development Mechanism
CFMC	Collaborative Forest Management Committee
CFUG	Community Forest Users Group
CHAL	Chitwan Annapurna Landscape
DADO	District Agriculture Development Office
DDC	District Development Committee
DFO	District Forest Office
DNPWC	Department of National Park and Wildlife Conservation
DSCO	District Soil Conservation Office
EIA	Environmental Impact Assessment
ERI	Environmental Resources Institute
FECOFUN	Federation of Community Forest Users' Nepal
FGD	Focus Group Discussion
GESI	Gender and Social Inclusion
GHG	Green House Gas
GIS	Geographical Information System
HH	Household
ICIMOD	International Centre for Integrated Mountain Development
IEE	Initial Environmental Examination
IPCC	Intergovernmental Panel for Climate Change
KII	Key Informants Interview
LAPA	Local Adaptation Plan for Action
LFG	Leasehold Forestry Group
LFP	Livelihood Forestry Program
LRMP	Land Resources Mapping Project
M&E	Monitoring and Evaluation
MJJ	Marginalized Janajati
MoE	Ministry of Environment
MoFSC	Ministry of Forest and Soil Conservation
NAPA	National Adaptation Plan for Action
NORAD	Norwegian Agency for Development Cooperation
NP	National Park
NRM	Natural Resource Management
NTFP	Non - Timber Forest Product
NTNC	National Trust for Nature Conservation
PA	Protected Area
PD	Program Development
PES	Payment for Ecosystem Services

PGA	Participatory Governance Assessment
PHPA	Public Hearing and Public Auditing
PVSE	Poor, Vulnerable and Socially Excluded
PWBR	Participatory Well - Being Ranking
REDD	Reducing Emission from Deforestation and Forest Degradation
RPP	Readiness Preparation Proposal
SAGUN	Strengthened Action for Governance in Utilization of Natural Resources
TAL	Terai Arc Landscape
UNDP	United Nations Development Program
USAID	United States Agency for International Development
VDC	Village Development Committee
WUG/A	Water User Group/Association
WWF	World Wildlife Fund

Acknowledgements

The purpose of this study was to generate reliable, up-to-date information on biodiversity conservation, sustainable landscape management and climate change adaptation in Terai Arc Landscape (TAL) and Chitwan - Annapurna Landscape (CHAL) of Hariyo Ban Program. This would primarily be a database of the project to establish baseline values for the assessment of the contribution of Hariyo Ban Program in future.

We would like to express our sincere thanks to Mr. Ram Prasad Lamsal, Joint Secretary, Ministry of Forest and Soil Conservation (MFSC) who kindly provided input, cooperation and support during the entire study. Similarly, the study team would like to thank the Hariyo Ban Program/WWF for providing us the opportunity to carry out this study. Special gratitude goes to Ms. Judy Oglethorpe – Chief of Party, Mr. Sandesh Hamal – Deputy Chief of Party, Dr. Sunil Regmi – Climate Change Adaptation Coordinator, Dr. Shanta Jyanwali – Biodiversity Coordinator, Mr. Keshab Khanal – Landscape Coordinator, Ms Shikha Shrestha – Gender and Social Inclusion Coordinator, Gorkarna Bista- Senior GIS Specialist and other team members. Very special thank goes to Dr. Rajendra Lamichhane - Monitoring and Evaluation Specialist of Hariyo Ban Program and also focal person of this assignment for his continuous support, follow-up and necessary inputs for the study. This task would not have been possible without his continuous support and encouragement.

During designing the methodology, field survey, and developing of reports, Mr. Ishwori Prasad Bhandari from the Centre Bureau of Statistics (CBS) Nepal provided significant guidance and input. There was a significant input from various experts on the methodology as well as on the findings of the study. The study team is indebted to all District Development Committees, District Forest Offices, District Soil Conservation Offices, District Agriculture Development Offices, District Livestock Service Offices, Protected and Conservation Areas from sampled districts, Department of Forest, Department of National Park and Wildlife Conservation, Department of Soil Conservation and Watershed Management, Alternative Energy Promotion Centre, Biogas Support Program, Federation of Community Forest Users' Nepal and National Trust for Nature Conservation. ERI also would like to thank UNESCO Club Banke team and the Chairperson Mr Parwej Ali Siddique, who provided surveyors for Dang, Banke, Bardiya, Kailali and Kanchanpur.

We would like to owe our sincere thanks to professionals and experts from many other government and non-government organizations who directly and indirectly provided intellectual inputs to complete this assignment. We would like to express our sincere thanks to all experts, field coordinators and enumerators who worked extremely hard to design the study and gather field-level information. Last but not the least; we thank all the individuals and institutions who provided information for this study.

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Executive Summary

The Environmental Resources Institute (ERI) in collaboration with Hariyo Ban Program/WWF conducted "***Baseline Study for Hariyo Ban Program"***. The study was conducted from March 26 – July 31, 2012. The study included two main landscape areas, Chitwan Annapurna Landscape (CHAL) and Terai Arc Landscape (TAL) that comprise of 27 districts (CHAL- 14 and TAL - 13). However, baseline survey was conducted only in 28 VDCs and one municipality covering 17 clusters of 17 districts of both CHAL and TAL areas.

The overall objective of the baseline study was to establish baseline values for the assessment of contribution of the Hariyo Ban Program particularly in Terai Arc Landscape (TAL) and Chitwan Annapurna Landscape (CHAL) areas in future. Four major study methods - household survey, FGDs, interaction/consultation meetings and secondary information - were used in the study. Suitable methods of data collection were selected on the basis of data nature, population and data availability. Further, both primary and secondary data sources were used to collect the required information for the study. Primary data were collected through sample survey (HH survey), FGDs and case studies, whereas secondary data were collected from various offices/institutions, project reports, relevant research and studies, and national and local level policy documents.

A number of tools were used to collect information from the field. Survey questionnaire was one of the major tools used to collect HH information. Several checklists were developed and used to conduct FGDs and collect information from different offices. Consultation and coordination meetings were another tool used for finalization of methodology, collection of data and their verification. A series of such meetings were held amid different stakeholders both at central and local levels. Field-testing was done in Chitwan district to check consistency and usability of the questionnaire and checklist before using them in the field.

The study has revealed some interesting facts about household and community situation. Major highlights of the study are given below:

General Information:

- Nearly 25% of household members have been found illiterate whereas only 10% people have college level education;
- Vast majority of household decisions are taken by both male and female in CHAL area;
- Average household income from the employment is Rs. 53,225/Annum in the area;
- Over 50% respondents said that their main expenditure area is food and they spend most of their income to buy food items;
- Nearly one third of the respondents (32%) said that their production is enough to feed for at least nine months. However, 65% said their production is sufficient for only six months or less;
- Total 498 HHs (nearly 23%) and over 29% households in TAL do not have toilet at all and they practice open defecation;
- Nearly 44% HHs surveyed are using piped water for drinking and 42 HHs (nearly 2%) use river water for drinking purpose;

Biodiversity:

- Understanding on biodiversity was found to be high (81.3%) in TAL and low (18.7) in CHAL;

- More than 80% of the people in TAL and CHAL believed that better ecosystem can provide benefit to the people. Responses among the male and female were found to be almost similar in both the areas;
- There is domination of hybrid and improved breeds of livestock and crops in both CHAL and TAL and local varieties are gradually disappearing;
- Overall, majority people perceived that wildlife has increased in the last 20 years and less than a quarter populations believe that wildlife is declining. The reason for declining is found to be mostly by poaching and illegal logging;
- The population of focal species were recorded to be 155 Tigers, 534 Rhinos, 47 Snow leopards, 102 Ghariyal and 1741 Swamp Deer;
- Most of the people (over 90%) stressed the need for protecting wild animals;
- A total of 378 CBAPOS existed in TAL (38 in buffer zones of the protected area and 359 in corridors and bottlenecks) where 2,639 community members are engaging;
- Around two third people think they have fair relationship with PAs whereas only negligible numbers of people think that relationships are poor. But, over 70 % the respondents have problem of crop damaged by wild animals and around 20% have problem of livestock attack. Negligible people (1.8%) have received compensation of less than Rs. 20,000.

Landscape Management:

- A total of 583 thousand hectares of forests are under improved management that is managed by more than 8300 groups;
- A total of 1.10 million hectares of forest land exists in CHAL and 1.11 million hectares in TAL;
- The overall deforestation rate in CHAL is estimated to be 0.97 % annually (this include degraded forest area) whereas it is 0.18% in TAL which does not include degraded forest having canopy cover less than 10%. The area of dense and very dense forest has increased and degraded and medium decreases in CHAL while it is reverse in the case of TAL;
- The prioritized drivers of deforestation and forest degradation in CHAL were found to be fire, illegal felling of trees, uncontrolled grazing, encroachments and invasive species. Similarly, in TAL, illegal felling, forest fire, encroachment, uncontrolled grazing and invasive species were prioritized;
- Total carbon stock in CHAL is estimated to be 187 million tons and it is 262 million metric tons in TAL;
- A total of US$ 1.15 million has been generated under REDD and CDM in the project area;
- Majority of people (over 90%) in the project area are still using firewood for cooking. However there is a combination of energy sources;
- A total of 159,477 bio-gas plants and 74,803 improved cooking stoves (ICS) are installed in the project areas;

Climate Change Adaptation:

- Around half of the people surveyed are aware on climate change (CC). The sources of information are radio and television;
- Over 70% people in TAL and CHAL observed the impact of climate change;

- Over 70% people believe that there is impact on agriculture production mostly resulting in less food availability;
- Over 60% people in TAL and CHAL believe that there is impact of CC on water resources by changing water quantity and quality;
- More than half of the population in CHAL and TAL believe that CC has impacted on biodiversity especially in productivity, species composition and ecosystem services;
- Gorkha, Dhading, Manang, Rasuwa, Rautahat and Kapilbastu districts have low CC adaptation capacity. Similarly, Lamjung and Banke are highly vulnerable districts;
- A total of 10 LAPAs in CHAL and 79 in TAL; 649 CAPs in CHAL and 392 CAPs in TAL have been developed. Similarly, 54 CFUGs have incorporated adaptation activities in their CFOPs;

Training and Capacity Building:

- About 27% (585 HHs) respondents reported that they have received some kind of forestry or NRM related trainings; however 73% of them responded that they have not received any training;
- Forestry is the most common training that many people have been receiving and gender and social inclusion is the second one;
- It is found that 8% respondents (170 out of 2,150 HHs) and their family members have received skill-based trainings but other 92% (1,980 HHs) have not received any skill-based training;
- Number of HHs running enterprises is very low (less than 5%) as compared to total 2,150 HHs surveyed, the percentage is high (61%) as compared to the number of people who have received skill based trainings;
- Skill oriented enterprises are the most lucrative businesses at the community level. Out of total 48 such enterprises, 22 are earning more than NRs. 50,000 per year;

Good Governance, Gender and Social Inclusion:

- A vast majority (nearly 69%) of the sampled HHs is associated or has been the member of local committee, group, society and so forth;
- Number of people associated with CFUG is the highest one, 979 people out of 3,070 (over 45%) followed by other groups 923 (43%);
- Most of the groups/associations/committees have at least 33% women in the executive committees;
- Regarding the listening to voices in the group, 15% said their voices are always heard and 41% reported that their voices are heard occasionally but 44% responded that their voices are never heard;
- Voices of all poor, *Dalits*, women and other disadvantaged groups are heard and common issues are addressed too but when there are important issues like - benefit sharing, the male members (elites) influence the decisions;
- Nearly 32% respondents who are member of community groups/committees/ associations said that they have some knowledge on PGA and are familiar with the issue;
- The PVSE people are selected as executive members by chairperson, so they have little influence in the committee and chairperson and other elites of the committee also determine their wellbeing ranks;
- Nearly 86%, (429 respondents out of 501) are familiar with PWBR process;

- PVSE groups are getting benefits or support from their community organizations. Total 501 families have received support from the local organizations in the study area;
- Over 61% respondents have knowledge on PHPA. Total 66% respondents replied that they participate in such public events;
- Most of the people seem aware of income and expenditure situation of their respective groups/committees/associations. 66% respondents said that they do have information about it, and
- Total 21% respondents of sampled HHs found to have participated in issue based campaigns.

CHAPTER I

1. Introduction

1.1 General Background

Funded by the USAID, the Hariyo Ban Program is a five year program which is being implemented in two important landscapes of Nepal– Terai Arc Landscape and Chitwan Annapurna Landscape. The Program has been in operation since August, 2011 and is implemented by four core partners: WWF Nepal as prime recipient, the Cooperative for Assistance and Relief Everywhere (CARE), National Trust for Nature Conservation (NTNC), and the Federation of Community Forestry Users Nepal (FECOFUN). It works on three core interwoven components – biodiversity conservation, sustainable landscape and climate change adaptation – with livelihoods, gender and social inclusion, and internal governance of NRM groups and their networks being important cross-cutting themes.

Hariyo Ban Program aims to achieve significant results in the three core areas as stipulated in the Results Framework document. These results will be monitored by a number of relevant indicators which are elaborated in the M&E Plan of the Program. The overall goal of the Hariyo Ban Program is *to reduce adverse impacts of climate change and threats to biodiversity in Nepal*. Other specific objectives of the Program are, reduce threats to biodiversity in target landscapes, build the structures, capacity and operations necessary for an effective sustainable landscapes management, especially reducing emissions from deforestation & forest degradation (REDD+) readiness and increase the ability of target human & ecological communities to adapt to the adverse impacts of climate change.

As mentioned, the Program is implemented in the two important landscapes – Terai Arc Landscape (TAL) and Chitwan Annapurna Landscape (CHAL). TAL encompasses 7 protected areas in 14 Terai districts (Rautahat, Bara, Parsa, Chitwan, Makawanpur, Nawalparasi, Rupandehi, Kapilbastu, Dang, Banke, Bardia, Kailali, Kanchanpur and Palpa). Similarly CHAL contains 4 protected areas and the Kali, Seti, Marsyandi and Trisuli River basins, and encompasses part of 19 districts (Mustang, Manang, Gorkha, Rasuwa, Nuwakot, Dhading, Lamjung, Tanahun, Chitwan, Nawalparasi, Syangja, Kaski, Parbat, Baglung, Myagdi, Gulmi, Arghkhachi and Palpa). Chitwan and Nawalparasi districts overlap both the landscapes.

Environmental Resources Institute (ERI), a consulting company having extensive experiences in survey, studies in forestry and other related sectors; carried out the study and prepared this study report. This report covers the study period March 26 to July 31, 2012.

1.2 Rationale for the Baseline Study

The baseline study is considered as a benchmark against which changes brought about by the Hariyo Ban Program in future will be compared. It was, therefore, necessary to establish baseline values for different indicators mentioned in monitoring and evaluation matrix of the program. This study also provides insights into interrelation between the program's target groups and different ecosystems particularly focused on biodiversity, landscape management and climate change adaptation.

This study is assumed to be helpful for the program staff to analyse key areas which the project has not foreseen now and to consider whether they should redesign their current project activities. Hence, the baseline values derived from the study will be pertinent in revisiting the targets of the key indicators and modification of certain indicators, which the program has anticipated to achieve during its tenure. It will also provide a clear foundation for measuring changes by establishing both qualitative and quantitative base values of

relevant indicators. This study, therefore, is considered an integral part of M&E matrix without which the matrix would be incomplete.

1.3 Objectives of the Study

The overall objective of the baseline study is to establish baseline values for the assessment of contribution of the Hariyo Ban Program particularly in Terai Arc Landscape (TAL) and Chitwan Annapurna Landscape (CHAL) areas in future. The specific objectives include:

- To establish baseline values for the indicators included in the M&E Plan at intermediate result and sub-IR level.
- To revisit the existing proposed indicators to make them more focused, relevant and measurable.
- To revisit, if necessary, the targets stated in the performance management plan initially submitted.
- To develop common understanding and acceptance among Hariyo Ban Program staff and core partners, particularly for project participants, of the project indicators, how to measure them, and how the information will be used.

1.4 Methodology of the Study

Various tools and techniques were adopted in order to complete the study. Desk review, consultation and interaction meetings with different stakeholders, household survey, focus group discussions, and key informants interviews (KIIs), expert consultations and sharing of draft report were major methodological tools used in the study. Please see *Chapter III* for details on study design and methodology.

1.5 Scope of the Study

The study includes two main landscape areas, CHAL and TAL that comprise 27 districts (CHAL- 14 and TAL - 13). The baseline information basically covers information on general demographic situation, biodiversity, landscape management, climate change adaptation, capacity building and income generation and good governance, gender and social inclusion. This study has also attempted to explore livelihoods and NRM situation of total 2,150 households who are living nearby forest or other protected areas. In addition, the study includes ownership of family asset, particularly the land and food sufficiency situation.

The study has also explored the linkages and dependency of households on forest and other natural resources including water. Further, vulnerability and risk factors are also considered while assessing livelihoods. Occurrence of shocks and coping strategies to mitigate natural disaster and other shocks caused by climate change are also covered in the study. Household decision-making pattern and role of women in a family and local groups/associations also are touched upon in the study. Further, institutional involvement in NRM related activities and pattern of deforestation and forest degradation also are covered in the baseline. Most importantly, review of project documents and monitoring and evaluation matrix also has been one of the major scopes of this assignment.

1.6 Management of the Study

The Environmental Resources Institute (ERI) carried out the study in close coordination and collaboration with the Hariyo Ban Program. The Hariyo Ban Program assigned Dr. Rajendra Lamichhane as a focal person for the project. The main role of the focal person was, coordination and communication with different stakeholders, monitoring of the study and providing required backstopping support to the study team. In addition, the focal person and other team members of Hariyo Bann Program were involved in finalising methodologies,

implementing the study, sharing of reports, etc. A multi-disciplinary team was involved from ERI to accomplish this assignment. The core team consists of Mr. Basanta Lamsal – Team Leader, Mr. Shambhu Dangal – NRM Expert, Mr. Bishwa N Paudyal – Policy and Governance Expert. A complete list of team members and their roles is presented in ***Annex 1***.

ERI recruited necessary human resources at both central and field levels. A 4-day training was organized for eight Field Coordinators to orient and get feedback on the questionnaires/checklists, followed by a consultative meeting with stakeholders and experts. All the field researchers attended the training, got familiarized with the process of information collection, and were subsequently deployed to their respective fields. ERI also organised four slots of one-day orientation programs for 46 Enumerators in Gaindakot (Nawalparasi), Pokhara (Kaski), Nepalgunj (Banke) and Dhangarhi (Kailali). The Enumerators were briefed about questionnaire content and also imparted knowledge about the process to fill up the questionnaire. ERI core and office team provided required support and supervision to the Field Coordinators and Enumerators. They also visited some sample districts to monitor field work.

1.7 Limitation

This study encountered numerous challenges and problems during the field survey period. The major problem the study team faced was general strike during the field survey. Over a month long strike limited the movements of field staff. Duration of assignment itself was another limitation of this study. Due to short assignment period, there was no enough time for research design and preparation of the field survey. Purposive sampling method, which was applied in the study, was probably another limitation of the study. The selected sample sites may not adequately represent the entire landscape areas. Lack of required secondary information was another major challenge faced during the study. Because of which the research team came across difficulty to generate updated and complete data for training and other issues.

1.8 Organization of the Report

The study findings are presented in Five Chapters. First Chapter deals with general introduction containing objectives and rationale of the survey and study methodology. The second Chapter deals with study design and methodology. Major findings of desk review are described in Chapter Three. Major results and analysis are stated in Chapter Four. The last Chapter covers key findings, observation, learning and recommendation of the study.

1.9 Study Period

The total duration of the study was 16 weeks (March 26 – July 31, 2012).

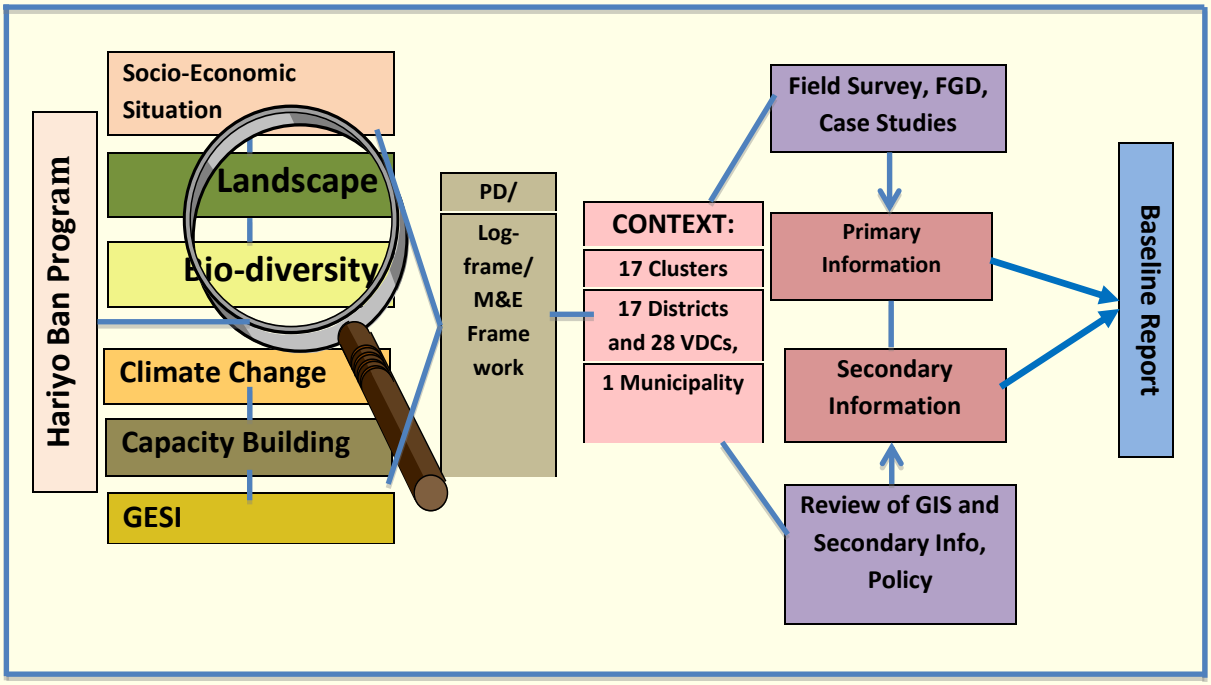
Chapter-II

2. Study Design and Methodology

3.1 Study Framework

This baseline survey was conducted in line with the project documents of Hariyo Ban Program and its requirement. It is believed that it would be the part of project activities. Therefore major areas for information are based on the project document. The following is the conceptual framework followed during the baseline study.

Diagram 2-1: Conceptual Framework of Baseline Survey



3.2 Methodology

Series of meetings were held with Hariyo Ban Program team to discuss on study methods, select the sites and determine sample size. Both qualitative and quantitative data were used to complement each other. Baseline data are generated at different levels including clusters, landscape and national level. Based on the discussion and meetings held with project team, the following study methods were agreed and used for the study.

3.2.1 Sampling and Sample Size

The universe of the study is TAL and CHAL project area. From the image analysis of the targeted watershed and sub-watershed, a total of 27 districts have been identified as effective universe of the project. Based on Population Census 2001, the universe consists of 4.9 million people. The list of the district covered as universe in the study is presented in ***Annex 2***. Within the universe, a total of seventeen (17) various sub-watersheds/clusters nine sub-watersheds from CHAL and eight clusters from TAL) from 17 districts are selected for the study including household survey, focus group discussions and field level consultation meetings. These sites cover total 28 VDCs and one municipality of TAL and CHAL area, which are primary sampling units (PSUs) of the study.

The total household number in selected VDCs and wards of municipality of the clusters is estimated at 42,369. At least 5% HHs (2,150) with a minimum 30 HHs in one VDC are surveyed from the selected VDCs. This sample size is determined on the basis of total

population, population variance in selected VDCs, time and resource requirement. Though there are numerous formula and calculators to determine sample size, this has been one of the commonly practiced statistical methods, which has been accepted widely. Stratified random sampling method has been applied while selecting the households from the VDCs. At least three wards of each VDC are covered while selecting wards for survey and efforts are made to find adjoining wards, ethnic diverse ward, proximity of forest resources and CC vulnerability. The VDC wards are considered secondary sampling units (SSUs). Within the wards, a complete list of households (HHs), which is final sampling unit of the study, was prepared and the HH list was stratified according to ethnic composition, sex and economic status. The required number of HHs, in proportion, was selected randomly from each stratum. The following are the selected sites, districts and VDCs (***Table 2-1***). Please also see ***Map 1*** and ***Map 2*** for location of selected VDCs and Municipality.

The clusters were selected purposively using multiple criteria namely biodiversity, climate change adaptation, REDD, gender and social inclusion, geographical zones, river system and potential NRM based economic activities.

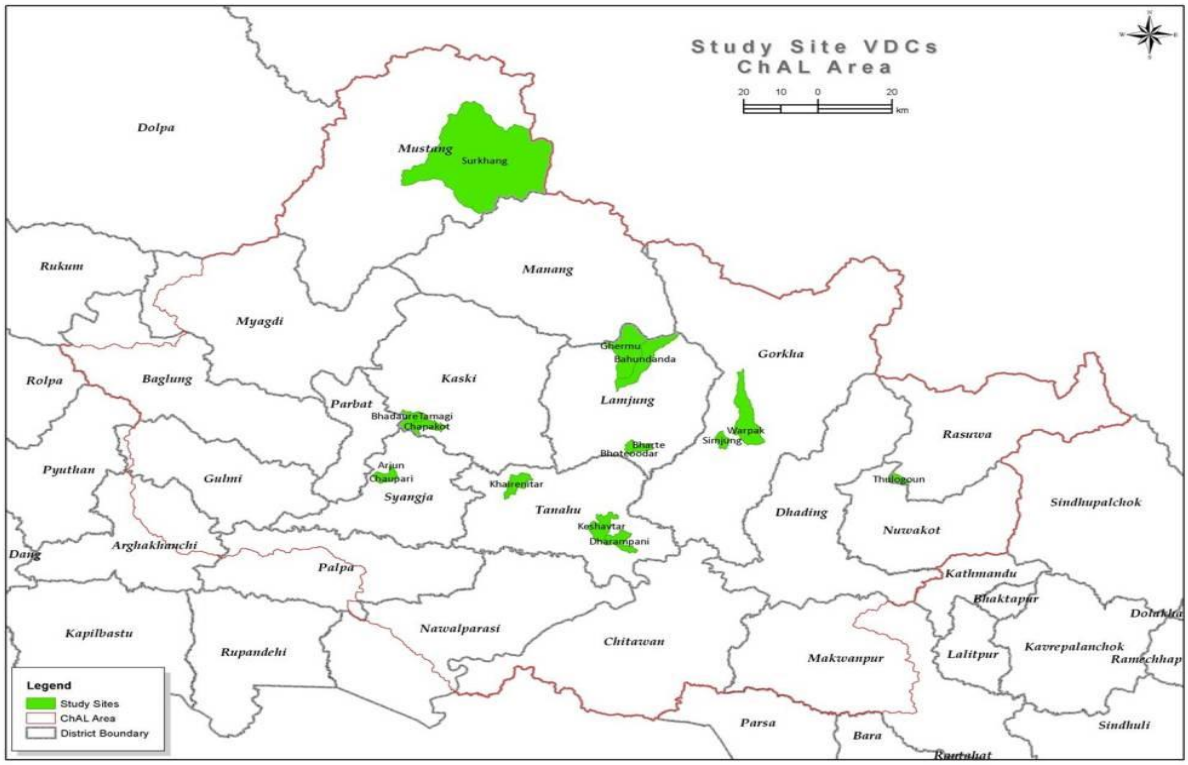
Table 2-1: Cluster, Total Population and Sample Size

Area	Selected Clusters	Districts Covered	Selected VDCs	HH Number	Sample Size
	Adhikhola	Syangja	Arjun Chaupari	1,357	67
	Upper Kali	Mustang	Charang	142	18
			Surkhang	114	12
	Phewa Upper	Kaski	BhadaureTamagi	762	38
	Seti		Chapakot	638	32
	Mid Seti	Tanahun	Khairenitaar	1,822	90
	Madi Lower	Tanahun	Dharampani	709	35
	Seti		Keshavtar	1,054	52
CHAL	Daraudi	Gorkha	Simjung	823	41
	Upper Marsyandi		Warpak	966	48
	Nagdi Upper	Lamjung	Bahundanda	474	30
	Marsyandi		Ghermu	382	30
	Dordi - Mid	Lamjung	Bharte	623	31
	Marsyangdi		Bhoteodar	1,295	64
	Trishulli	Rasuwa	Thulogaun	293	30
Sub Total	**(9 Clusters)**	**(7 Districts)**	**(15 VDCs)**	**11,454**	**618**
	Nijgadh	Rautahat	Judibela	881	44
		Bara	Ratanpuri	1,486	74
	CNP	Chitwan	Ayodhyapuri	2,310	114
	Bufferzone		Naya Padampur	2,137	106
		Nawalparasi	Naya Belhani	2,348	116
	Dobhan	Palpa	Dobhan	1,226	61
TAL	Lamahi	Dang	Sisahaniya	2,356	116
	Kamdi Banke	Banke	Baijapur	1,308	65
			Kamdi	1,479	72
	Karnali	Bardia	Patabhar	1,930	96
	Bardia	Kailali	Tikapur N.P.	6,287	312

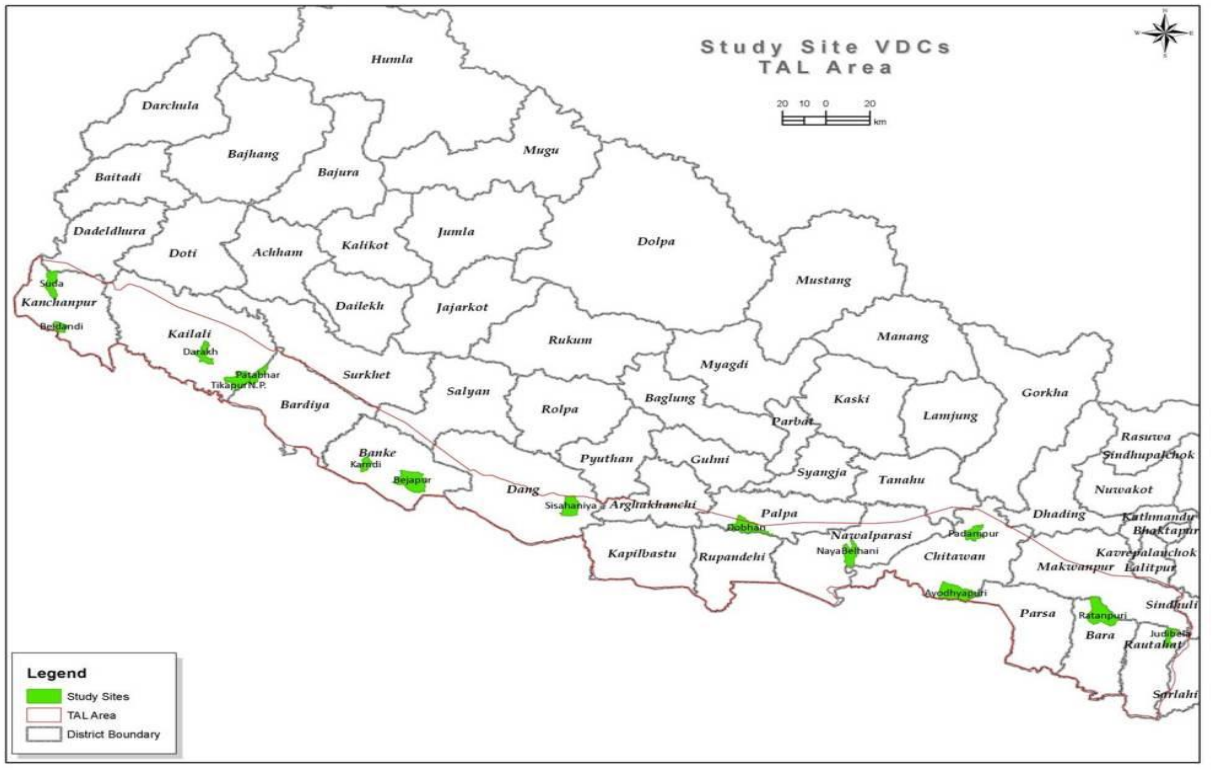
	Basanta Ghodaghodi	Kailali	Darakh	1,694	84
	Shukla	Kanchanpur	Beldandi	2,311	115
	Bufferzone		Suda	3,162	157
Sub Total	**(8 Clusters)**	**(10 Districts)**	**(13 VDCs and 1 NP)**	**30,915**	**1,532**
Total	**(17 Clusters)**	**(17 Districts)**	**(28 VDCs and 1 NP)**	**42,369**	**2,150**

The detail of sites and bases for selection and sample size are mentioned in ***Annex 2***.

Map 1: Selected VDCs in CHAL Area



Map 2: Selected VDCs in TAL Area



3.2.2 Methods of Data and Information Collection

The study is the combination of both primary and secondary source of information. Primary information for the study was collected through household survey, focus group discussion and consultation whereas secondary information were collected from project documents – study reports, periodic progress reports, evaluation reports, project plan etc. Consultation was done primarily with district level government officials, FECOFUN, NTNC, and AEPC, REDD Forestry and Climate Change Cell etc. Desk review, consultation meetings, interactions and case studies were used to validate and triangulate the field data. Geographical Information System (GIS) was used for image analysis, mapping exercises and to delineate landscape boundary in CHAL, estimate forests areas and estimate the area of wetland forests.

a) Literature Review/Desk Review

The desk review was carried out for the collection of secondary data and information for TAL and CHAL. The literature for the desk review included various study reports, species reports, socio-economic reports, annual progress reports, evaluation reports, district development plans and any other relevant documents. The documents were sought from WWF resource centre, field project offices, core partners' offices, government organizations and other relevant institutions. Please see list of agencies (***Annex 3***) which were source of secondary information.

b) Interaction/Consultation Meetings

The study team also undertook interaction and consultation meetings with district and central level stakeholders and conservation and development experts. These included organizations and government line agencies – that Hariyo Ban is closely working with – including Ministry of Forest and Soil Conservation (MoFSC) and Ministry of Environment (MoE); District Forest Offices (DFO); National Parks; (NPs) District Soil Conservation

Offices (DSCOs); central and district chapters of FECOFUN, CARE, NTNC etc. Information received from such meetings was used for validation purposes.

c) Household Survey

The study team conducted household survey to capture information about family on various aspects including biodiversity, landscape management, climate change, governance, gender and other socio-economic conditions of family. A structured questionnaire was developed for the purpose. A total of 2,150 households from 17 sub-watersheds/clusters (28 VDCs and one municipality) of TAL (from Rautahat to Kanchanpur) and CHAL (from Chitwan to Mustang) were interviewed. Please see sub-section ***3.2.1*** above for details of sampling and sample size and ***Annex 4*** for HH survey questionnaire.

d) Focus Group Discussion (FGD)

The study team also conducted focus group discussions (FGDs) with the anticipated project beneficiaries to reflect the current status, trends and issues related to biodiversity conservation, landscape management, climate change adaptation, governance, gender and social inclusion and socio-economy of the selected sites. The places for FGDs and criteria for participants were selected in consultation with Hariyo Ban Program team. Separate checklists for different FGDs were developed which would complement the existing information/baseline values of key indicators. Total 40 FGDs covering all major clusters and issues were conducted during the survey. Please see ***Annex 5*** for the checklists used for FGDs, places of FGDs conducted and criteria for participating members.

e) Secondary Information

As stated, some of the secondary sources of information were used to verify information received from field. The information also was useful to derive national level data for a specific issue. Periodic publications (annual progress report, plan and other documents) of government agencies (DDCs DFOs, DSCOs and DADOs), project reports, relevant research and studies and MoFSC records were major source of information. Documents reviewed for data collection are presented in the references. Please see ***Annex 6*** for checklists used to collect secondary information.

3.3 Data Collection Tools

3.3.1 Questionnaire

A 16-page structured questionnaire was designed to collect information from sampled households. Draft questionnaire was shared with Hariyo Ban Program team for their comments and field testing was done in one of the program areas, Chitwan. The questionnaire was finalised incorporating feedbacks received from subject experts, project team and field testing. The questionnaire is presented in ***Annex 4***

3.3.2 Checklists

Separate checklists were prepared for secondary information, FGDs and consultative meetings. Separate checklists were prepared for different FGDs, women in decision-making process in NRM management, PVSE participation in governance and decision-making, climate change, landscape management including REDD, biodiversity including human wildlife conflict and status. Please see ***Annex 5***

3.3.3 Geographical Information System (GIS)

Image Analysis of three time series (1990, 2000 and 2010) data was done using Geographical Information System (ArcView GIS) to delineate landscape boundary in CHAL, estimate forests areas according four canopy classes of three time series analysis of carbon stocks and estimate area of wetland forests.

3.4 Data Entry and Processing

A coding manual was developed before the data entry and the entire questionnaires were coded accordingly. Consistency of data was checked during entry process and after completion. Data processing and analysis was done by using appropriate statistical tools, i.e. data entry using CSPro (Census and survey Programming) and data analysis using STRATA. Electronic copy of data set has been provided along with this report.

3.5 Data Disaggregation

Collected data are presented in different ways. Landscape, clusters, caste/ethnicity, age groups, and gender are major strata used for disaggregation of data. Dummy tables were designed for each variable to get the required outputs. Please see below for some classification about the strata.

- ***Landscape:*** Most of the data presented are divided into CHAL and TAL areas as they are major landscapes of the Hariyo Ban Program.
- ***Clusters:*** The following are the major clusters that available data are segregated.

Table 2-2: Major Clusters in CHAL and TAL

S.N.	CHAL	S.N.	TAL
1	Adhikhola	10	Nijgadh
2	Upper Kali	11	Buffer Zones (CNP and PWR)
3	Phewa Upper Seti	12	Dobhan
4	Mid Seti	13	Lamahi
5	Madi Lower Seti	14	Kamdi Banke
6	Daraudi Upper Marsyandi	15	Karnali Bardia
7	Nagdi Upper Marsyandi	16	Basanta Ghodaghodi
8	Dordi - Mid Marsyandi	17	Shukla Bufferzone
9	Trisulli		

- ***Caste/Ethnicity:*** For the study purpose, following are the caste/ethnic classifications and data are segregated accordingly.

Table 2-3: Caste/Ethnicity

Brahmin/ Chhetri	*Dalits*	*Janajati*	*Religious Minorities*
Bramin (Hill), Chhettri,Thakuri, Sanyasi,Bramin (Terai),Rajput, Kayasta, Baniya, Marwadi, Jaine, Nurang, Bengali	Kami,Damai, Sarki, Gaine, Badi, Chamar, Mushar, Dhusadh/Paswan, Tatma, Khatway, Bantar, Dom, Chidimar, Dhobi, Halkhor, Other	***Relatively Advantaged*:** Newar, Thakali, Gurung, **Relatively Disadvantaged Janajati:** ***Hill***- Magar, Tamang, Rai, Limbu, Sherpa, Bhote, Walung, Byansi, Hyolomo, Gharti/Bhujel, Kumal, Sunsar, Baramu, Pahari, Yakkah, Chhantal, Jirel, Darai, Dura, Majhi, Danuwar, Thami, Lepcha, Chepang, Hayu, Raute, Kusunda ***Terai***- Tharu, Dhanuk, Rajbansi, Tajpuriya, Gangai, Dhimari, Meche, Kisan, Munda, Santhal/Satar, Dhangad/Jhangad, Koche, Patharkatta, Kusbadiay, Sinaha, Bote and Majhi. ***Other excluded castes:*** Yadav, Teli, Kalwar, Sudhi, Sonar, Lohar, Koiri, Kurmi, Kanu, Haluwai,	Muslim, Churaute, Christian

		Hajam/Thakur,Badhe, Bahae, Rajpur, Kewat, Mallah, Nunia, Kumhar, Kahar, Lodhar, Bing/Banda, Bhediyar, Mali, Kamar, Dhunia	

Source: Acharya M, et al (2004)

- ***Age Groups:*** The total respondents are divided into three age groups, 15-24, 24-59 and 60+. These age groups were divided in consultation with project team and project requirement.
- ***Sex:*** Information is presented to see the status and role between male and female in several aspects.

3.6 Sharing of Major Findings

The preliminary baseline finding has been shared to Hariyo Ban team (central), TAL and CHAL Coordinators, technical experts of core partners and relevant stakeholders. Inputs received from all the stakeholders have been incorporated in the findings and report.

The draft report has been shared with Hariyo Ban core team for inputs and comments. The report shows the base value against each indicator to be measured with sufficient supporting evidence and analysis. Received comments and inputs have been included in the final report.

CHAPTER III

3. Major Findings from Desk Review

2.1 General Overview

The desk review was carried out for the collection of secondary data and information for TAL and CHAL. The literature for the desk review include various study reports, species reports, socioeconomic reports, annual progress reports, evaluation reports, district development plans and other relevant documents. Relevant documents were gathered from WWF, field project offices, core partners' offices, government organizations, DFOs, DDCs, VDCs and other relevant institutions.

Further, documents like - Hariyo Ban Program document, M&E Plan, SAGUN Final Report, GCP Final Report, Nepal Biodiversity Strategy, TAL Annual Progress Reports, Chitwan Annapurna Linkage study 2000 and many other relevant documents were reviewed during the survey. For secondary information, a lot of published or unpublished data were reviewed and used as reference documents. Similarly, different policies reviewed to identify proposed, revised, newly formulated and endorsed policies in the field of bio-diversity, landscape and climate change adaptation.

Similarly, Image Analysis of three time series (1990, 2000 and 2010) data was done using Geographical Information System (ArcView GIS) to delineate landscape boundary in CHAL, estimate forests areas according four canopy classes of three time series, estimate forest carbon stock and area of wetland forests.

2.2 Documents of Hariyo Ban Program

2.2.1 Project Developments

Project document has been reviewed thoroughly before designing the methodology and tools for the baseline survey. All the major issues of the TAL and CHAL have been analysed properly and attempts are made to address in the project document with multi-dimensional approach. It looks a very ambitious program and tries to address so many issues in the project area. The two landscapes in the Hariyo Ban Program are critically important for ensuring effective conservation and sustainable livelihoods in Nepal. TAL is among the most biologically important regions whereas CAL includes a major biogeographic boundary. The overall goal of the Program is to reduce adverse impacts of climate change and threats to biodiversity in Nepal. It has 3 specific objectives: a. to reduce threats to biodiversity in target landscape(s); b. to build the structures, capacity and operations necessary for an effective sustainable landscape management, especially reducing emissions from deforestation and forest degradation (REDD+) readiness; and c. to increase the ability of target human and ecological communities to adapt to the adverse impacts of climate change.

The project document has clearly defined partnership among WWF major stakeholders who have been working in the area of biodiversity, landscape, capacity building, climate change and good governance over the decades. The consortium of extremely experienced and qualified international and national NGOs i.e. World Wildlife Fund (WWF), Cooperative for Assistance and Relief Everywhere (CARE), National Trust for Nature Conservation (NTNC), and the Federation of Community Forestry Users in Nepal (FECOFUN) are renowned name itself in the area.

As project has clearly designed the Implementation Plans to best achieve the goal and objectives, this will enable the program to initiate and administer effectively. The three components of the program - biodiversity conservation (IR1), sustainable landscapes (IR2), and climate change adaption (IR3) - are inextricably linked that have been spited into Sub-IR and activities with a set of clear milestones. The cross-cutting issues like - livelihoods, community energy programs, governance and gender have also been practically addressed in the document as a cross-cutting area. Similarly, the monitoring and evaluation (M&E) matrix clearly reflects the project target and milestones.

2.2.2 Monitoring and Evaluation Matrix

The Monitoring and Evaluation (M&E) matrix clearly sets the target for each IR and Sub-IR that will be complemented by this baseline survey. The M&E Matrix clearly defines the indicators, baseline data, desired results, data needed, sources of data and its verification including risks and assumptions. Though some indicators at upper level are not so easy to measure and will be more ambitious, it is technically sound and programmatically useful. Please see ***Annex 7*** for details of revised M&E Matrix.

In general, the monitoring and evaluation matrix presented in the Monitoring and Evaluation Plan looks complex which tries to monitor both inputs as well as effectiveness/impact. Input level monitoring generally does not require baseline value as they are generated after the implementation of project activities. More often in the forest sector, impact of many activities can be seen in real ground after many years. Monitoring impacts of a short duration is challenging. From the review of available information, the following recommendations were made.

A. General Recommendations

- Several socio-economic information were collected during the HH survey. However, the existing M&E matrix does not require these information. Some of the key information such as occupations, income sources, sources of energy, availability of forage, dependency on forests, and awareness level on Climate Change, Biodiversity and REDD+ and hazard related to Climate Change.
- The monitoring and evaluation matrix require a number of input level monitoring baseline value and are required in all components. Such indicators included training data related to NRM/Biodiversity/Climate Change, governance, skilled based training, issue-based campaigns and so on.
- Skill-based training, on-farm and off-farm IGA activities are included in first and second components. It can create confusion in database management and reporting. It is recommended to create a separate component for training and capacity building including all the three components.
- During the mid-line and end-line survey, the intervention from other sources and institutions should be considered that is lacking in the matrix. Likewise, the effect of intervening variable should also be considered while measuring the impact.

B. Specific Recommendations

Component 1: Biodiversity Conservation

- The 13 Tiger Range Countries have ambitious target to double the tiger population by 2022. Looking at the target, the target set by the project is realistic. Looking at the Rhino Population in last 10 years, it has decreased by 78 in number. The target set by the program (increase 116) looks ambitious. So, it needs to be revised.

- Under the IR 1.1- threats to target landscape, in-addition to given indicators, establishment and functioning of government institutional mechanisms is important. Such institutional mechanisms include Wildlife Crime Control Coordination Committee (WCCCC), Wildlife Crime Control Bureau (WCCB), and Working Groups etc.
- The indicator IR 1.2.3, number of sub-watershed management plan developed and implemented, the suitable place for this indicator can be under sustainable landscape management.
- For number of groups with strong good governance practices, suitable unit of measurement is percentage than number.

Component 2: Sustainable Landscape Management

- The deforestation rate estimated by Forest Carbon Accounting Study in TAL-2011 is 0.18%. Similarly, based on the Landsat Image Analysis of three time series of CHAL areas it is estimated to be 0.97% deforestation rate. These figures need to be ground-truthing as it is estimated that the image analysis only gives accuracy of around 60%. Instead of deforestation rate, the project can estimate change in area of forest by different canopy classes. The target set by the program needs to be revised/reset.
- Under G.3: Two indicators (IGA and Alternative energy) are mentioned under data need. It should be separated. Under the Alternative Energy, number of HH should be the unit than the number of people as individual will not have alternative energy.
- Estimating the GHG emission using Landsat Images and multiplying factors derived from similar forests areas in other parts of the country cannot give accurate estimation. These information needs to be ground-truthing in CHAL. Otherwise similar methodologies should be employed at the end of the project.
- There is no REDD + guideline for revising FOPs existed, the existing FOPs generally include activities related to REDD+. So, need to clarify the definition what does it mean.

Component 3: Climate Change Adaptation

- Adaptive capacity cannot be measured from training only, it depends on various factors. So, vulnerability and adaptive capacity index for each cluster needs to be developed and target should be set accordingly.
- Rate of deforestation and forest degradation is included in component 2. It should be omitted from component 3.
- Under IR 3.2.1, percentage of vulnerable HH should be measured than the number.
- Under IR 3.2.2, difficult to identify vulnerable sites during the baseline survey. So, inputs level monitoring will work for this indicator where there is no need of baseline value.

Chapter IV

4. Results and Analysis

4.1 General Overview

The results and analysis presented in this chapter are based on the information collected through different tools particularly, HH survey, FGDs, consultation meetings and secondary source of information. A structured questionnaire for HH survey and checklists for FGDs and secondary source of information were used for the purpose. The major areas covered in the questionnaire and checklists were general household situation, biodiversity, landscape management, climate change adaptation, capacity building and income generating activities, and good governance, gender and social inclusion. Responses on various questions and checklists are explained under the mentioned sub-topics and the responses are also presented in different tabular and diagrammatic forms.

4.2 General Household Situation

4.2.1 Demographic Characteristics

a) Age, Sex and Marital Status

Age, sex and marital status of respondents are some of the demographic information collected during baseline survey. Among the total respondents over 14% are youths, i.e. between 15-24 years old. Vast majority of respondents, nearly 75% are in the age group of 24-59 years. This group is also considered economically active population. Nearly 11% respondents are over 60 years. Similarly, out of 2,150 respondents 1,109 are male and 1,039 are female. Two respondents, one from each CHAL and TAL area are reported as other sex. The survey has found that majority of the respondents (nearly 66%) have been living in their demographic areas for over 16 years and only 12% are living in the places for less than five years. Vast majority of the respondents, nearly 89% are married, nearly 9% are unmarried and other categories reported were divorced, widow and others. Please see ***Table 4-1*** and ***Diagram 4-1*** for details on age, sex and marital status.

Two respondents, one from each area, responded that they belong to other (third) sex group.

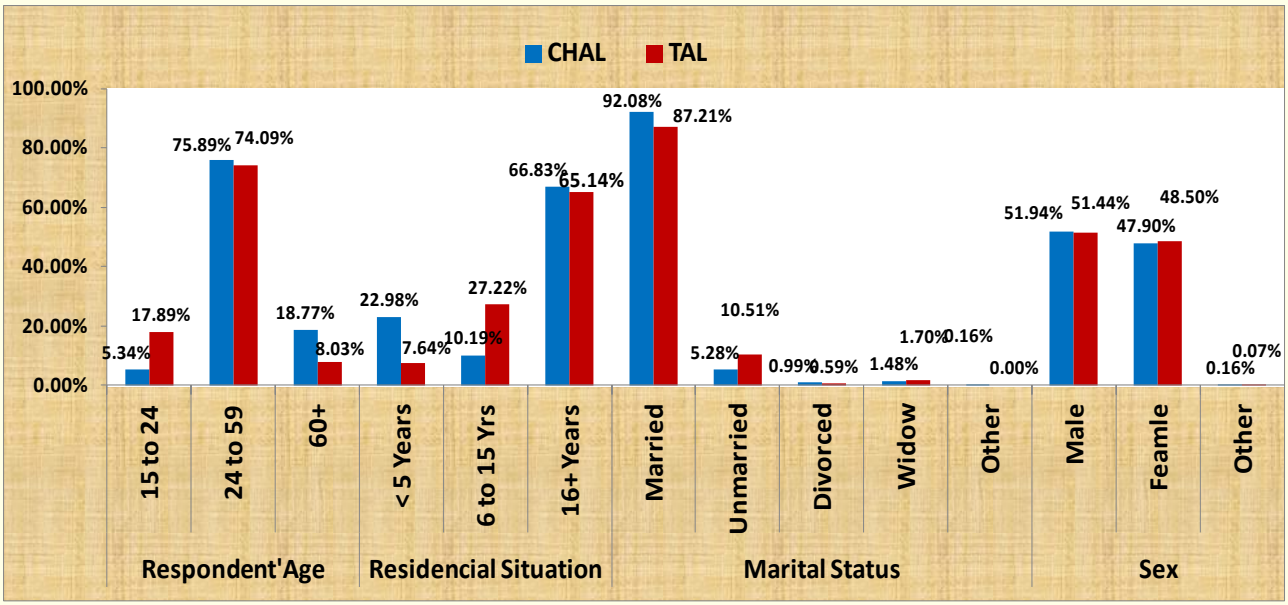
Table 4-1: Respondents" Age, Sex, Residential Situation and Marital Status

Clusters	Respondent'Age			Residencial Situation			Marital Status					Sex			Total
	15 to 24	24 to 59	60+	< 5 Years	6 to 15 Yrs	16+ Years	Married	Unmarried	Divorced	Widow	Other	Male	Feamle	Other	
CHAL	**33**	**469**	**116**	**142**	**63**	**413**	**569**	**33**	**6**	**9**	**1**	**321**	**296**	**1**	**618**
Adhikhola	2	41	24	1	0	66	64	3	0	0	0	35	32	0	**67**
Upper Kali	2	20	8	1	2	27	27	3	0	0	0	18	12	0	**30**
Phewa Upper Seti	3	56	11	8	13	49	61	4	4	1	0	35	35	0	**70**
Mid Seti	8	64	18	67	6	17	83	5	0	2	0	44	46	0	**90**
Madi Lower Seti	12	64	11	5	16	66	76	8	0	2	1	43	44	0	**87**
Daraudi Upper Marsyandi	2	76	11	45	3	41	83	2	1	3	0	42	47	0	**89**
Nagdi Upper Marsyandi	2	46	12	11	8	41	53	5	1	1	0	34	26	0	**60**
Dordi - Mid Marsyandi	1	76	18	3	14	78	92	3	0	0	0	55	39	1	**95**
Trisulli	1	26	3	1	1	28	30	0	0	0	0	15	15	0	**30**
TAL	**274**	**1,135**	**123**	**117**	**417**	**998**	**1,336**	**161**	**9**	**26**	**0**	**788**	**743**	**1**	**1,532**
Nijgadh	13	90	15	21	31	66	104	10	1	3	0	66	52	0	**118**
Buffer Zone	51	252	33	15	142	179	281	42	4	9	0	167	168	1	**336**
Dobhan	3	48	10	1	7	53	57	3	0	1	0	33	28	0	**61**
Lamahi	29	85	2	8	19	89	106	8	1	1	0	62	54	0	**116**
Kamdi Banke	21	109	7	2	14	121	120	13	1	3	0	70	67	0	**137**
Karnali Bardia	91	290	27	45	100	263	350	49	1	8	0	207	201	0	**408**
Basanta Ghodaghodi	10	64	10	11	24	49	78	6	0	0	0	44	40	0	**84**
Shukla Bufferzone	56	197	19	14	80	178	240	30	1	1	0	139	133	0	**272**
Total	**307**	**1,604**	**239**	**259**	**480**	**1,411**	**1,905**	**194**	**15**	**35**	**1**	**1,109**	**1,039**	**2**	**2,150**
Total Percentage	**14.28%**	**74.60%**	**11.12%**	**12.05%**	**22.33%**	**65.63%**	**88.61%**	**9.01%**	**0.71%**	**1.64%**	**0.05%**	**51.58%**	**48.33%**	**0.09%**	**100.00%**

Source: HH Survey, 2012

Demographic distribution between CHAL and TAL areas was matter of interest for the study team. The study has found that distribution of population by age group is different in two areas. The number of youths (15-24 years) is high in TAL as compared to CHAL as there are nearly 18% youths in TAL and only 5% in CHAL. Similarly, with nearly 76%, the age group between 24 - 49 years is high in CHAL as compared to TAL (74%). Similarly, the number of population over 60 years of age is higher in CHAL (19%) which is nearly 8% in TAL area. Marital status and sex ratio are more or less same in TAL and CHAL areas (***Diagram 4-1)***.

Diagram 4-1: Respondents' Age, Sex, Residential Situation and Marital Status



Source: HH Survey, 2012

b) Age, Education, Major Occupation and Average Family Size

Age, education and occupation were other types of information collected from the sampled households. With nearly 44%, the number of population of 24-59 years age group is the highest one. Similarly below 15 years (25.4%) is at second position and 15-24 years (24.7%) at third position. There seem some differences between the figures mentioned and percentages indicated by Nepal Demographic Health Survey, 2011. The survey states that the percentages of age groups below 15 yrs, 15-24 yrs, 25-59 yrs and 60+ yrs are 37.2%, 18.7%, 35.7% and 8.4% respectively.

Nearly 25% of household members were found illiterate whereas only 10% people have college level education. The number of people with high school education is the highest one (37%). Agriculture has been reported predominantly the major occupation in the surveyed area where about 54% of sampled household reported the occupation as a major one. Domestic employment or service (11%), foreign employment (9%) and business (9%) are other occupations reported during the survey. Please see ***Table 4-2*** and ***Diagram 4-2*** for details.

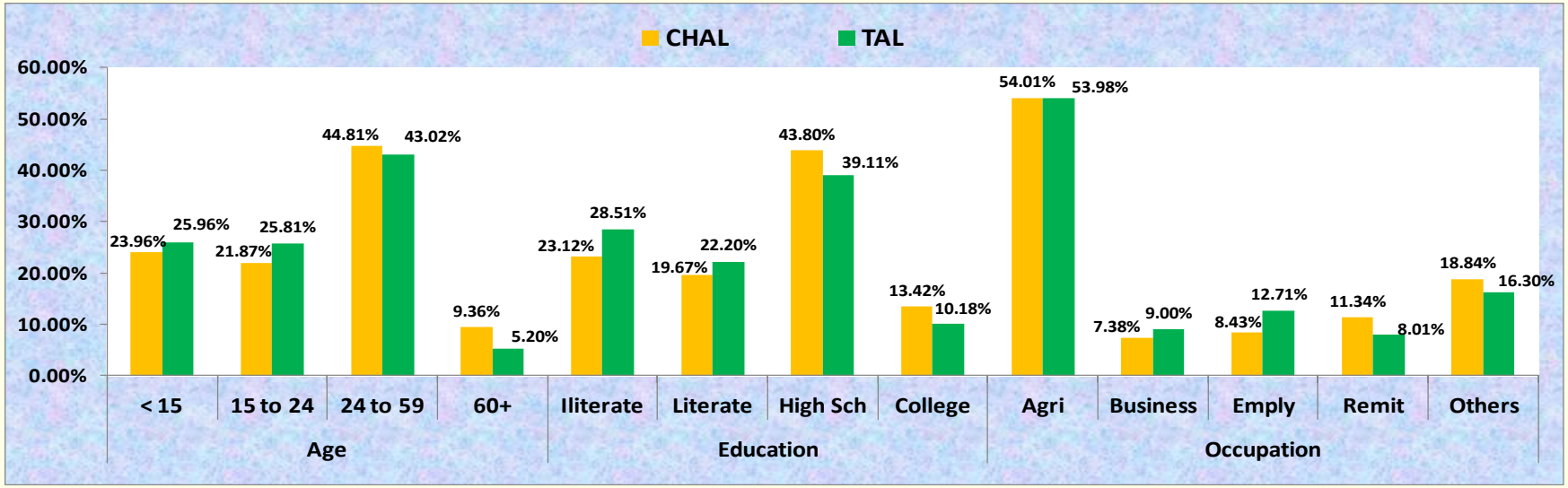
The survey data reveals that the average HH size in the survey area is 5.54. The average numbers are 5.56 and 5.54 in CHAL and TAL areas respectively (***Table 4-2***). The average HH size seems little bit high as compared to the national average (4.7) derived from national census of 2011.

Table 4-2: Total Population's Age, Education and Occupation

Landscape	Age				Education				Occupation					Average HH size
	< 15	15 to 24	24 to 59	60+	Iliterate	Literate	High Sch	College	Agri	Business	Emply	Remit	Others	
CHAL	23.96%	21.87%	44.81%	9.36%	23.12%	19.67%	43.80%	13.42%	54.01%	7.38%	8.43%	11.34%	18.84%	5.56
TAL	25.96%	25.81%	43.02%	5.20%	28.51%	22.20%	39.11%	10.18%	53.98%	9.00%	12.71%	8.01%	16.30%	5.54
Total	**25.39%**	**24.67%**	**43.54%**	**6.40%**	**24.84%**	**19.79%**	**37.30%**	**10.25%**	**53.99%**	**8.54%**	**11.50%**	**8.95%**	**17.02%**	**5.54**

Source: HH Survey, 2012

Diagram 4-2: Age, Education and Major Occupation



Source: HH Survey, 2012

c) Caste/Ethnicity and Religion

Information on caste/ethnicity and religion was also collected during the survey. The survey result reveals that vast majority of the people are Hindu (83%) followed by Buddhist (11%). The number of Christian population is 4% and Muslim 1%. The population of Hindu religion is slightly higher than national percentage (81) but the percentage is same for Buddhist. There is significant difference for Christian and Muslim population as national percentage for the religions are 1% and 4% respectively (***Diagram 4-4***).

The population of Hindu religion is the highest in CHAL (73%) and TAL (87%) areas too, however the second largest population in the areas is different. Buddhist (26%) is at the second position in CHAL area and with less than 1% Christian is at third position. Similarly, Christian 6% and Buddhist 5% are at second and third positions in TAL areas. Please see ***Table 4-3*** and ***Diagram 4-3*** for details on religion.

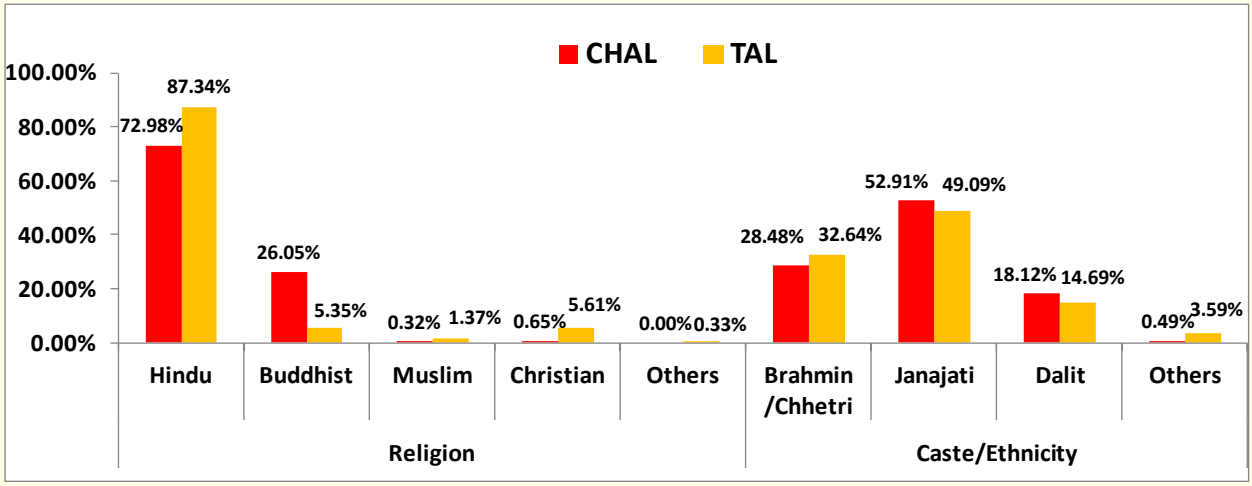
Table 4-3: Religion and Caste/Ethnicity

Clusters	Religion					Caste/Ethnicity				Total
	Hindu	Buddhist	Muslim	Christian	Others	B/C	Janajati	Dalit	Others	
CHAL	**451**	**161**	**2**	**4**	**0**	**176**	**327**	**112**	**3**	**618**
Adhikhola	61	6	0	0	0	42	19	6	0	**67**
Upper Kali	1	29	0	0	0	0	30	0	0	**30**
Phewa Upper Seti	54	16	0	0	0	29	18	23	0	**70**
Mid Seti	90	0	0	0	0	29	45	15	1	**90**
Madi Lower Seti	83	4	0	0	0	10	43	34	0	**87**
Daraudi Upper Marsyandi	47	41	0	1	0	9	68	12	0	**89**
Nagdi Upper Marsyandi	33	25	1	1	0	9	44	7	0	**60**
Dordi - Mid Marsyandi	74	19	1	1	0	44	36	13	2	**95**
Trisulli	8	21	0	1	0	4	24	2	0	**30**
TAL	**1,338**	**82**	**21**	**86**	**5**	**500**	**752**	**225**	**55**	**1,532**
Nijgadh	81	29	0	7	1	34	67	12	5	**118**
Buffer Zone	282	24	1	29	0	104	128	102	2	**336**
Dobhan	61	0	0	0	0	22	32	7	0	**61**
Lamahi	112	1	0	3	0	12	99	5	0	**116**
Kamdi Banke	112	1	18	5	1	28	67	22	20	**137**
Karnali Bardia	351	23	2	29	3	123	228	47	10	**408**
Basanta Ghodaghodi	83	1	0	0	0	32	36	6	10	**84**
Shukla Bufferzone	256	3	0	13	0	145	95	24	8	**272**
Total	**1,789**	**243**	**23**	**90**	**5**	**676**	**1,079**	**337**	**58**	**2,150**
Total Percentage	**83.21%**	**11.30%**	**1.07%**	**4.19%**	**0.23%**	**31.44%**	**50.19%**	**15.67%**	**2.70%**	**100.00%**

Source: HH Survey, 2012

The majority of sample of households are Janajati (50%) followed by Brahmin/Chhetri (31%) and Dalits (16%) and others (3%). The CHAL and TAL areas also follow same pattern as the total. Janajati, Brahmin/Chhetri and Dalits are at the first, second and third positions in the areas. Please see ***Table 4-3*** and ***Diagram 4-3*** for details. The caste/ethnicity composition of sampled HHs is close to national caste/ethnicity composition of population census 2001. According to the census 2001, the percentages of population of Brahmin/Chhetri, Janajati, Dalits and other minorities are 33%, 50%, 12% and 5% respectively (***Diagram 4-5***).

Diagram 4-3: Religion and Caste/Ethnicity



Source: HH Survey, 2012

Diagram 4-4: National Population - Religion

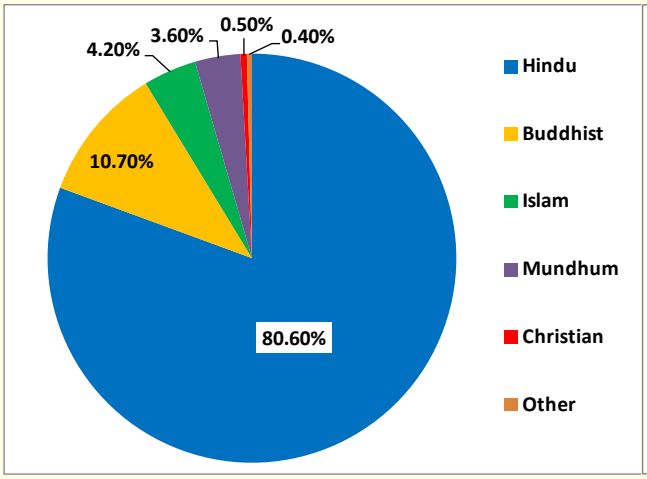
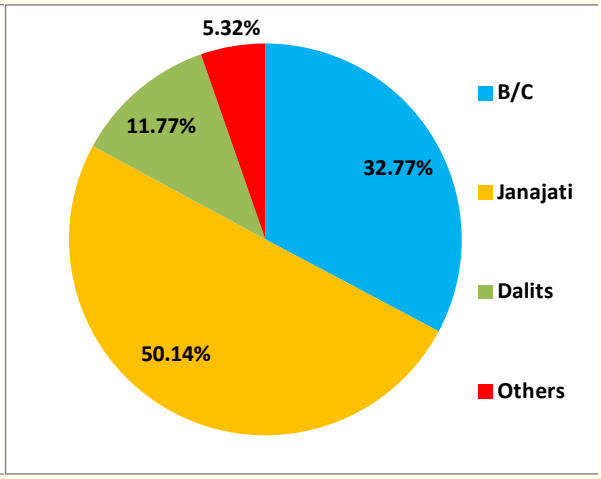


Diagram 4-5: National Population - Caste/Ethnicity



Source: Population Census 2001, Vol. I & II, CBS, 2002

4.2.2 Major Income Sources and Expenditure Areas

In-country employment has been reported as the major income source of the households. Average income from the employment is Rs. 53,225/Annum, which is higher than national per capita income Rs 46,020 (NPC, Economic Survey, 2010). With Rs. 43,746/Annum, remittance is in second position. Agriculture and livestock are other income sources reported during the survey. Remittance is reported as the major income source in CHAL area whereas

employment in country is at the top in TAL. Domestic employment, agriculture and livestock are other income sources in CHAL area in chronological order. Similarly, remittance, agriculture and livestock are other income sources in TAL area. The data shows that there is huge difference on agriculture income in TAL and CHAL areas. The agriculture income is Rs. 22,357 in TAL and Rs. 9,239 in CHAL. Please see the ***Table 4-4*** for details.

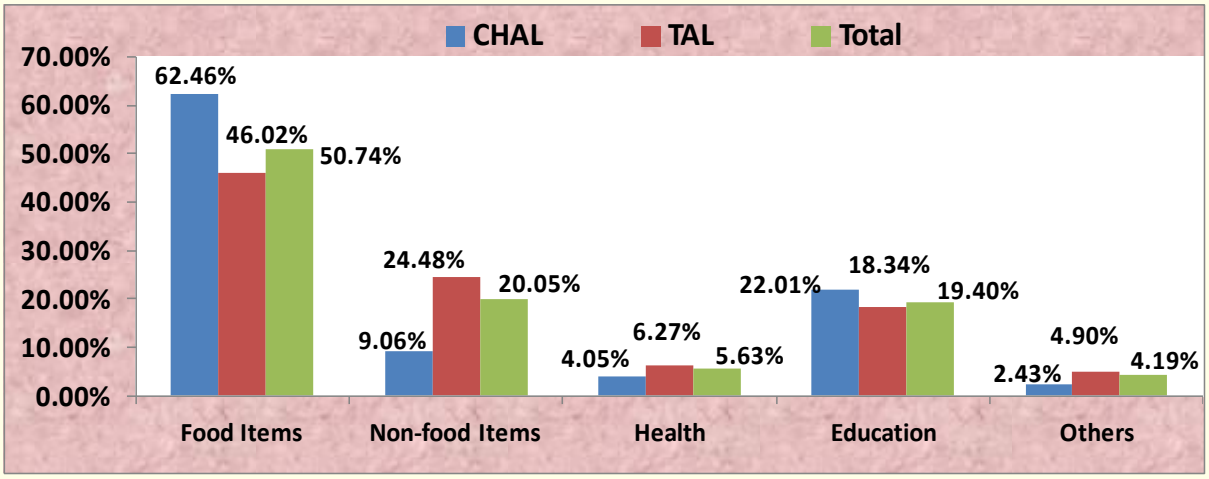
Table 4-4: Average Annual Income per HH

Clusters	Average Annual Income per HH (in NRs)					Total
	Agriculture	Employment	Livestock	Remittance	Other	
CHAL	**9,239**	**57,149**	**5,559**	**62,964**	**6,207**	**141,117**
Adhikhola	134	56,955	2,493	108,522	17,015	**185,119**
Upper Kali	39,348	41,173	33,833	10,000	0	**124,355**
Phewa Upper Seti	8,157	53,686	1,164	52,729	3,429	**119,164**
Mid Seti	682	72,882	3,557	63,300	11,719	**152,140**
Madi Lower Seti	2,820	50,628	16,379	113,310	11,736	**194,872**
Daraudi Upper Marsyandi	893	64,236	2,753	40,899	112	**108,893**
Nagdi Upper Marsyandi	5,133	63,577	843	6,417	83	**76,053**
Dordi - Mid Marsyandi	29,161	42,453	0	68,211	0	**139,824**
Trisulli	16,457	66,000	4,367	53,000	12,167	**151,990**
TAL	**22,357**	**51,643**	**7,501**	**35,994**	**5,090**	**122,586**
Nijgadh	26,551	35,624	4,220	17,627	2,256	**86,278**
Buffer Zone	6,547	71,548	10,012	73,698	5,494	**167,299**
Dobhan	32,557	106,139	7,803	164,672	0	**311,172**
Lamahi	6,099	65,362	4,970	21,034	4,353	**101,819**
Kamdi Banke	11,927	50,663	2,782	24,058	719	**90,149**
Karnali Bardia	39,567	33,862	7,559	15,270	9,133	**105,391**
Basanta Ghodaghodi	41,405	24,369	2,750	27,048	6,238	**101,810**
Shukla Bufferzone	18,272	51,519	10,593	14,768	3,059	**98,211**
Total	**18,587**	**53,225**	**6,943**	**43,746**	**5,411**	**127,912**

Source: HH Survey, 2012

Over 50% respondents said that their main expenditure area is food and they spend most of their income to buy food items. Non-food item (20%) is in second position and education (19%) in third position. Health is reported as another major expenditure area. Food item is at the highest position in both CHAL and TAL. However, non-food item (24%) is at second position in TAL and education (22%) in CHAL. This indicates that people are spending more money in education in CHAL area as compared to TAL. Please see the ***Diagram 4-6*** for details.

Diagram 4-6: Areas of Expenditures



Source: HH Survey, 2012

4.2.3 Land Holding Pattern

The survey data reveals that out of total 2,150 households, 101 HHs (nearly 5%) are landless. Similarly, 889 HHs hold less than 0.25 Ha of land, 512 HHs possess 0.25 – 0.5 Ha, 378 HHs own 0.5-1 Ha and 270 HHs have over one hectare land. As majority of the sampled HHS possess less than 0.5 Ha of land, the average landholding pattern in the surveyed area is less than the national size 0.79 Ha (Agriculture Census Nepal, 2001/2).

On land ownership pattern, vast majority of respondents, over 75% said that their land is owned by male member of the family. Only 12% respondents said female members are the owner of their land. Similarly, 8% respondents said their land is owned by both male and female members and nearly 5% reported that none of the members of the family own land. Please see ***Table 4-5*** for details.

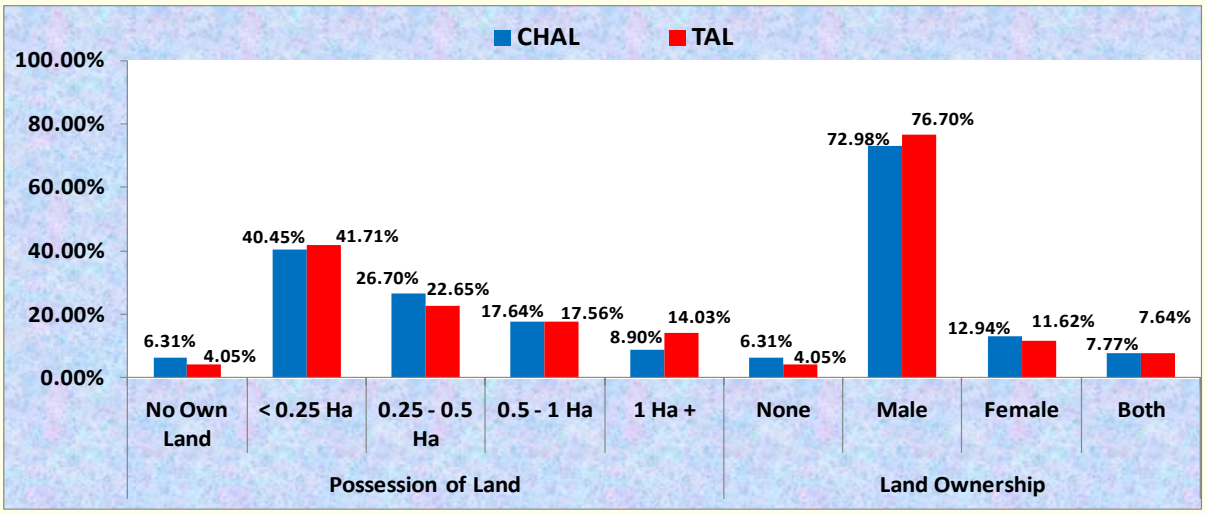
Table 4-5: Land Possession and Ownership Pattern

Clusters	Possession of Land					Land Ownership			
	No Own Land	< 0.25 Ha	0.25 - 0.5 Ha	0.5 - 1 Ha	1 Ha +	None	Male	Female	Both
CHAL	**39**	**250**	**165**	**109**	**55**	**39**	**451**	**80**	**48**
Adhikhola	2	32	21	11	1	2	56	6	3
Upper Kali	0	10	7	8	5	0	26	4	0
Phewa Upper Seti	11	22	20	13	4	11	44	9	6
Mid Seti	2	37	22	23	6	2	71	13	4
Madi Lower Seti	8	38	15	14	12	8	63	6	10
Daraudi Upper Marsyandi	6	27	38	14	4	6	57	12	14
Nagdi Upper Marsyandi	1	31	8	2	18	1	40	16	3
Dordi - Mid Marsyandi	8	51	20	13	3	8	70	11	6
Trisulli	1	2	14	11	2	1	24	3	2
TAL	**62**	**639**	**347**	**269**	**215**	**62**	**1,175**	**178**	**117**
Nijgadh	8	54	28	20	8	8	83	13	14
Buffer Zone	18	150	89	64	15	18	249	38	31

Dobhan	2	15	14	12	18	2	52	5	2
Lamahi	4	49	21	25	17	4	92	8	12
Kamdi Banke	3	44	26	26	38	3	105	20	9
Karnali Bardia	14	178	76	60	80	14	291	68	35
Basanta									
Ghodaghodi	0	27	34	13	10	0	79	1	4
Shukla Bufferzone	13	122	59	49	29	13	224	25	10
Total	**101**	**889**	**512**	**378**	**270**	**101**	**1,626**	**258**	**165**
Total Percentage	**4.70 %**	**41.35 %**	**23.81 %**	**17.58 %**	**12.56 %**	**4.70 %**	**75.63 %**	**12.00 %**	**7.67 %**

Source: HH Survey, 2012

Diagram 4-7: Land Holding Pattern



Source: HH Survey, 2012

Nearly 5% respondents reported to be landless and over 75% said their land is owned by male member of the family.

Land holding pattern of each landscape is similar to their combined results. Percentage of landless people in CHAL (6%) is slightly higher than that of TAL (4%). The survey data reveals that most of the respondents in CHAL and TAL areas hold less than 0.25 Ha of land. The category 0.25 – 0.5 Ha is in the second highest position. Similarly, 0.5 - 1 Ha and over one Ha are in third and fourth position.

Nearly 77% respondents of TAL landscape said that their land is owned by male members of the family whereas the percentage is nearly 73 in CHAL. Percentages of land owned by female members in CHAL and TAL area are 13 and 12 respectively. Land owned by both male and female members is nearly 8%. Please see ***Diagram 4-7*** for details.

4.2.4 Food Sufficiency Situation

Nearly one third of the respondents (32%) said that their production is enough to feed for at least nine months. However, some 28% said their production is enough to survive for only three months or less. Percentages of food sufficiency for 3-6 month and 6-9 months are 13 and 17 respectively.

Over 85% respondents mentioned food purchase as the way of food deficit management. However nearly 6% people said that they manage the food deficit through borrowing from

others and some others said they manage it through credit. Please see the ***Table 4-6*** for details of food sufficiency by each cluster.

Table 4-6: Food Sufficiency Situation

Clusters	Food Sufficiency				Food Deficit Management			
	< 3 months	3 - 6 months	6 - 9 months	9+ months	Purchase	Borrow	Credit	Other
CHAL	**189**	**212**	**96**	**121**	**533**	**41**	**34**	**10**
Adhikhola	28	24	14	1	54	5	8	0
Upper Kali	8	14	6	2	21	7	1	1
Phewa Upper Seti	17	29	10	14	68	1	0	1
Mid Seti	35	23	11	21	90	0	0	0
Madi Lower Seti	23	30	10	24	62	14	6	5
Daraudi Upper Marsyandi	35	35	13	6	73	2	14	0
Nagdi Upper Marsyandi	21	18	7	14	45	10	4	1
Dordi - Mid Marsyandi	17	25	19	34	91	2	1	1
Trisulli	5	14	6	5	29	0	0	1
TAL	**418**	**289**	**260**	**565**	**1,303**	**86**	**55**	**88**
Nijgadh	25	21	23	49	103	8	5	2
Buffer Zone	111	62	52	111	308	13	12	3
Dobhan	14	10	8	29	52	4	0	5
Lamahi	32	19	13	52	89	3	2	22
Kamdi Banke	24	31	22	60	121	8	3	5
Karnali Bardia	135	59	71	143	341	31	28	8
Basanta Ghodaghodi	7	15	10	52	54	4	1	25
Shukla Bufferzone	70	72	61	69	235	15	4	18
Total	**607**	**501**	**356**	**686**	**1,836**	**127**	**89**	**98**
Total	**28.23 %**	**23.30%**	**16.56 %**	**31.91 %**	**85.40 %**	**5.91 %**	**4.14 %**	**4.56%**

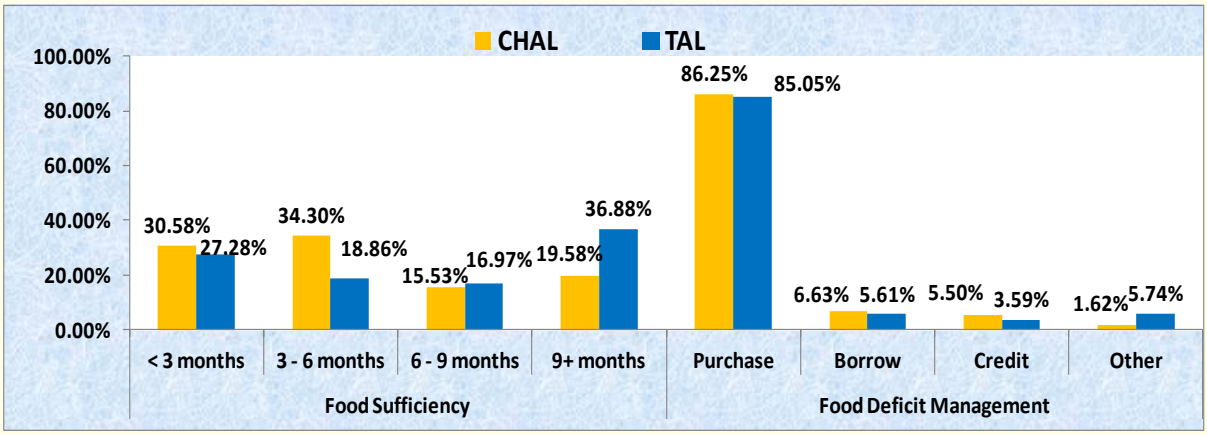
Source: HH Survey, 2012

Nearly 65% households sampled are below poverty line in CHAL area whereas the percentage is 46 in TAL

Food sufficiency situation in CHAL and TAL area seems different. The people in TAL area are in better off position as compared to CHAL area in terms of food sufficiency. As per the report, nearly 65% households sampled have food sufficiency for less than 6 months, in CHAL area whereas the percentage is 46 in TAL. About 37% HHs in TAL reported that their production is enough to feed over nine months but the percentage is nearly 20 in CHAL area.

Responses on food deficit management were more or less same in both CHAL and TAL areas. Vast majority of respondents in both landscapes said that the deficit foods are managed through purchase. Other options for deficit management that the respondents mentioned were borrowing, credit and so forth. Please see ***Diagram 4-8*** for details.

Diagram 4-8: Food Sufficiency Situation



Source: HH Survey, 2012

4.2.5 Housing Conditions and Sanitation Facility

Most of the houses, nearly 48%, in the area surveyed are roofed with corrugated sheet. Number of houses with slate/tile roofs (15%) holds second position. Similarly, houses with RCC and thatch also are found in the area. Please see ***Diagram 4-9*** for details.

Roofs with corrugated sheet dominate in both CHAL and TAL areas. Slated houses (27%) are second in position in CHAL whereas RCC houses (nearly 16%) stand at second position in TAL. Please see ***Diagram 4-10*** for details on roofs of houses in CHAL and TAL areas.

Diagram 4-9: Type of Roof - Total

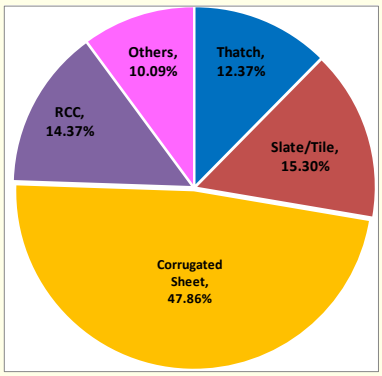
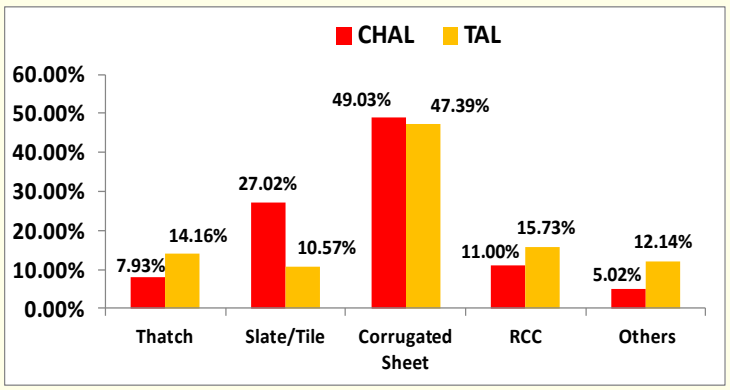


Diagram 4-10: Type of Roof – CHAL and TAL



Source: HH Survey, 2012

Information on sanitation facility has given some interesting facts. Over 50% respondents said that they have water seal toilets at their houses. Nearly 21% said they have pit latrine and some 5% reported they use traditional toilet.

Table 4-7: Toilet Availability and Type

Landscape	Toilet Availability and Type			
	Water seal	Pit	Traditional	No Toilet
CHAL	71.68%	16.67%	4.05%	7.61%
TAL	42.36%	23.30%	4.90%	29.44%
Total	**50.79%**	**21.40%**	**4.65%**	**23.16%**

Source: HH Survey, 2012

It is interesting to note that in total and over 29% households in TAL do not have toilet facility at all.

It is interesting to note that out of 2,150 households surveyed, 498 HHs (nearly 23%) do not have toilet at all and they practice open defecation. Demographic Health Survey, 2006 has indicated that nearly 50% do not have toilet facility in Nepal.

The sanitation situation in CHAL is much better than that in TAL where over 71% households have water seal toilet and less than 8% people do not have toilet. In contrary, over 29% households do not have toilet in TAL area and only 42% HHs have water seal toilets. Please see ***Table 4-7*** for details.

4.2.6 Family Assets

Mobile phone has been the most common family assets amongst the households. Nearly 88% respondents stated that they possess mobile phone. With over 59%, radio seems another popular item in the study area. Similarly, bicycle, television and motorcycle are other family assets commonly found in the study area. Nearly 5% people said they have tractor and only 1% respondents do possess car/jeep as well.

Possession of radio, TV, telephone, mobile phone and other assets are more or less same in CHAL and TAL areas; however there is significant difference in possession of bicycles in the areas. Nearly 75% households possess bicycles in TAL whereas only 7% HHs have bicycles in CHAL area. This might be due to the topography of the study area. Please see the ***Table 4-8*** for details on possession of family assets.

Table 4-8: Possession of Family Assets

Landscape	Radio	TV	Telephone	Mobile	Bicycle	Motorcycle	Car/Jeep	Tractor
CHAL	52.59%	59.55 %	9.71%	88.51%	6.96%	8.25%	1.62%	1.46%
TAL	62.27%	50.59 %	10.51%	87.60%	74.74%	12.79%	0.78%	5.87%
Total	**59.49 %**	**53.16 %**	**10.28%**	**87.86 %**	**55.26 %**	**11.49%**	**1.02%**	**4.60%**

Source: HH Survey, 2012

4.2.7 Sources of Drinking Water

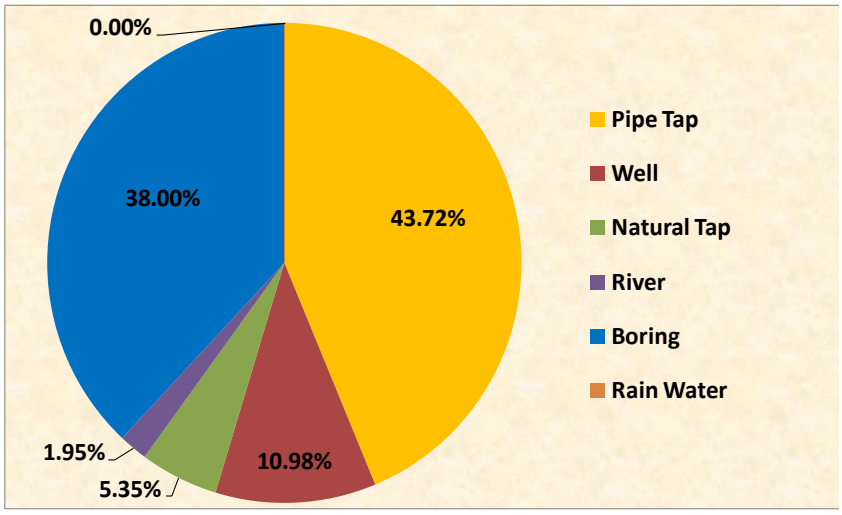
Piped water has been reported as one of the major sources of drinking water in CHAL and TAL areas. Nearly 44% HHs surveyed are using piped water for drinking purpose. Boring (underground) water is another major source of drinking water in the area. Similarly, wells, natural taps/springs are other sources of drinking water. It is noteworthy that 42 HHs (nearly 2%) use river water for drinking purpose. Please see ***Table 4-9*** and ***Diagram 4-11*** for details. If we compare the figure with national scenario, 53.4% household is served with piped water. The second common source of drinking water is Tube-well/Borehole (28.6%) followed by well (9.1%) and spout water (6.5%). As per the report 1.5% households still draw water from river/stream and 0.9 % from some other sources (Population Census, CBS, 2011).

Table 4-9: Sources of Drinking Water

Clusters	Sources of Water						Who Fetches Water		Distance		
	Pipe Tap	Well	Natural Tap	River	Boring	Rain Water	Male	Feamle	< 5 minutes	5 - 30 mints	30+ mints
CHAL	**528**	**15**	**67**	**4**	**4**	**0**	**55**	**563**	**415**	**167**	**36**
Adhikhola	61	2	4	0	0	0	4	63	42	20	5
Upper Kali	27	0	2	0	1	0	2	28	24	6	0
Phewa Upper Seti	57	3	8	2	0	0	15	55	48	21	1
Mid Seti	65	2	23	0	0	0	6	84	90	0	0
Madi Lower Seti	63	4	17	2	1	0	6	81	35	51	1
Daraudi Upper Marsyandi	86	0	3	0	0	0	5	84	58	31	0
Nagdi Upper Marsyandi	53	3	2	0	2	0	11	49	10	22	28
Dordi - Mid Marsyandi	86	1	8	0	0	0	6	89	79	15	1
Trisulli	30	0	0	0	0	0	0	30	29	1	0
TAL	**412**	**221**	**48**	**38**	**813**	**0**	**98**	**1,434**	**996**	**473**	**63**
Nijgadh	81	15	8	0	14	0	6	112	43	70	5
Buffer Zone	107	181	20	2	26	0	38	298	161	163	12
Dobhan	54	2	4	1	0	0	9	52	12	39	10
Lamahi	113	2	0	0	1	0	1	115	81	35	0
Kamdi Banke	30	5	1	5	96	0	18	119	125	11	1
Karnali Bardia	17	13	6	6	366	0	15	393	293	114	1
Basanta Ghodaghodi	0	0	0	2	82	0	0	84	82	2	0
Shukla Bufferzone	10	3	9	22	228	0	11	261	199	39	34
Total	**940**	**236**	**115**	**42**	**817**	**0**	**153**	**1,997**	**1,411**	**640**	**99**
Total Percentage	**43.72%**	**10.98%**	**5.35%**	**1.95%**	**38.00%**	**0.00%**	**7.12%**	**92.88%**	**65.63%**	**29.77%**	**4.60%**

Source: HH Survey, 2012

Diagram 4-11: Sources of Drinking Water



Source: HH Survey, 2012

Most of the households do not spend much time while fetching water. Vast majority, over 65% said they have water source very close to their house, i.e. only five minutes distance. A total of 30% respondents reported that they need to walk nearly 30 minutes to fetch water and some 5% stated that the water fetching takes over 30 minutes time. The respondents were also asked about who were generally fetching water. Nearly 93% said that female members of the family collect water and remaining 7% said that male members collect water. Please see ***Diagram 4-12*** and ***Diagram 4-13*** for details.

Diagram 4-12: Time for Water Fetching

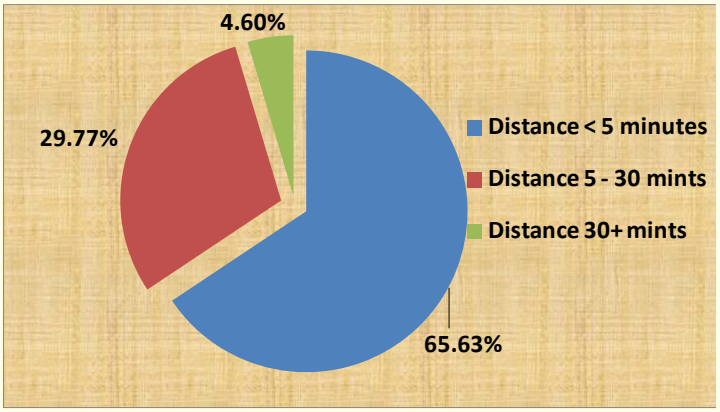
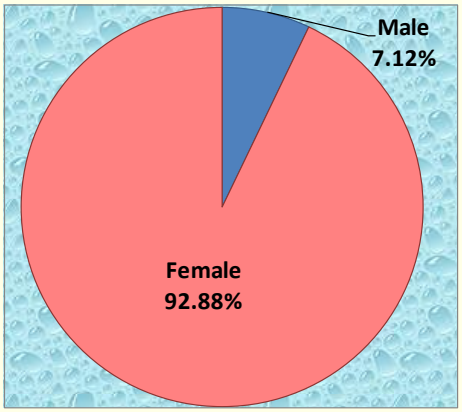


Diagram 4-13: Water Fetching



Source: HH Survey, 2012

4.3 Biodiversity

Various information related to biodiversity were collected through Household Survey. Secondary sources and focus group discussion (FGD) based on various indicators were identified in the monitoring and evaluation framework of the Project. Findings of the study related to biodiversity conservation are presented in different headings below.

4.3.1 Awareness on Biodiversity and Ecosystem

People's awareness on biodiversity is very important for its conservation. A simple question was framed during the HH survey to understand whether people are aware of the meaning of biodiversity or not. Majority of the respondents in TAL and CHAL found to be unaware of biodiversity (***Diagram 4-14***). The household survey has shown that awareness of respondents in TAL is much higher (48.3%) than CHAL (27.5%). This could be due to the presence of a number of programs implemented on biodiversity conservation in TAL areas and most of the sites for HH survey in CHAL are far from protected areas.

Diagram 4-14 Awareness on Biodiversity

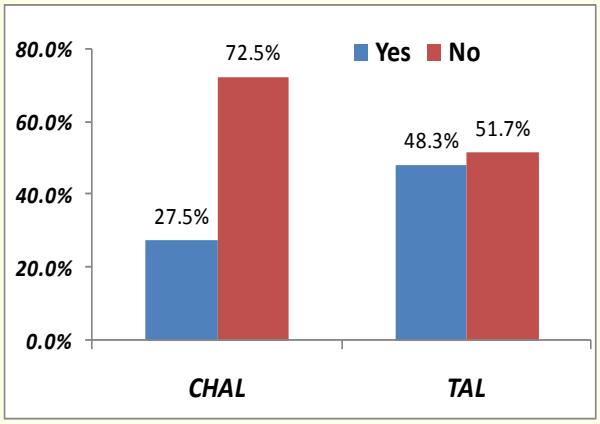
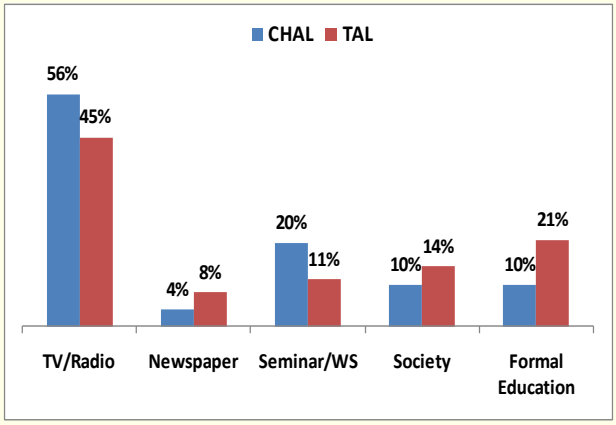


Diagram 4-15: Sources of Information



Source: HH Survey 2012

Those respondents who have understanding on the importance of biodiversity conservation knew the subject through radio/television in both CHAL and TAL (***Diagram 4-15***). More than one fifth respondents in TAL who were aware of the subject expressed that they received information through formal education such as school/ university and trainings but only one tenth was in the case of CHAL. 14% respondents in TAL expressed that they received message in social gathering. Analysis of FGD has revealed that communities nearby protected areas (Langtang, CNP and Manaslu) have fair understanding on the meaning of biodiversity and they were found to be positive for biodiversity conservation.

During the HH survey, perception of respondents towards the benefit of better ecosystem management was gauged (***Table 4-10***). Most of the respondents (82.7%) expressed they believe that ecosystem services help in improving livelihoods' of people. As shown in ***Table 4-10***, almost equal number of male and female believed in positive role of ecosystem.

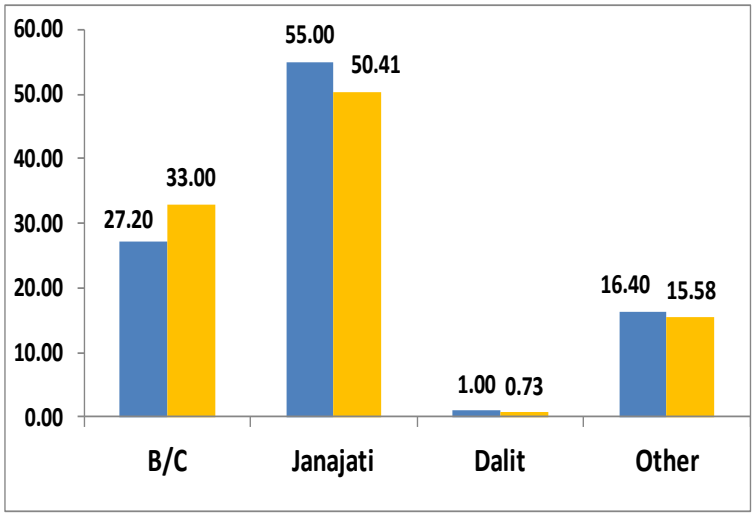
Table 4-10: Percentage of People Opinion of Ecosystem Benefits

Clusters	Can Ecosystem Help People?					
	Yes			No		
	Male	Female	Total	Male	Female	Total
CHAL	**51.5**	**48.5**	**81.1**	**53.8**	**46.2**	**18.9**
TAL	**51.2**	**48.8**	**83.3**	**52.7**	**47.3**	**16.7**
Total	**51.3**	**48.7**	**82.7**	**53.1**	**46.9**	**17.3**

Source: HH Survey 2012

Looking at the ethnic perceptions of the positive responses (***Diagram 4-16***), almost half Janajati in TAL and CHAL believed that the better ecosystem improves livelihood. Around 30% (Brahmin/Chhetri/Thakuri) and 15% other group were found positive towards the statement respectively.

Diagram 4-16: Perception on Ecosystem



Source: HH Survey, 2012

Regarding the type of benefits people are receiving, the HH survey data revealed that people are receiving timber, firewood, fodder, NTFPs and other products from buffer zones of conservation and protected areas. ***Table 4-11*** shows the number of respondents receiving benefits.

Table 4-11: Percentage of People Receiving Benefit Buffer Zones

Landscape	Benefits				
	Timber	Firewood	Fodder	NTFP	Other
CHAL	7	14	10	3	7
TAL	32	67	53	5	21
Total	25	52	41	5	17

Sources: HH Survey, 2012

In the case of CHAL, there are very few protected areas and majority of the sites surveyed are very far from the protected areas. Hence, it is obvious for people nearby buffer zones to receive forest products. In TAL, people are mostly benefited from firewood, fodder and timber. The involvement of male and female in the forest product collections is presented in next section (see ***Diagram 4-24 below***).

4.3.2 Livestock Diversity

A number of livestock has been recorded from secondary sources. Breeds of major livestock were explored from district veterinary service offices. Breeds of major livestock in CHAL and TAL are presented in ***Table 4-12*** below.

Table 4-12: Breeds of major Livestock

Type	*Breeds*	
	CHAL	**TAL**
Buffalo	Lime, Parkot, Murra cross, Local (3,1)	Lime, Parakota, Murrah, Jafrabadi
Cow/Ox/Yak	Pahadi cow, Local, Yak, Jarsi, & Holestain (3,2)	Local, Jarsi, Holistain, Sindhi, Saiwal, Hariyana (5,1)
Goat/Ram	Jamunapari, Khari, local, Barbari (3, 1)	Terai local, Ajmeri, Jamunapari, Barbasi, beetal (4,1)
Poultry	Broiler, Layers, New Hempsire, Austrlop, Sakine (3,1)	Sarkani, Pwakh ulle, Ghati khuile, Ostolarp, New hampshire, Broiler, Layers (3,3)
Horse/Mule	Local	No
Sheep	Baruwa, Bhyaglung, Kage,Improved cross, Hybrid (3,2)	Lampuchhre (1)
Pig	Dewwork, Yorksagar, Kalo chwanche, Lanrace, Hemsar (4,1)	Harrah, Landres, Yakshire, Hampshire, Diurok, Menasan, Pakhribas kalo (5,2)

Note that the figure in parenthesis gives number of breeds-hybrid/improved and traditional respectively. The local names of the traditional breeds were not available. The information from ***Table 4-12*** reflects that the number of livestock is dominated by hybrids/improved.

4.3.3 Crops Diversity

Information on major varieties of agriculture crops were collected from district agriculture offices, FGD and HH survey. A number of varieties were recorded during the survey which is presented in ***Table 4-13***.

Table 4-13: Varieties of Agriculture Crops

Crop Species	CHAL	TAL
Rice	Mansuli, Makawanpure-1, Sabitri, Radha-1, 4, 7 & 32, Taichin, Khumal-4, Bhunte Masino, TR 84, Barse 3004, Hardina, Anadi, Jethobudo, Pokhereli Masino, Jarneli, Kalakan, Mansara, Loktantra, Chhotemadhise, Aarbawali Chaite;	Bindheshwori, Hardinath, Mallika, Loktantra, Mithila, Ram, Rampur manshuli, Radha-4, 9 & 11, Sabitri, Manshuli, Janaki, Sawa Manshuli, Chaite, Vadaiya, Agahani
Maize	Manakamana-1, Rampur Composite, Annapurna-4, Arun-1 & 2, Seto pahelo, Posilo-1, Khumal Pahelo, Kakani Pahelo, Ganesh-1 and Local (rato, seto);	Deuti, Sital, Rampur-2, Manakamane-1, Arun-2, Rampur composite, Manakamana-4, Biosee 9681, Payoniyar 3410, Poshilo-1
Millet	Okhle, Dalle, Kabre-1, Local (Kartike, Dare jhapre, Mudko, Jhallari);	NA
Wheat	RR21, N.L-297, BL-1442, BL-1973, BL-1135, BL-1142, WK-1204, Bijaya, Gautam, Module etc;	Gautam, BL-1473, BL-1135, Achyut, Aditya, Bhrikuti, BL-1022, Nepal-251 & 297, Siddhartha, UP-262, NL-30
Barley	Benes, Malt, Jure, Local	
Buck Wheat	Kavre, Mite,Mithe, Local	
Musuro	Simrik, Shikhar, Sindur, Local	Sital, Khajura-1, Shikhar, Simrik, Sindure, Bharati

Sources: DADOs and HH Survey, 2012

4.3.4 Area of Biological Significance

The government of Nepal has declared several areas of biological significance in TAL and CHAL as protected and conservation areas and has also given special attention to protect forests for biodiversity conservation. ***Table 4-14*** below gives brief information of areas of biologically significance in TAL and CHAL.

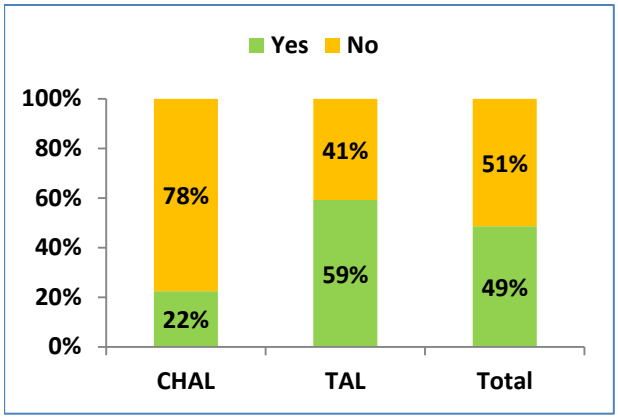
Table 4-14: Forest Area (hectare) under Biodiversity Conservation

S.N.	Categories	CHAL		TAL		Total	
		No	Area	No	Area	No	Area
1	National Parks	**2**	**186,900**	**3**	**245,000**	**5**	**431,900**
2	Wildlife Reserves	**-**	**-**	**2**	**80,400**	**2**	**80,400**
3	Corridors and Bottleneck	**-**	**-**	**12**	**307,587**	**12**	**307,587**
4	Conservation Areas	**2**	**929,200**	**-**	**-**	**2**	**929,200**
5	Wetlands (Ramsar Sites)	**1**	**1,030**	**3**	**3,088**	**4**	**4,118**
6	Buffer-zone CF	**69**	**4,150**	**177**	**31,258**	**246**	**35,409**
	Total	**74**	**1,121,280**	**197**	**667,334**	**271**	**1,788,614**

Sources: Conservation Areas of Nepal 2068, DNPWC; DoF 2012, WWF/ERI survey, 2012

During the HH survey, respondents were asked about distance between protected areas and their settlements. About one-fifth of the respondents in CHAL and almost half of the respondents in TAL said that they are close by the protected/conservation areas (see ***Diagram 4-17***). Though conservation areas such as Annapurna and Makalu, and Langtang National Park exist in CHAL, number of HHs surveyed in these areas was very limited; therefore percentage may not adequately represent the PAs.

Diagram 4-17: Proximate to PA



Source: HH Survey, 2012

During consultation it was reported that there are some specific biodiversity rich areas in CHAL and TAL. The sites identified are small and localized but have high biodiversity value. See ***Table 4-15*** for list of sites.

Table 4-15: Biodiversity Rich Area

CHAL	TAL
Chitwan National Park, Chitwan Grasslands and Riverian Ecosystem; Barandabhar Forest and Wetlands; Devghat-Gaighat, Chitwan, **Nawalparasi** and **Tanahun;** Kali Gandaki gorge; Panchase Hill; Madane Forest, **Gulmi**; Resunga Forest, Gulmi; Rani Ban, **Kaski**; Annapurna Conservation Area; Pipar, Upper Setikhola Valley, ACA; Madi River Valley, ACA; Daruadi River Valley, ACA; Eastern Himalayan Broadleaf and Conifer Forest; Whole Manaslu Conservatin (MCA) Area; Bhimtang forest area in between ACA and MCA; Ganesh Himal Base Camp area between Langtang and MCA (east-northern part of **Gorkha**, northern part of **Dhading** and west northern part of **Rasuwa**); Langtang NP; Shivpuri NP	***Rautahat***: Chure area, Brindaban, Gaidatar ***Bara:-*** Pasaha river, bakaiya river), Thanemaiye and Dhukuwas for Wild animals; and Satisal regeneration in Pasaha Jungle ***Parsa:-*** PWR, Nirmal basti, Bighnathm Sikaribaas for wild animals ***Nawalparasi:-*** CNP; Dhanewa khola, Narayani river are some wetland; Churia range, Sunwal , Dumkibas for bijayasal and Satisal ***Dang:-*** Churia area Banke:- -Kamdi, Banke National Park ***Bardia:-*** Khata corridor,Bardia National Park ***Kailali***:- Ghodaghodi for turtles and aquatic flora and fauna; Basanta Corridor and Churia range for plants and wild animals; Mohana river for gangetic Dolphin ***Kanchapur***:- Laljhadi corridor, Suklaphanta Wildlife Reserve, Churia range

Source: ERI Field Consultations, 2012 and CHAL Rapid Study Report 2012

4.3.5 Status of Biodiversity

Majority of respondents in the HH survey in TAL and CHAL are of the view that the status of wildlife has improved in last 20 years (See ***Table 4-16***). Many respondents were unable to answer the questions as they could not estimate the situations. Almost 78% in CHAL and 40% in TAL said they are not aware of the status of wildlife. Almost a quarter of respondents in TAL and one fifth respondents in CHAL made their opinion on degrading situation.

Majority of respondents have identified poaching a main reason followed by illegal logging, forest fire and encroachment.

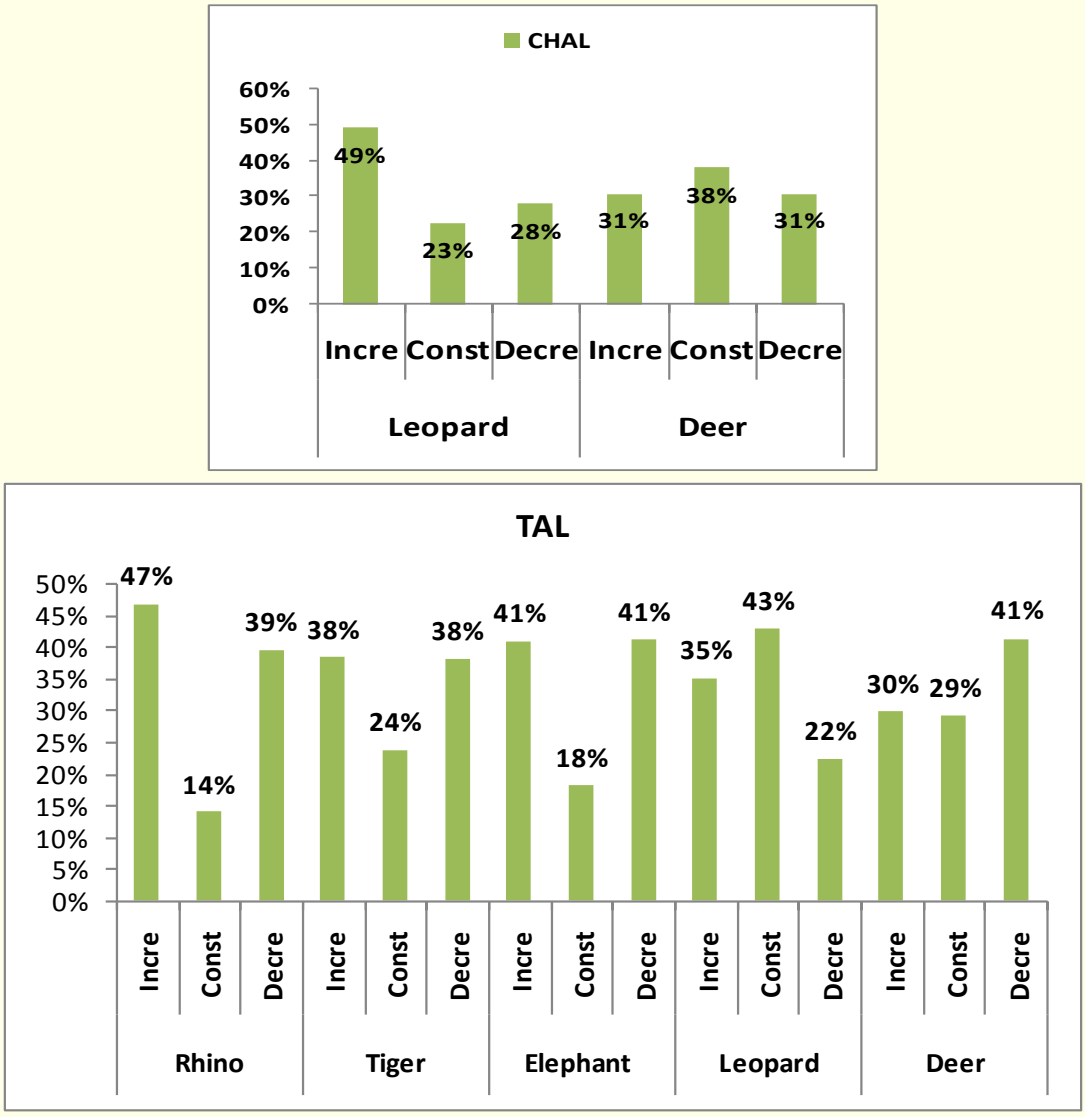
Table 4-16: Perception of People on Status of Biodiversity and Reasons for Declining (%)

Landscape	Status of Wildlife in Last 20 Years			Reasons for Decline					
	Improving	Similar	Declining	Poaching	Illegal logging	Invasive Species	Encroachment	Forest Fire	Other
CHAL	51.8	28.8	19.4	40.7	37.0	0.0	3.7	18.5	0.0
TAL	50.3	26.0	23.7	38.6	31.2	9.8	10.7	8.8	0.9
Total	50.5	26.4	23.1	38.8	31.8	8.7	9.9	9.9	0.8

Source: HH Survey, 2012

Looking at individual species, majority of the respondent in CHAL were of the opinion that Leopard and Deer are increasing during last 20 years (***Diagram 4-18***). Almost one third respondents were of the opinion that these animals are in same number. Just less than half respondents in TAL said number of Rhino was increasing and nearly two fifth said population of tiger was on the rise. ***Diagram 4-18*** shows that quite big proportion of the respondents (41%) said that the population of elephant and deer was declining. Most of the respondents expressed that poaching and deforestation are main reasons behind the decline of wild animals.

Diagram 4-18: Perceptions on Status of Wild Animals



Source: HH survey 2012

Wildlife census is very challenging task and conducting census for many species involves huge amount of money and time. The survey team tried to collect information related to the population of focal species as identified by the Hariyo Ban Program. However information about a few species were not available as it was known that census of those species have not be carried out extensively. See ***Table 4-17*** for available census data.

Table 4-17: Population of Focal Species

S.N	Species	CHAL	TAL	Total
1	Tiger	0	155	155
2	Rhino	0	534	534

Source: DNPWC, 2011

If we look at the back record, around 340-350 tigers were estimated in 1999/2000 by the DNPWC. The Government of Nepal has planned to double the Tiger Population by 2020.

Similarly, 612 Rhino were counted in 2000. The population trend shows that the rhino population was declined to 409 in 2005 but now it is on increasing trend (DNPWC, 2012).

Several issues related to wildlife conservation were reported during the FGDs. These issues are linked to human, natural and financial aspects. Below is the list of issues identified.

- Poaching and trade of wild animals
- Inadequate security post
- Shortage of water for wild animals/degradation of wetlands
- Shortage of grassland/pasture land
- Drying out of water sources and waterholes
- Livestock grazing inside the protected areas
- Excess number of tourists in a particular area (exceeding carrying capacity)
- Natural conversion of grassland to woodlands (succession)
- Forest fire
- Deforestation and forest degradation
- Insufficient human resources
- Inadequate research
- Encroachment of forest areas

Poaching has been identified as one of the major threats to wild animals. The exact information on the number of poaching incident is not available as local level poaching outside the PAs is not normally reported to central level database. ***Table 4-18*** gives the poaching incidents and trade conviction recorded in DNPWC in different fiscal years (DNPWC, 2012). It should be noted that the year 2011 was zero poaching year for Rhino. A total of 33 trade conviction record was available in DNPWC. Records of trade conviction and poaching of snow leopard, swamp deer and Grey wolf were not available.

Table 4-18: Poaching Incident and Trade Conviction

Focal Species	*Poaching Incident (no)*			*Trade Conviction (no)*
	2008/09	*2009/10*	*2010/11*	*2011 onward*
Tiger		1	1	6
Rhino	9	12	2	27
Ghariyal			1	
Musk Deer	4			
Red Panda	1			
Common Leopard	1	2		

Source: DNPWC, 2012

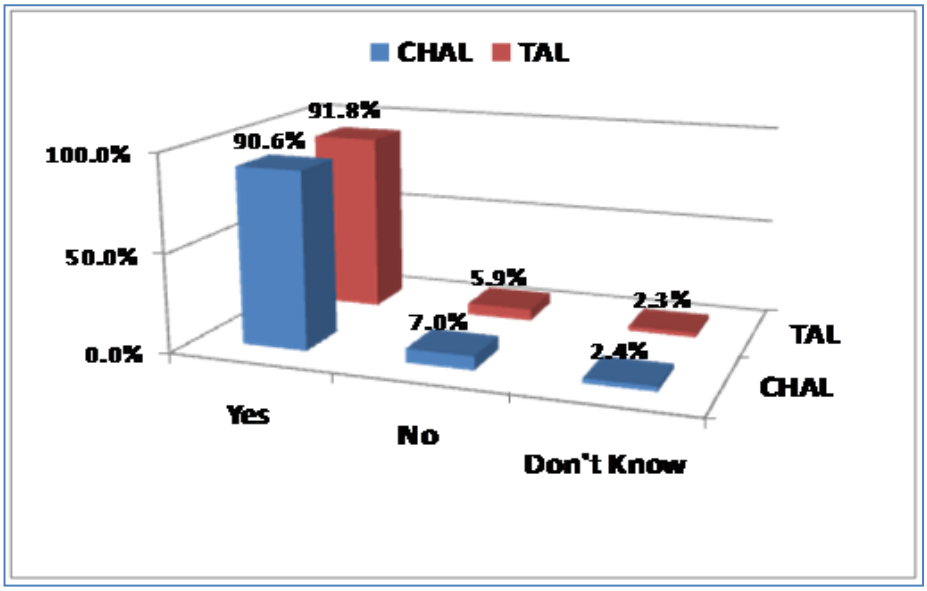
4.3.6 *Participation of Local Communities in Biodiversity Conservation*

Need of protection of wild animals was asked to all respondents during HH survey. Information on ***Diagram 4-19*** reveals that most of the respondents (> 90%) gave positive remarks.

Community Based Anti-poaching Operation (CBAPOs) is considered an effective means for conserving wild animals. Respondents were asked several questions related to CBAPOs during HH survey. See ***Table 4-19*** for their responses.

The ***Table 4-19*** shows that less than one-fifth respondents have knowledge on CBAPOs in CHAL whereas two-fifth have knowledge in TAL areas. Among the respondents having knowledge, a very small number of people are involved in CBAPOs. Looking at the duration of involvement in last year, more than 60% respondents were involved in the range of 2-5 days while 34% were involved less than a day. Very few respondents seemed to be involved more than 5 days.

Diagram 4-19: Perception on Need of Protecting Wildlife



Source: HH Survey 2012

Table 4-19: Knowledge and Involvement in CBAPOs (%)

Landscape	Knowledge on CBAPOs		Involvement		Total Involvement Last Year		
	Yes	No	Yes	No	< 1	2 to 5	5+
CHAL	18.9	81.1	8.3	91.7	23.5	76.5	0.0
TAL	44.7	55.3	13.3	86.7	36.8	56.4	6.9
Total	37.3	62.7	11.9	88.1	34.1	60.4	5.5

Source: HH Survey 2012

During the FGD, it is observed that most of the participants have good understanding on the importance of conservation and are, therefore, involved in anti-poaching activities. It was observed that females are very active in anti poaching activities. They gave this credit to WWF.

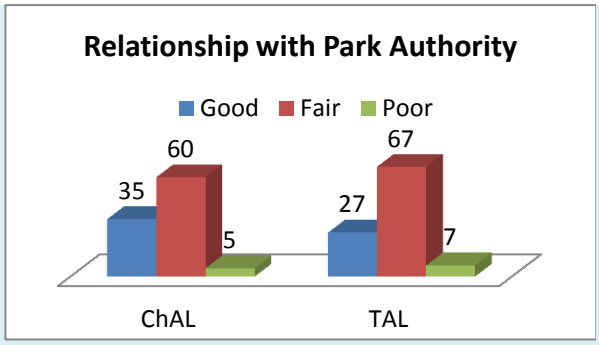
Altogether, 378 CBAPOs were formed in TAL. Out of them 38 were established in buffer zone of protected area engaging 359 community members and rest were set up in corridors and bottleneck with the support of corridor and bottleneck project where a total of 2639 community members are involved. Similarly, a total of 25 CBAPOs have been established in CHAL. Information on the number of members in CBAPOs in ACAP was not available. In Lamtang, in 9 CBAPOs, 133 members (127 male, 6 female) are involved whereas in MCAP in 7 CBAPOs, 63 members (60 male and 3 female) and ACAP 8 CBAPOs are involved.

Source: WWF 2011 (June) and ERI Survey 2012

4.3.7 *Human Wildlife Conflict*

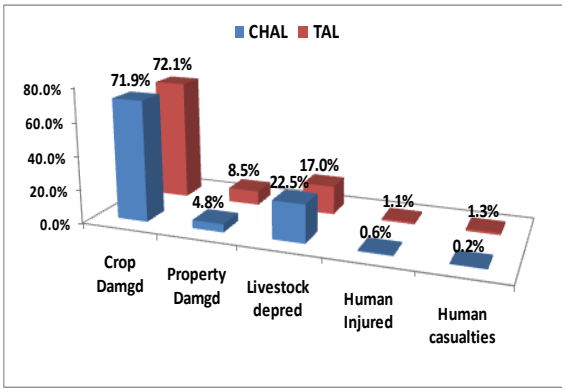
While conducting the HH survey, respondent had categorized the relationship between park authorities and communities in a following way which is presented in ***Diagram 4-20***.

Diagram 4-20: Peoples Relation with PA Authorities (%)



Source: HH Survey 2012

Diagram 4-21: Human Wildlife Conflict



Source: HH Survey 2012

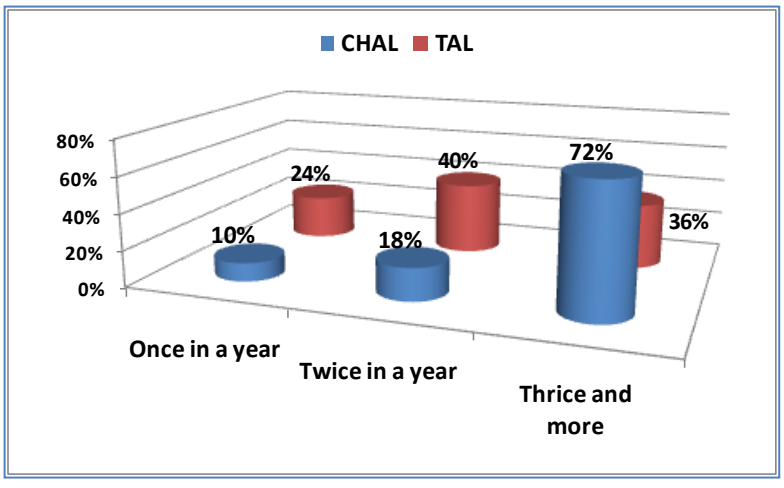
Majority of the respondent said they have fair relations with park authorities whereas almost one-third of them think that they have maintained good relations. However, very insignificant number said the relation was not maintained well.

Most of the participants during the FGDs said the relations cannot be ranked hard and fast as it depends on person. However, most of them agreed that relation at present is better than that of past as mutual coordination and collaborative works have increased after the concept of buffer-zone management came to effect.

> Last year, elephant destroyed six houses and grains, killed two men during the night; marsh mugger (crocodile) hurt one person, every year crops are being eaten up by Nilgai, Deer and Parrot. Government provides just 6-10 thousand to a victim.
>
> ***Grievances recorded during the FGDs 2012***

Human wildlife conflict situation was assessed during the HH surveys (***see Diagram 4-22***) Incidents of crop damage and livestock depreciation were found to be widely prevailing in TAL and CHAL.

Diagram 4-22: Frequency of Crop Damage



Source: HH Survey 2012

It was natural to see more incidences in TAL areas than in CHAL as most of the protected areas are located in TAL. Crop damage by wild animals was highlighted in most of the discussions for which no compensation was made available. Majority of respondents in CHAL expressed that the frequency of their crop damage is more than

three times a year where-as more than two third respondents in TAL have similar responses (***see Diagram 4-20***). Almost two fifth said they saw damage twice a year in TAL. Incident of crop damaged by monkeys was reported high in number in both the landscapes. Communities expressed that the crop damage rate was reduced after the construction of electric fence. So, they suggest the expansion of electric fences in vulnerable places. They strongly suggested that reasonable compensation should be granted to victims so that they can tolerate crop damage that result in less conflict.

Out of 2,112 respondents, over 60% respondents reported that various types of property damage and casualties occurred while nearly two percent have received compensation (*see* ***Table 4-20***). However, the compensation amount was less than Rs. 20,000.

Table 4-20: Compensation Received

Landscape	Compensation Received (%)		Amount Received (in Thousand)		
	Yes	No	< 20	20-100	100+
CHAL	1.1	98.9	100.0	0.0	0.0
TAL	2.0	98.0	100.0	0.0	0.0
Total	1.8	98.2	100.0	0.0	0.0

Source: HH Survey, 2012

Most of the participants in FGDs expressed that the present compensation amount is not enough and the process is tedioous and and time-consuming. As said by the participants, there is no compensation for crop damage in Bardiya National Park and Shuklaphanta Wildlife Reserve however it is reverse in the case of Chitwan National Park. Participants during the FGDs made various recommendations that include making compensation scheme more realistic, providing adequate compensation the all damages, reducing steps involved in compensation process, ownership by park authority for compensation and conducting high level monitoring for compensation.

4.3.8 Biodiversity Policies and Strategies

Several policies and plans have been in place for biodiversity conservation since 1970s. Realizing the need of lparticipation of locals residing around the protected areas, buffer-zone concept was brought to effect in late 1990s. The existing policies and plans under the process of preparation and proposed are listed below.

Existing Policies and Plans
Act (1): National Park and Wildlife Conservation Act, 2029 (1972).
Regulations (Total number- 11): Elephant Management, 2022 (1965); National Park and Wildlife Conservation, 2030 (1973); Royal Chitwan National Park 2030 (1973); Wildlife Reserves, 2034 (1977); Himali National Parks, 2036 (1979); Khaptad Nationl Park, 2044 (1987); Bufferzone Management, 2052 (1995); Royal Bardia National Park, 2053 (1996); Conservation Area Management , 2053(1996); Conservation Area Government Management, 2057 (20000; and Kanchanjanga Conservation Area Management, 2064 (2007).
Policies and Strategies (Total number-6): National Wetland Policy, 2059; National Biodiversity Strategy 2059(2002) ; Wildlife Farming, Breeding and Research Strategy, 2060 (2003); Domesticated Elephant Management Policy, 2060 (2003); Action Process for Management lease out Parks, Reserves, conservation areas to Non-government and other institution, 2060 (2003); and Strategy for Physical Infrastructure Development and Implementation, 2065 (2008).

Guidelines (Total number-2): Buffer-zone Management Guideline, 2056 (1999) and Guideline on Compensations of Damage by Wildlife (date NA).

Action Plans (Total number-3): Rhino Action Plan 2005-2011, Tiger Action Plan (2011); and Crocodile Action Plan

Policies in Process:

National Park and Wildlife Conservation Bill, 2068 (2011); and Strategy for Awarding individual providing information on wildlife poaching and trade of forensics, 2068 (2011).

Policies Proposed:

Research Policy; Human Wildlife Conflict Strategy; and Wetlands Restoration Strategy.

Source: DNPWC 2012

4.3.9 Issues Related to Biodiversity Conservation

Several issues were reported during the focus group discussions. Illegal hunting and habitat loss due to forest fire, deforestation, grazing and encroachment were recorded as the major issues in CHAL and TAL area. The anti-poaching groups especially women committees are occasionally threatened and blamed from poacher as they feel these groups are barrier for poaching animals.

Buffer–zone concept has been an effective means for conserving biodiversity in and around the protected areas. Institutional set up for buffer-zone management such as buffer-zone councils, buffer-zone committees and buffer-zone community forests have been established. Several buffer-zone management plans are developed and implemented. Several issues were raised (listed below) by members of council, communities and CF during the focus group discussions as listed below.

- After the introduction of buffer-zone concepts, people's participation in biodiversity conservation has been increased. The local communities have received several tangible and intangible benefits such as share of revenue generated from protected areas, easy and systematic access of forest products in buffer-zones, capacity building of communities, formation of local level institutions etc. However, there are several areas for improvement at policy and implementation level.
- By policies, buffer zone should be managed jointly by park and committees but in practice it is not happening. Park authorities have less attention to buffer-zones. Even the staffs of TAL and WWF have more attention to park authorities than communities. During the planning process, there is biasness from park authority and TAL/WWF staffs.
- Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) for CF were raised as big issues. As conducting both incur huge costs, communities are having hard time in developing and revising management plans addressing the provision of IIE for forest more than 200 ha and EIA for more than 500 ha.
- Most of the poaching takes place inside parks where the armed forces are mobilized. Very rare cases of poaching are reported in buffer zone area. Communities do not get any motivation and awards in return of conserving wild animals but if someone gives message related to poaching sh/e gets award.
- The policies and guidelines related to buffer-zone management are against communities. For example, no bank cheque will be valid without park warden's signature and communities do not have freedom in implementing management plans.

- According to government policy, the BZ communities are eligible to receive 30-50% of the royalties. The communities have received fraction of their share in last fiscal year (1968/69). They complained that the process has been very slow and tedious.
- Compensation process for wildlife damage is very slow and tedious and the amount is not sufficient to compensate the damage. The amount of compensation should be at least near to the damage amount. In the case of death, people receive Rs. 150,000 where as in public place if someone is killed by vehicle accident, they receive up to Rs.10, 00,000. While discussing this issue with park authority, it was said that they are in the process of revising the compensation process and the amount.

An active female member of CBAPO in Chitwan complained that community-based anti poaching groups were not invited by NP authority while celebrating Zero poaching year for Rhino 2011

4.4 Sustainable Landscape Management

4.4.1 Forest Management

Forests in TAL and CHAL areas are being managed under various forest management regimes. Government management and community based participatory management are two major modalities of forest management. Under participatory management, Community Forests, Collaborative Forests, Leasehold Forests and Buffer-zone Community Forests are major community based forest management regimes found in the TAL and CHAL areas. Over 8600 groups are managing more than half a million hectare of forests under these models. For detail information, see ***Table 4-21*** below.

Table 4-21: Area of Forest (hectare) Under Community Management System

S.N.	Particulars	CHAL		TAL		Total	
		No.	Area	No.	Area	No.	Area
1	Community Forests	4,043	198,587	2,518	329,406	6,561	527,993
2	Collaborative Forests	-	-	16	33,870	16	33,870
3	Leasehold Forests	1,294	5,271	489	2,675	1,783	7,945
4	BZ Community Forests	69	4,150	177	31,258	246	35,409
	Total	5,406	208,008	3,200	397,209	8,606	605,217

Sources: DoF 2012; Conservation area of Nepal, DNPWC, 2068

All these forests are handed over with approved forest management plans. Forest development, management and utilization activities are carried out based on the forest management plan. However, from the discussions with staff of District Forest Offices it is found that around 25% of CF Management Plans (Operational Plan) are waiting for renew/revision as their period has been completed. No district-wise specific data is available. From the discussion with DFOs, Rangers and Communities, few reasons were reported for this huge backlog. This is one of the areas where project can develop a sustainable mechanism for FOP revision.

- DFOs and Rangers are supposed to support CFUGs but they have expressed that they are overloaded and do not have enough human resources. It is reported that in general, annual revision of five operational plans is a maximum from DFOs own HR.

- High cost for revision is another factor for the backlog. The mandatory provision of conducting IEE for forests with more than 200 ha to 499 and EIA for more than 500 ha is implicating huge cost for the revision of operational plans. Many resourceful CFUGs are reluctant to invest such huge amount as they do not see additional benefit revising plans conducting IEE or EIA.

There are a total of 101 (CHAL - 19 and TAL – 82) CFs, which cover more than 500 hectares of land each. Similarly, 108 and 326 CFs in CHAL and TAL respectively are more than 200 hectares in their size.

- A number of CFUGs are having small area of forests. They do not see benefit of investing their fund for revising plans.

4.4.2 Major Forest Products and Income

Benefits from forests identified during the focus group discussions were access of timber, firewood, grass, fodder, leaf litters and medicines (***Table 4-22***). A number of other ecosystem services were highlighted during the discussions. They include clean air, water recharge, soil erosion control, watershed protection, scenic beauty and wildlife conservation.

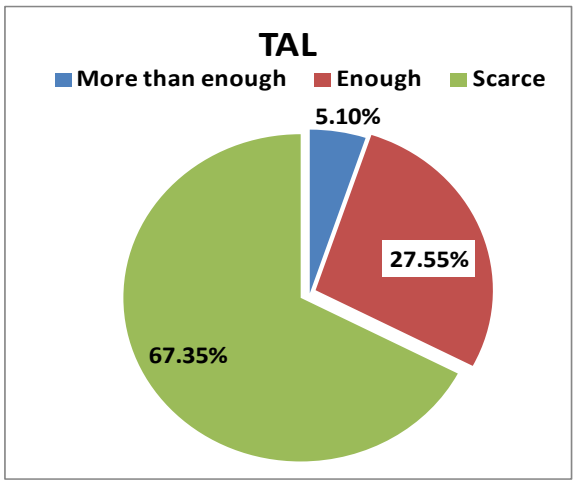
Situation of forest product collections in the cluster identified were analysed from records of HH survey. The data indicated that majority (91%) of houseolds in CHAL collect firewood and fodder from forests. Similarly, more than two fifth (41%) and less than one tenth (7%) depend on forests for timber and NTFP respectively. In TAL, almost three quarter (74%) families collect firewood and fodder from their forests whereas two fifth (40%) collects timber and nearly one tenths (9%) collect NTFPs.

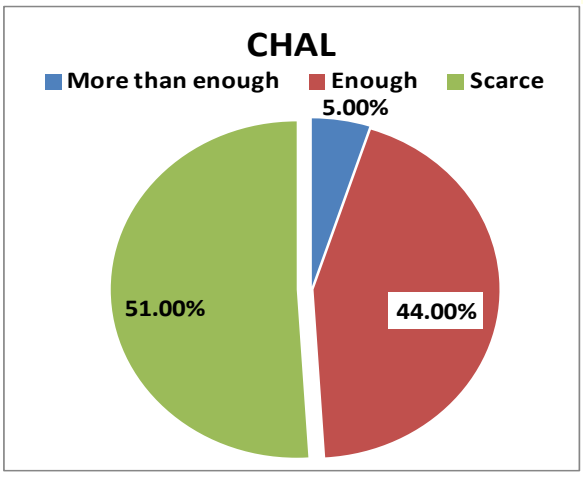
Table 4-22: People's Involvement in Forest Product Collection

Landscape	Forest Products			
	Timber	Firewood and fodder	NTFP	Others
CHAL	41	91	7	3
TAL	40	74	10	2
Total	**41**	**79**	**9**	**2**

Source: HH Survey 2012

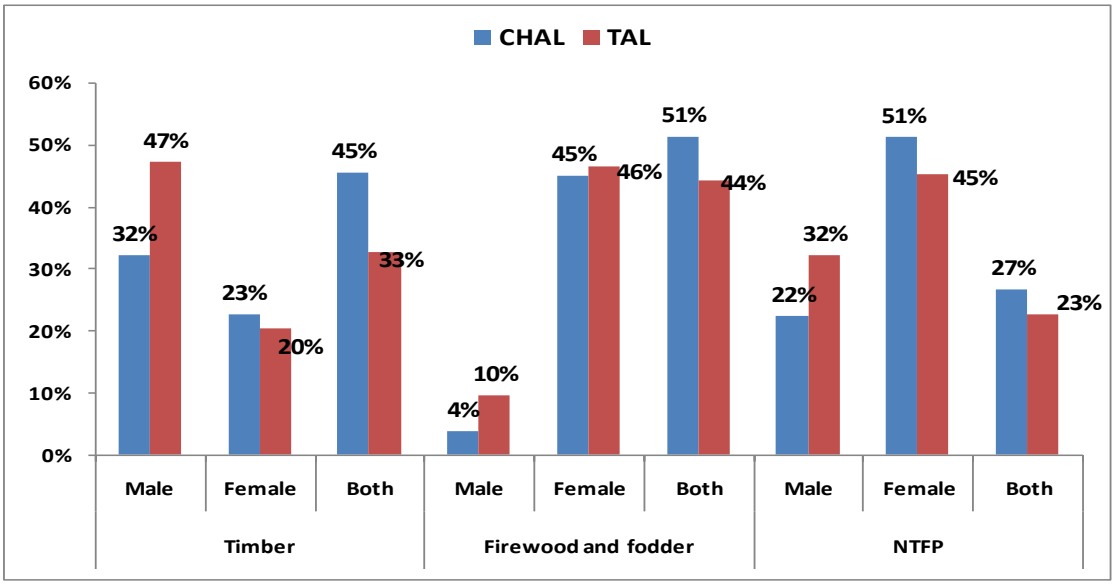
Diagram 4-23: Forage Availability in Forest Areas and Farm Land





Source: HH Survey 2012

Diagram 4-24: Involvement in Forest Products Collection



Source: HH Survey 2012

Fodder and grasses are major sources of forage in both TAL and CHAL (see ***Diagram 4-23***). Regarding the sufficiency of forage in CHAL, more than two fifth (44 %) felt sufficient and more than half (51%) felt scarcity. In TAL, two third (67%) respondents felt scarcity of forage and more than a quarter (28%) felt sufficient. Negligible (5%) respondents in both TAL and CHAL felt more than enough. This suggests that one of the intervention of the HBP can be support in forage development in forest and private land. The HH survey indicates that in both CHAL and TAL, firewood is mostly collected by female (***Diagram 4-24***).

In TAL, nearly half of the respondents said that female mostly collect firewood and almost similar number of respondents were of the opinion that both male and females involve while one tenth said mostly male collects firewood. In CHAL, majority (51%) respondents said that both male and female involve in firewood collection whereas a significant (45%) percentage of respondents said that female mostly collect firewood. Most of the respondents in CHAL and TAL agreed that there is female domination in NTFPs collection (***Diagram 4-24***)). Very slim respondents receive income from selling of forest products. Only 5% in TAL and 6% in CHAL respondents expressed that they have income from selling of forest products. Percentage of people received income from different sources in presented in ***Table 4-23.***

Numbers of forest based enterprises were reported in CHAL and TAL while collecting secondary information. Major enterprises include sawmills, furniture industries, veneer production, Jadibuti processing, Leaf Plate Manufacturing Industry (Duna Tapari Udhyog), Rosin and Turpentine.

Table 4-23: Percentage of Respondent receive income from Forest Products Sale (Rs, 000 and in %)

Landscape	16 - 50	51 – 150	> 150
CHAL	13	47	39
TAL	19	14	67

Source: HH survey 2012

Among these, sawmills and furniture industries have occupied more than 50% of the industries. Herbal (Jadibuti) processing and veneer production ranked at third and fourth positions. In western part of CHAL, Betbas processing industries are popular. Information on the number of enterprises in all districts was not available. ***Table 4-24*** gives the number of enterprises in few districts.

Table 4-24: Forest based Enterprises

TAL	CHAL
Bara: Sawmill-33, Furniture-120, Kathha mill-3 ***Parsa:*** Sawmill-72, Furniture-40, Bamboo based-5, Jadibuti Processing plant-6, Incense stick-47 ***Kailali:*** Sawmill-30, Furniture-80, Betbas processing-10, Medicinal plant distillation-5, Kathha processing-5, Rosin & terpentine-3, Brick & til-55, Nursery	***Tanahun:*** Furniture-113, Sawmills-2, Veneer-2, ***Gorkha***: Furntiture-90-, Ayurved company-1 ***Dahding:*** Furniture- 150, NTFPs processing-1 ***Rasuwa:*** Paper making-1, Furniture-2, Bamboo processing-1, Oil processing-1, Gurans Processing-1, Briquette-2 ***Kaski:*** Sawmill-260, Furniture-168, Veneer-3, Minor Forest product Industries-8, Other-9

Source: District Forest Offices, 2012

4.4.3 Deforestation and Forest Degradation

All the forests in TAL and CHAL are classified into four canopy classes based on the Land Resource Mapping Project (LRMP) 1978. The forest areas in both the landscapes were estimated based on latest satellite images. Ground truthing was carried out in TAL area. A total of two million hectares of forests is estimated in CHAL and TAL. Forest less than 10% canopy cover is not considered as forest based on the IPCC definition. However, area under this category has also been estimated and is considered the most degraded forest. Forest area based on the canopy classes in both landscape is presented in ***Table 4-25*** below.

Table 4-25: Forest Area (ha) according to Canopy Classes

S.N.	Particulars	CHAL (2010)	TAL (2009)	Total
1	**Total Forest Area**	1,106,842	1,110,996	2,217,838
2	**Forest area under various canopy classifications**			
2.1	Very Dense (>71% canopy cover)	86,233	117,197	203,430
2.2	Dense (41-70% canopy cover)	657,003	762,592	1,419,595
2.3	Medium (11-40% canopy cover)	340,710	222,510	563,220
2.4	Degraded (<10% canopy cover)	22,896	8,696	31,592

Source: Forest Carbon Accounting Study For TAL 2011, ERI Landsat Image Analysis, 2012

Forest area in TAL is slightly higher than CHAL. According to the Forest Carbon Accounting Report 2011, very dense forest in TAL has been degraded by 0. 54% and dense forest by 0.51% annually since 1990. The medium forest is increasing by 1.88% annually. The very dense forest has been converted to dense and the dense to medium forests. Similarly, the study estimates that an average of 0.18% of the forest area is deforested annually. The estimate of deforestation made by the study is opposite to the people perception on deforestation in TAL as people believed that more deforestation rate exist in TAL than CHAL areas. So, the estimated figure needs to be verified.

Diagram 4-25: Forest According to Canopy Class

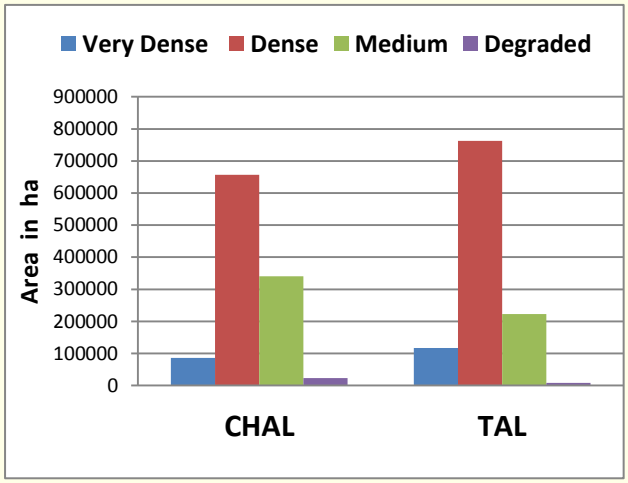
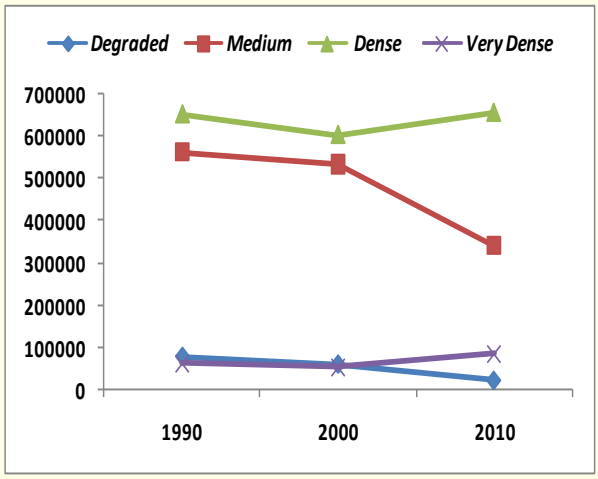


Diagram 4-26: Forest Cover Change in CHAL by Canopy Class



Source: Forest Carbon Accounting Study For TAL 2011, ERI Landsat Image Analysis, 2012

Landsat image analysis of three time series (1990, 2000 and 2010 AD) was done for CHAL to understand the deforestation and forest degradation situation. The findings of the analysis are presented in ***Table 4-26*** below. As shown in the table, the overall deforestation rate is estimated to be 0.97%. It is interesting to note that the area of dense and very dense forest has increased in 20 years' time. But the area of medium and degraded forests has been reduced and mostly in-between 2000 to 2010. At the same period, the area of dense and very dense forests has increased. It means, the medium and degraded forests were either converted to none forest use or to dense forests.

Table 4-26: Forest Cover Change in CHAL

Canopy Classes	Year			Average Reduction/ Increase
	1990	2000	2010	
Degraded Forest				
Area Exist (ha)	**79078.68**	**61082.50**	**22896.00**	
Area Changed (ha)		-17996.18	-38186.50	-28091.34
Changes (%)		-2.28	-6.25	-4.26
Medium Forest				
Area Exist (ha)	**563084.91**	**534565.69**	**340710.00**	437637.84
Area Changed (ha)		-28519.22	-193855.69	-111187.46
Changes (%)		-0.51	-3.63	-2.07
Dense Forest				
Area Exist (ha)	**652491.36**	**603851.34**	**657003.00**	630427.17
Area Changed (ha)		-48640.02	+53151.66	+2255.82
Changes (%)		-0.75	+0.88	+0.07
Very Dense Forest				
Area Exist (ha)	**63128.07**	**53454.50**	**86233.00**	69843.75
Area Changed (ha)		-9673.57	+32778.50	+11552.47
Changes (%)		-1.53	+6.13	+2.30
Total Forest				
Area Exist (ha)	**1357783.02**	**1252954.03**	**1106842.00**	1179898.01
Area Changed (ha)		-104828.99	-146112.03	-125470.51
Changes (%)		-0.77	-1.17	-0.97

Source: Forest Carbon Accounting Study for TAL 2011, ERI Landsat Image Analysis, 2012

The Forest Carbon Accounting Study 2011 for TAL has developed a baseline which projected deforestation trend for the next 30 years. It estimates that if the present trends continue, the forest will be reduced to below 1.02 million ha by 2050 in TAL. Based on the estimate from Image analysis, CHAL will lose around 0.4 million hectare by 2050 (See ***Diagram 4-27, 4-28 & 29***).

Diagram 4-27: Deforestation trend and projected scenario in TAL

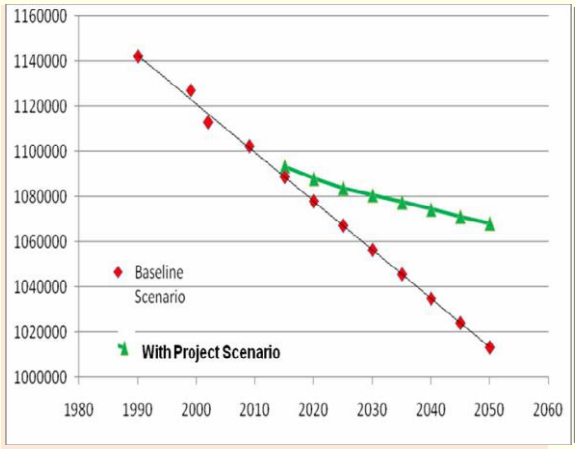
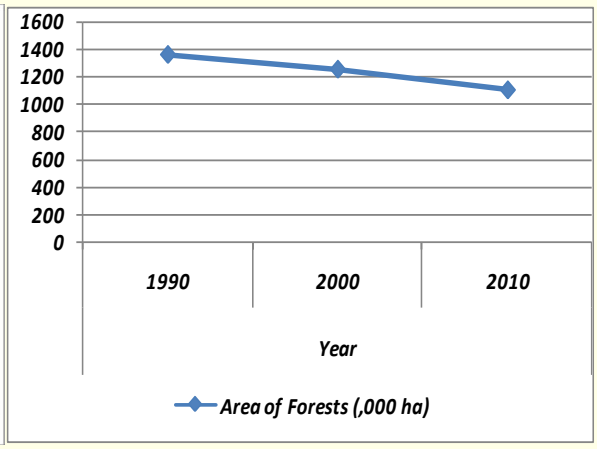


Diagram 4-28: Deforestation Trend in CHAL



Source: Forest Carbon Accounting Study For TAL 2011, ERI Landsat Image Analysis, 2012

During the FGD; forest fire, uncontrolled grazing and illegal felling are identified as major drivers of forest degradation in CHAL where as Illegal felling, encroachments, forest fire, uncontrolled grazing are prioritised as major drivers of deforestation and forest degradation in TAL.

The findings of focus group discussion indicated that due to community forest, the rate of deforestation and forest degradation has been significantly decreased in CHAL and gradually in TAL. All the participants during the FGD confidently expressed the positive change in forest conditions due to forest conservation and management by communities and afforestation in private and public land. However, communities see threats on forest conservation such as forest fire, illegal felling and uncontrolled grazing. Forest encroachment, illegal logging, uncontrolled grazing and forest fire are identified as major drivers by most of the district forest officers.

The underlying causes of deforestation and forest degradation are identified as poverty, increasing population, lack of awareness on importance of forests, political instability, weak law enforcement and weak governance in government offices and some community based groups.

While exploring the perceptions on the forest condition during the HH survey, majority of the respondents in CHAL (78%) and TAL (62%) were of the opinion that forest condition is good.

Diagram 4-29: Perception on Forest Condition

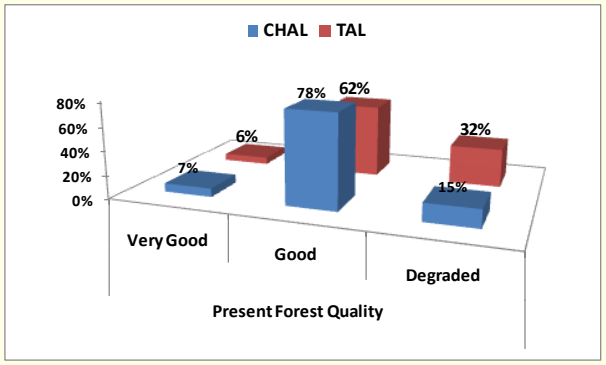
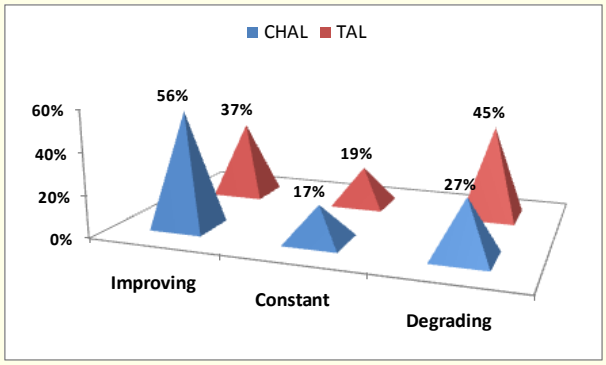


Diagram 4-30: Status of Forest in Last 20 Years



Source: HH Survey, 2012

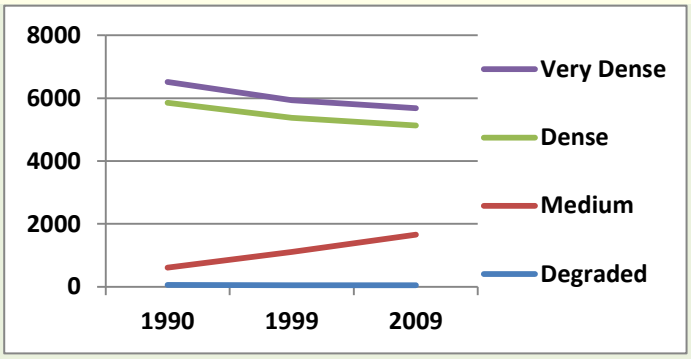
Insignificant number of respondents expressed that the present forest condition is very good whereas more than one-seventh in CHAL and almost one-third in TAL were in opinion of degraded forest condition. Regarding quality of forest in CHAL during last 20 years, majority of the respondents expressed that forest condition is improving, less than one-fifth expressed as constant and more than a quarter expressed as degrading. Similarly in TAL, more than one-third (37%) respondents expressed that forest condition is improving whereas nearly one-fifth expressed as constant. Quite huge respondents (44%) expressed that the forests are degrading.

A separate image analysis was done for wetland forest particularly Ghodaghodi Lake Areas. The analysis showed that annually the wetland forest is depleting by 0.66%. The depletion was estimated high during the 90s which decreased later. ***Table 4-27*** below is the findings of analysis. Dense and very dense forests area has decreased whereas medium forest and degraded lands are increased.

Table 4-27: Forest Areas in Ghodaghodi Lake Area

Forest Strata	Area of forest (ha) /Year 199 0	1999	2009
Degraded	59	50	45
Medium	549	1059	1,610
Dense	5,250	4,272	3,477
Very Dense	663	551	545
Total	6,520	5,931	5,677

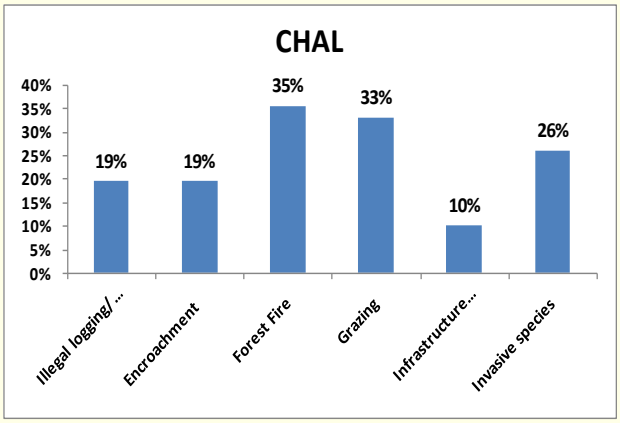
Diagram 4-31: Change in Forest Area



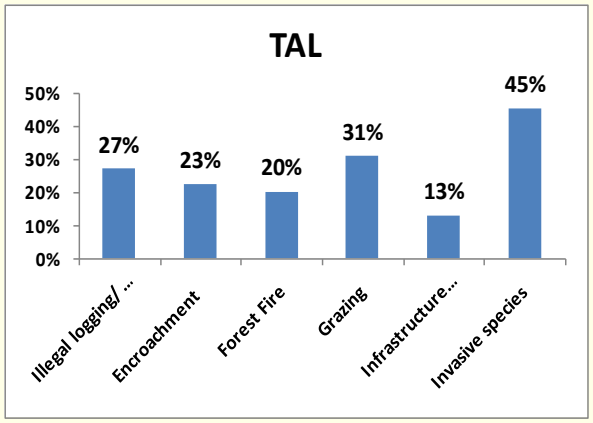
Source: Forest Carbon Accounting Study For TAL 2011, ERI Landsat Image Analysis, 2012

The major drivers of deforestation and forest degradation prioritized in CHAL based on the respondent opinions included forest fire, grazing, invasive species, illegal logging, encroachment and infrastructure. Similarly, the prioritized drivers in TAL include invasive species, grazing, illegal logging, encroachment, and forest fire and infrastructure development.

Diagram 4-32: Perception of People on Drivers of Deforestation and Forest Degradation (%)



Source: HH Survey 2012



Source: HH Survey 2012

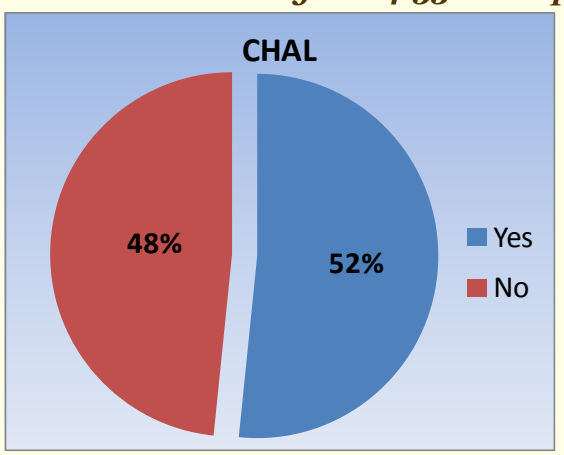
On the basis of field consultation, review of other literature, FGD and household survey the following rank can be given to various drivers of deforestation and forest degradation.

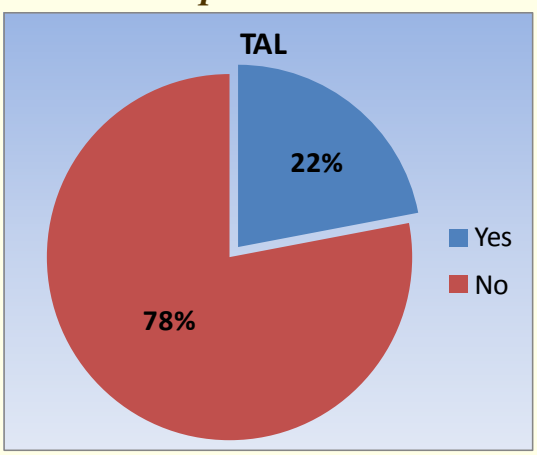
Drivers	TAL	CHAL
Forest Fire	High	High
Illegal Felling	High	Medium
Uncontrolled Grazing	Medium	Medium
Encroachment	Medium	Low
Invasive Species	Medium	Low

Forest fire is identified as high priority drivers in CHAL and TAL. It is reported that except use of forest land for road constructions, there is no use of forest for other uses. The encroachment of forests for agriculture use is slim and is limited to the periphery of boundaries in CHAL. Illegal felling and encroachment in outside the officially handed over community based management system are said to be very high in TAL area.

During the HH survey, respondents were asked about the invasive species. The response between TAL and CHAL is different. Majority respondents in CHAL were in the opinion of increasing number of invasive species whereas most of the respondents in TAL are in the opinion of not having serious problems. It is contradictory to drivers they have identified.

Diagram 4-33: Perception on Invasive Species





Source: HH Survey, 2012

During the discussions and HH survey, Michenia Species was highlighted as major problematic species in TAL and CHAL areas.

During the consultations meetings, drivers of wetland degradation were discussed in TAL area. Siltation/sedimentation and eutrophication were found to have high impacts, limited recharging of water was found medium and; encroachment and dumping of solid waste were found to have low impact on degradation.

4.4.4 Green House Gas Emission Reduction, Conservation and Sequestration

Forest plays dual role on climate change. It is one of the major sources of the Green House Gases (GHG) emission (more than 17%) and cheap and efficient sink of GHG. If the current rate of deforestation and forest degradation is reduced, a huge source of GHG will be reduced. Similarly, forest is only the efficient natural process to sequestrate atmospheric carbon dioxide (Co2). Estimating the amount of carbon emission reduced due to avoided deforestation and forest degradation, conserved forest carbon and amount sequestrated over the project period will be very important. The baseline information at this moment are required as to how much carbon stock in forest exist and what is the rate of deforestation and forest degradation so that the actual conservation and enhancement of forest carbon can be estimated at the end of the project. The estimated annual rates of deforestation and forest degradation are presented in chapter 4.4.3. The existing forest carbon stock in different canopy classes are presented in ***Table 4-28*** below.

Table 4-28: Forest Carbon Stock (Co2 equivalent metric ton) in Various Canopy Classes

S.N.	Canopy Class	CHAL		TAL (2009)		Total
		Area (ha)	C-Stock	Area (ha)	C-Stock	C-Stock
1	Very Dense (>71%)	86,233	72,969,675	117,197	123,290,517	196,260,192
2	Dense (41-70%)	657,003	403,737,542	762,592	683,788,336	1,087,525,877
3	Medium (11-40%)	340,710	209,371,065	222,510	152,045,978	361,417,043
	Total	**1,083,946**	**686,078,281**	**1,102,299**	**959,124,831**	**1,645,203,112**

Source: Forest Carbon Accounting Study of TAL , 2011, ERI Landsat Image Analysis, 2012

In average, 187.7, 244.99 and 287.43 metric tons carbon per hectare were estimated in medium, dense and very dense forests respectively in TAL. For CHAL, no separate multiplying factor was available for medium and dense strata. Hence, they were merged and used average multiplying factor. The average values were 167.9 and 226.0 ton carbon per hectare for very dense and dense/medium respectively. These values were taken from three years measurement average of two watersheds in hills of REDD+ pilot project implemented by ICIMOD, ANSAB and FECOFUN. The accuracy level of result measured by using these conversion factors is estimated to be 60-70%. So, it is strongly recommended to conduct ground truthing.

4.4.5 *Understanding on PES and REDD Mechanisms*

Payment for Ecosystem Services (PES) including REDD and CDM is relatively new concept in Nepal. In Nepal, CDM has been practiced after 2005 whereas concept of REDD was evolved in 2008 after Bali Convention. During the HH survey, respondents were asked whether they are aware of this concept and if so how. The data of HH survey revealed that majority of respondents are not aware of PES and REDD mechanism (See ***Diagram 4-34*** and ***4-35***).

Diagram 4-34: Knowledge on PES

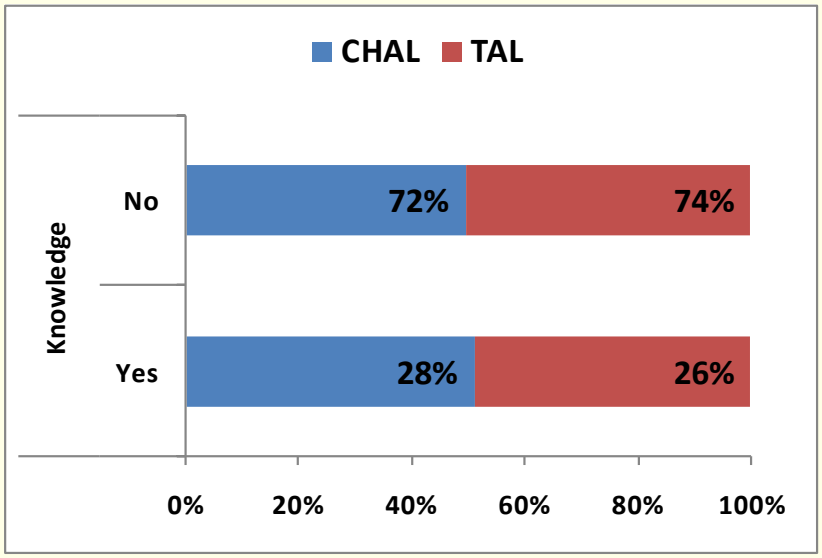
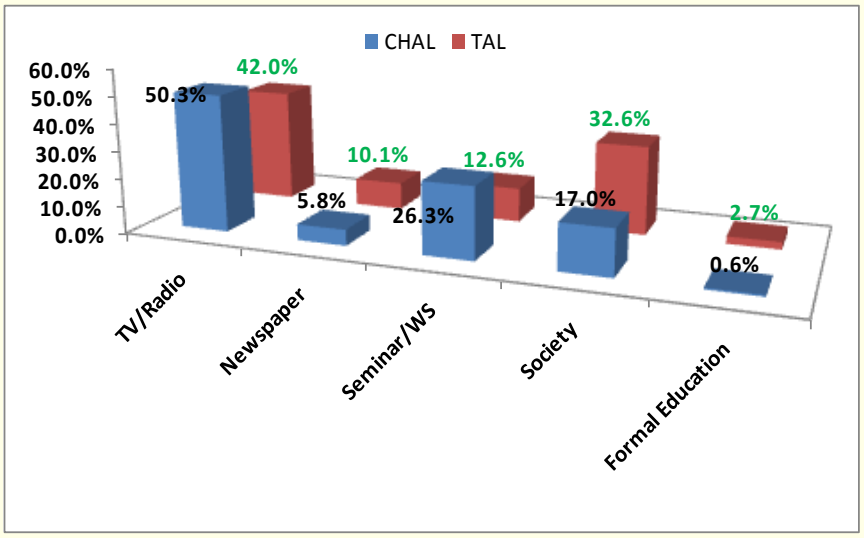


Diagram 4-35: Sources of Information on PES



Source: HH Survey, 2012

Very limited people i.e. around a quarter are aware of PES and REDD. Radio and Television seem to be most effective means of outreach activities to make communities aware on PES and REDD as most of the people expressed that they received message through radio and television. Social meetings also seemed to be another effective means for outreach as little less than one fifth respondents of CHAL and almost one third of TAL received message during social meetings. More than a quarter of the respondents seemed to have attended workshops/seminars on REDD/PE in CHAL. It has clearly given message to the program that TV and Radio is most efficient way of reaching out to public.

4.4.6 REDD+ related Policies

It has not been long since the concept of REDD+ has emerged in Nepal. So, expecting several policies and plans in place will be over ambitious. However, as Nepal is already engaged in REDD+ mechanism, the country needs several policies and plans related to REDD+. Several policies and plans related to activities under REDD+ are in place which existed before the REDD+ emerged. After the REDD+, few policies and plans are developed and some are proposed. Future policies and plans requirement cannot exclusively be identified at this moment as REDD is in evolving stage. The major policies existed; in process and proposed are listed in ***Table 4-29*** below.

Table 4-29: Policy Related to REDD+

Existing
REDD-Readiness Preparation Proposal (RPP)-2010; REDD+ Interim Strategy-2010; REDD Project Idea Note 2008; CF Operation Guideline 2009; Herbs and NTFP Policy 2004; Leasehold Forestry Policy 2002; Revised Forest Policy 2002; Revision of CF Directives, 1994 (in 2000); Revision of Forest Act 1993 (1999); Forest Regulations 1995; Forest Act 1993; Master plan for Forestry Sector 1989 (Ended in 2011)
On Process
National Land Use Policy; Social and Environmental Standard for REDD+ in Nepal; Establishment of Reference Emission Level; REDD+ National MRV system; National REDD+ Strategy
Proposed
CF Operational Guidelines included provision of REDD+

Source: RPP 2010, Quick Assessment of Land Use, Forest Policy and Governance, 2009; Baseline Survey 2012

4.4.7 Advocacy Campaigns

Concrete information related to advocacy campaigns was not readily available in the district offices as well as at the central level. Baseline data on training workshops and advocacy campaigns are difficult to collect as a number of government and non-government organizations are carrying out training/campaigns without proper documentation and reporting system to the government authority concerned. The ***Table 4-30*** below is overall record of advocacy campaigns supported by the SAGUN program of the USAID. Information related to the impacts of advocacy campaigns was not available.

Table 4-30: Support for Advocacy Campaign

SN	Project Activities	No of Event	Participants						
			Overall			Dalit		MJJ	
			M	W	Total	W	M	W	M
1	Workshop (Central, regional & district level)	35	1219	337	1556	31	17	271	76
2	Strengthened internal Governance of FUGs	152	6,081	4,186	10,267	326	427	1,285	1,323
3	Mobilization of advocacy forum at different levels (including Formation)	186	3,053	1,026	4,079	207	110	794	310
4	Support for Social movement / campaign and policy dialogue	416	779,559	529,525	1,309,084	31,884	21,972	169,365	139,199
5	Issues based	146	8271	2957	11228	689	309	1999	890

	workshops/seminars								
6	Capacity Enhancement and Strengthening Network Federation and Alliances	122	2,951	1,886	4,837	162	219	673	530
7	Window Opportunities/ Exchange gain	7	86	87	173	3	7	27	36
8	Media Advocacy Campaign	38	956	199	1,155	17	13	182	55
	Total	**1,102**	**802,176**	**540,203**	**1,342,379**	**33,319**	**23,074**	**174,596**	**142,419**
			59.75%	**40.25%**		**2.48%**	**1.72%**	**13%**	**10.6%**

Source: FECOFUN, 2012

4.4.8 Forest Operational Plan Developed According to REDD+ Guidelines

REDD + is an emerging mechanism to encourage for reducing emission and atmospheric carbon sequestration. Five major activities (as given below) have been identified under REDD+ (Cancun agreement, 2010).

- Reducing emissions from deforestation;
- Reducing emissions from forest degradation;
- Conservation of forest carbon stocks;
- Sustainable management of forest; and
- Enhancement of forest carbon stocks;

Though, no guidelines for developing management plan incorporating provision of REDD+ have been developed yet, the review of few management/operational plans showed that these activities are more or less included in the existing plans.

Two large scale REDD+ piloting project are implemented in TAL and CHAL. REDD - Reducing Poverty in Nepal is implemented in entire TAL areas and Design and Establishment of a Governance and Payment System for Community Forest Management under REDD+ is implemented in Gorkha and Chitwan (REDD Cell 2011). These projects have supported communities in revising their operational plan according to REDD+ principle.

A total of 31 and 16 CF Operational Plans have been revised/ prepared according to REDD+ principle in Gorkha and Chitwn respectively (ICIMOD 2012). Similarly, a total of 100 Forest Operational Plans have been revised according to REDD+ principles in TAL areas (WWF, 2011). Other small and localized projects were/are implemented in the project areas. They are also contributing in revising the FOPs. In Dhading and Rasuwa 40 and 14 plans have been revised respectively. Information of other small project is not available. Example include Climate Change Partnership Program of NEFIN in Lamjung which is conducting REDD awareness and Forest Carbon Inventory activities and National Conservation and Development Centre (NCDC) which had conduced Forest Carbon Inventory in 2011(REDD Cell, 2011). Altogether a total of 116 FOPs in TAL and 85 FOPs in CHAL were revised according to REDD+ Principles.

4.4.9 Payment schemes for Carbon Credit including other ecosystem services

Payment for Carbon Credit started after the Kyoto Protocol was enacted in 2005 under the Clean Development Mechanism. Since then, Nepal is receiving payment under CDM

especially for biogas. Payments under REDD+ has been initiated after Bali Convention-2008. There is no evidence of payment under REDD+ mechanism in Nepal. However, as piloting, there have been some payments to communities in the project area. Estimate from the available information showed that total of 1,156,942 USD (See ***Table 4-31*** for detail) has been generated under CDM.

Table 4-31: Revenue Generated from PES in USD

S.N.	Particulars	CHAL	TAL	Total
1	Forest Carbon			
1.1	Amount generated from forest carbon			
1.2	Source of financing			
2	CDM- biogas			
2.1	Amount generated from CDM (WWF)		488,889	488,889
2.2	Amount generated from CDM (AEPC)	255,152	412,905	
2.3	Source of financing	World Bank	World Bank - Under Gold standard, Source not available	
3	Hydropower/watershed management			
3.1	Amount generated from watershed mgmt	NA	NA	
3.2	Source of financing	NA	NA	
	Total	**274,859**	**901,790**	**1,156,942**

Source: WWF, 2012 and BSP/AEPC, 2012

Though it is not counted as REDD+ payment from forest carbon market; REDD+ piloting project implemented by ICIMOD, ANSAB and FECOFUN funded by NORAD (under climate fund) has piloted payment mechanisms creating a total of 300,000 USD seed grant for three- year project period. Two of three piloting sites are located in TAL and CHAL areas. The project has completed two payments based on Forest Carbon Trust Fund Guideline amounting US$ 53,681 in CHAL and US$ 46,596 in TAL (ICIMOD 2012). The amount generated under CDM was facilitated by WWF Nepal. It is reported that Alternative Energy Promotion Centre of Ministry of Environment has supported in a number of energy saving activities such as biogas, rural solar and micro-hydro (see ***Table 4-33***). The information from Biogas Support Program, 2012 showed that a total of 24,422 and 17072 biogas plants have been installed in TAL and CHAL respectively (in addition to WWF supported) for which payment under CDM was received.

Payment to motivate upstream communities for watershed management is not a new practice in Nepal especially in hydropower projects. Government generally allocates 8-10% of the revenue to the concerned districts. Details of revenue sharing are not available. It is reported that a total of Rs. 41.5 million was provided to Rasuwa in the last three years by Chilime Hydropower. There are several examples of payment for watershed services outside the project area. For example, Reward for Upland Environmental Services in Kulekhani Hydropower and Dhulikhel Drinking Water Project in Kavrepalanchok.

Two cases were reported on payment for watershed conservation in far western Nepal. Geta VDC of Kailali pays annually Rs.10, 000 to each of three CFUGs for Mohana River Conservation. Similarly, water users of Barhakunda and Brahmadev of Kanchanpur pay Rs 50 and Rs. 30 per hour of water use respectively.

4.4.10 Energy Source and Use

The household survey indicated that firewood has been the main source of energy for over 95% families for cooking (see ***Table 4-32***). Electricity has been identified as the second largest sources for cooking and biogas possess the third place. Firewood has the highest share for heating followed by electricity and kerosene.

Table 4-32: Sources of Energy and Uses

Landscape	Sources of Energy and Uses (%)															
	Firewood		Biogas		LP Gas		Kerosene		Electricity		Solar PVC		Bio-briquette		Cow dung	
	Cook	Heat	Cook	Heat	Cook	Heat	Cook	Heat	Cook	Heat	Cook	Heat	Cook	Heat	Cook	Heat
CHAL	98.2	44.0	21.7	1.1	30.3	1.0	24.4	3.7	49.7	13.8	4.4	3.2	0.3	0.0	4.2	2.1
TAL	94.6	66.4	17.2	2.2	14.3	1.4	9.8	13.1	17.2	25.7	3.4	10.8	0.8	0.3	4.8	1.4
Total	**95.7**	**60.0**	**18.5**	**1.9**	**18.9**	**1.3**	**14.0**	**10.4**	**26.5**	**22.3**	**3.7**	**8.6**	**0.7**	**0.2**	**4.6**	**1.6**

Source: HH Survey 2012

The HH survey data revealed that 84% of the biogas plants are not connected to toilets. Insufficient financial resources was identified as the main cause for the same whereas limited number of buffalo/cow and insufficient human resources were identified as second and third reasons.

Unless the consumptions of firewood for cooking and heating purposes are reduced, the emissions of GHG cannot be ensured. Several alternative energy as well as saving techniques are practiced in the program area. Biogas and Solar set were identified as major sources of alternative energy whereas improved cooking stove was for energy saving. The ***Table 4-33*** is the situation of alternative energy and energy saving techniques in TAL and CHAL districts. Biogas, micro-hydro, solar dryer and improved cooking stoves were found to be major energy saving mechanisms in the project districts.

Table 4-33: Alternative Energy Situation

Clusters	S N	DISTRICT	Total Biogas Plant	Micro-Hydro			No of Solar Dryer
				No	Energy (kW)	HHs connected	
CHAL	1	BAGLUNG	718	46	1382.5	13050	
	2	DHADING	5,225	16	242.5	2671	25
	3	GORKHA	4,815	20	488.5	4660	18
	4	KASKI	15,129	3	88	631	
	5	LAMJUNG	8,280	5	141	1289	
	6	MUSTANG	13				195
	7	MYAGDI	896	6	119.5	1332	
	8	NUWAKOT	2,510				26
	9	RASUWA	294				25
	10	SYANGJA	6,716	1	98	834	

	11	TANAHU	15,909				48
	12	Manang		3	87	740	98
		Total	**60,505**	**100**	**2,647**	**25,207**	**435**
TAL	1	BANKE	3,470				
	2	BARA	3,806				
	3	BARDIYA	6,750				
	4	CHITWAN	15,408				43
	5	DANG	7,924				11
	6	KAILALI	12,490				
	7	KANCHAN PUR	9,155				
	8	KAPILBASTU	3,901				
	9	MAKWANPUR	17,942	1	19.2	165	15
	10	NAWALPARASI	9,359	4	62	771	15
	11	PALPA	5,701	5	58.5	698	47
	12	PARSA	680				
		RAUTAHAT	1,706				1
		Total	**98,292**	**10**	**140**	**1,634**	**132**

Source: Alternative Energy Promotion Centre 2012

Information on improved cooking stoves was not available from AEPC. The secondary data collected from various District Development Committee Offices showed that altogether 74,803 improved cooking stove were stalled in few district as shown in ***Table 4-34***.

Table 4-34: Situation of Alternative Energy

Energy Sources/Landscape	CHAL	TAL	Total	Data Sources (DDCs)	
				CHAL	TAL
Improved Cooking Stove	54,938	19,865	**74,803**	Tanahun, Gorkha, Lamjung, Dhading, Rasuwa, Kaski and Syangja	Nawalparasi, Dang, Bardia

Source: Baseline Survey, 2012

4.4.11 Status of Sub-watershed Management Plans

Most of the District Soil Conservation Offices (DSCOs) were visited during the field consultation. However, data related to sub-watershed management plans were not available in some districts. During the consultation, climate change vulnerable watersheds were prioritized as below.

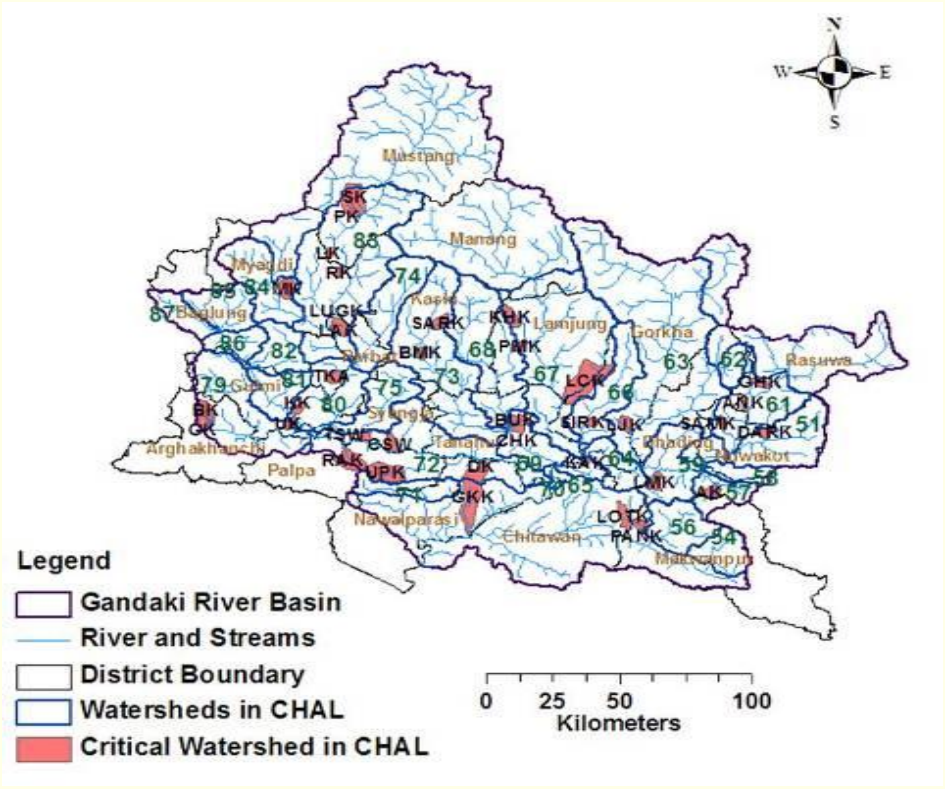
District	Sub-Watersheds
Gorkha	Ludi khola, Chepe khola, Budhi Gandaki, Daraudi river
Lamjung	Paudi Khola, Marysyagdi khola, Pisti Khola, Pumabhuwa, Udipur
Dhanding	Budhi Gandaki, Ankhu Khola, Thopal Khola, Trishuli, Mahesh Khola

Rasuwa	Tallo Falakhu Khola, Upallo Tirshuli Ganga, Mailung Khola, Tallo Trishuli Ganga, Upallo Falakhu Khola, Bhotekoshi, Chilime, Langtang Khola
Nuwakot	Darme, Kingtang, Mid salakhu, Lower salakhu, Dhowal Khola, Deurali, Dangsing, Bidur, Gerkhu Khola
Syanjha	Upallo Aandhikhola, Lubdhi Khola, Faudikhola, Upallo Jyagdi, Mirdi lungdi
Parbat	Sedikhola, Malyangdi khola, Pati khola, Lasti khola, Lungdi khola, Rati khola
Myagdi	Kaligandaki, Myagdi Khola, Rahughat,, Niskot, Aarman, Baranga, singa, Chimkhola, etc
Mustang	Accr to VDC, Surkhang VDC-Dhey, Chhusang VDC-Tetang, Kagbeni VDC-Sangta, Chhoser VDC-Samjung
Palpa	NA

Source: Baseline Survey 2012

Detailed information of Manang, Baglung, Tanahun and Kaski were not available. A total of 45 sub-watershed management plans were developed in Gorkha, Lamjung, Parbat, Baglung, Myagdi and Mustang. Out of 45, 32 plans have been implemented in these districts.

Map 3: Critical Watersheds in CHAL



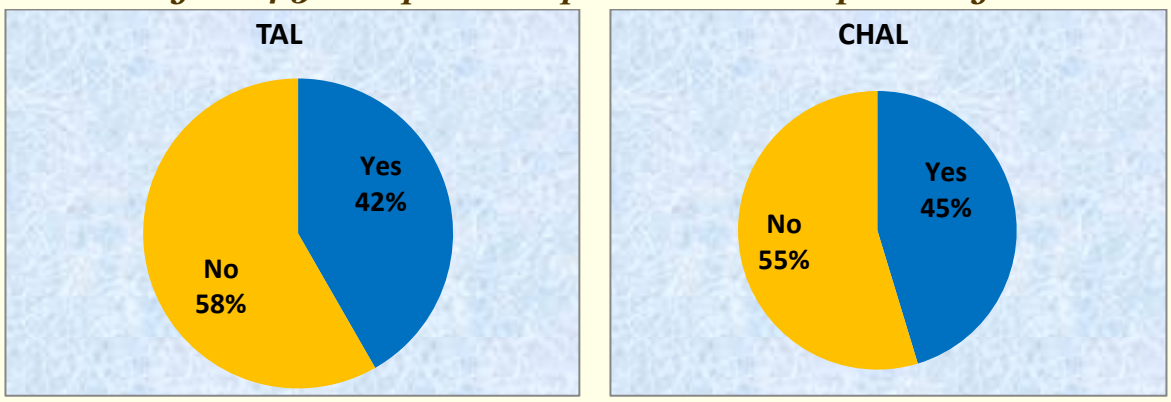
Information of remaining districts was not available. Issues in implementing plans were reported to be political conflicts, difficult geographical situations, limited human and financial resources, increasing labor rate and limited research. Attempts were made to collect data from the Department of Soil Conservation and Watershed Management (DSCWM) but district specific data was not readily available. A number of critical watersheds were identified during the CHAL Rapid Assessment 2012 as presented in ***Map 3***

Source: CHAL Rapid Study 2012

4.4.12 Peoples Participation in Landscape Management

In Nepal, peoples participation in landscape management began in late 1970s after the concept of community forestry began. The household survey revealed that majority of the respondents in both CHAL and TAL was not involved in landscape management activities in last three years (***see Diagram 4-36***).

Diagram 4-36: People Participation in Landscape Management



Source: HH Survey 2012

Those who participated in landscape management activities were asked to estimate the number of days they were involved in last three years (see ***Table 4-35***). The information given in the table cannot be considered to be absolute and accurate as difficulties in estimating days involved were reported by the field crew. However, this anecdotal information indicates the level of involvement of the local communities. The ***Table 4-35*** reveals that people are mostly engaged in forest protection.

Table 4-35: Participation of Local Communities in Landscape Management Activities (Nos. of days)

Landscape	Plantation			Water Conservation			Forest Protection			Fire Protection			Bio-engineering		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
CHAL	583	457	1040	1010	498	1508	692	445	1137	164	94	258	171	55	226
TAL	957	769	1687	561	257	818	1454	570	2024	534	313	847	235	123	358
Total	**1540**	**1226**	**2727**	**1571**	**755**	**2326**	**2146**	**1015**	**3161**	**698**	**407**	**1105**	**406**	**178**	**584**

Source : HH Survey 2012

The table 4-35 indicated that the with respect to participation by sex, male participation was dominating in all the activities. Overall, 9,942 person days were estimated among which 63 % was found to be male. The participation ratio of male and female in CHAL and TAL seems almost similar (60 % in CHAL and 67% in TAL).

4.5 Climate Change and Adaptation

Climate change issue has been the hot cake to this generation as its impacts on the environment are already visible. Several indicators were identified to assess the climate

change issues through HH survey, Focus Group Discussion, Consultations and Secondary Information. The findings of the assessment are summarized below.

4.5.1 Knowledge and Experience on Climate Change

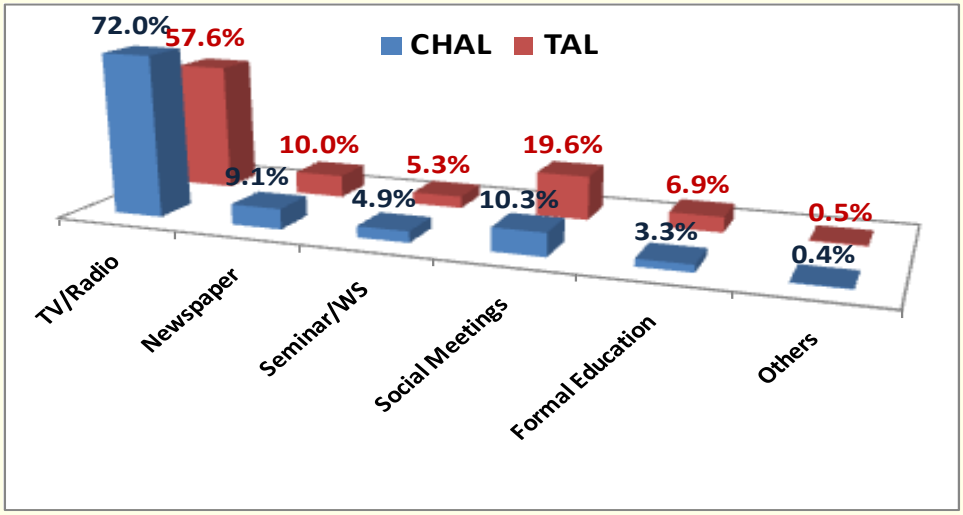
During the HH survey, respondents were asked about their understanding and awareness on climate change (see ***Table 4-36***). In general, majority (52%) of the respondents were found not aware of climate change and its impacts and female found to be less aware.

Table 4-36: Awareness on Climate Change

Landscape	Yes			No		
	Male	Female	Total	Male	Female	Total
CHAL	58	42	39	48	52	61
TAL	54	46	51	49	51	49
Total	55	45	48	49	51	52

Source: HH Survey 2012

Diagram 4-37: Sources of information



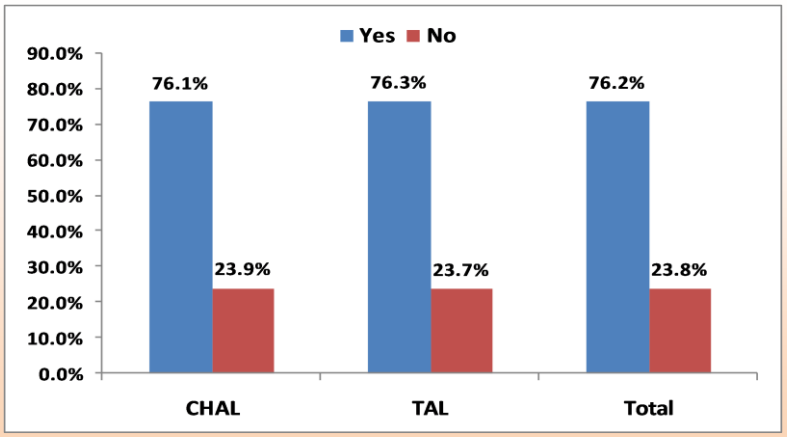
Source: HH Survey 2012

Majority of the respondents who were aware of CC issue reported that they received information on the issue from radio/television in CHAL and TAL (See ***Diagram 4-37***). The ***Diagram 4-37*** shows that social meeting has been the second mostly used means of information communications as 17% respondents said to have received information in informal social meeting. Newspapers stood at third position for information communications. This clearly suggest project on possible outreach means.

FGDs on climate change were conducted separately with youth, elder and women. The participants in FGDs were found to be little bit aware of climate change but they were not able to tell the reasons. Participants especially elders and women expressed that terminologies used in climate change are more complex to understand. However youth of TAL and CHAL seemed more aware on CC and its causes.

Respondent's experiences/perceptions toward the climate change were asked during the household survey. Most of the respondents (77%) were found to be experienced of climate change and that the cases are similar in both CHAL and TAL (see ***Diagram 4-38***).

Diagram 4-38: Perception on CC



Source: HH Survey 2012

During the FGDs, participants of both TAL and CHAL articulated that they are experiencing climate change since last 10/20 years. Change in rainfall pattern as well as amount and temperature were highlighted as most prevalent impact of CC during the FGDs. They expressed their experience of high intensity but short duration rainfall, reduction in the number of rainy days; extreme temperature during the winter and summer; increasing hail storm and decreasing snow fall in High Mountain.

During the HH survey, the respondents were asked to rank the frequency on seven various immediate impact of climate change based on their experiences. See the details in ***Table 3-37.***

Table 4-37: Percentage of People Perceive the Impact

Land scape	Heavy Rainfall		Low Rainfall		Temperature		Drought		Flood/landslide		Snow fall/hailstorm		Fire	
	Incrs	Decrs	Incrs	Decrs	Incrs	Decrs	Incrs	Decrs	Incrs	Decrs	Incrs	Decrs	Incrs	Decrs
CHAL														
	44	56	80	20	92	8	89	11	44	56	46	54	38	62
TAL														
	22	78	82	18	95	5	94	6	38	62	18	82	62	38

Source: HH Survey 2012

The ***Table 3-37*** indicated that more than two third respondents are of the opinion that intensive rainfall with short duration has been increased. This is reported to be high in the case of TAL and low in the case of CHAL. This has led to increase in flood and landslide. Around 60 % respondents said that landslides/flood has been increased. More than 80% of the respondents in CHAL and TAL seemed to have low rainfall experiences. In high altitude, snowfall seemed to be decreased. More than 90% of the respondents are with the opinion that temperature has increased over last 20 years. Temperature, rainfall and drought seemed to have correlations. Around 90% respondents have expressed that droughts have increased. Similarly, around half respondents said that fire incidence has increased over the last 20 years.

4.5.2 Impacts of Climate Change

Impact of Climate Change was assessed in five different prioritized areas of National Adaptation Program of Action (NAPA). Below are the findings of assessment.

a) Agriculture and Food Security

Household level impacts of climate change on agriculture and food security was assessed during the HH survey. Majority of respondents expressed that climate change has impacted in agriculture productivity (see ***Diagram 4-39***). The ratio of respondents impacted and not impacted in TAL and CHAL was found to be the almost same.

Diagram 4-39: Impact of CC in Agriculture Productivity

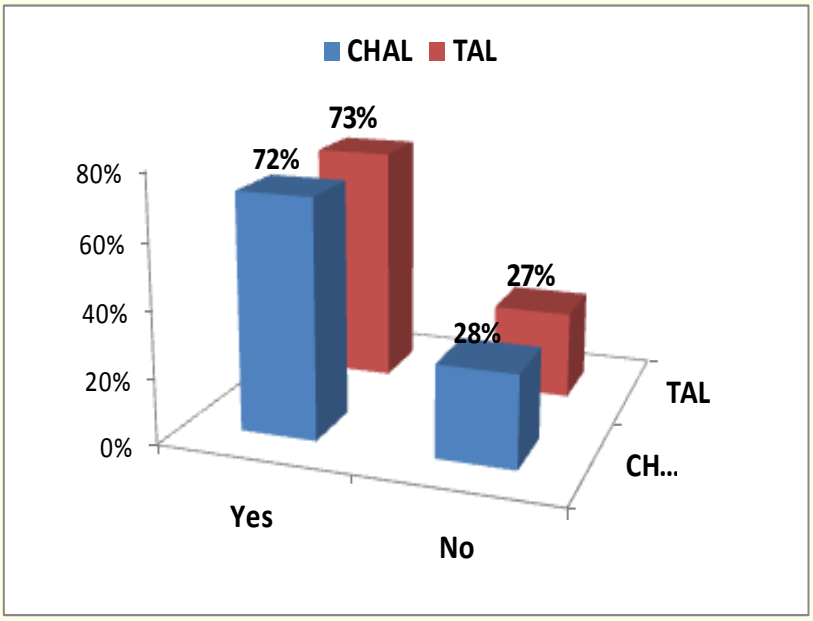
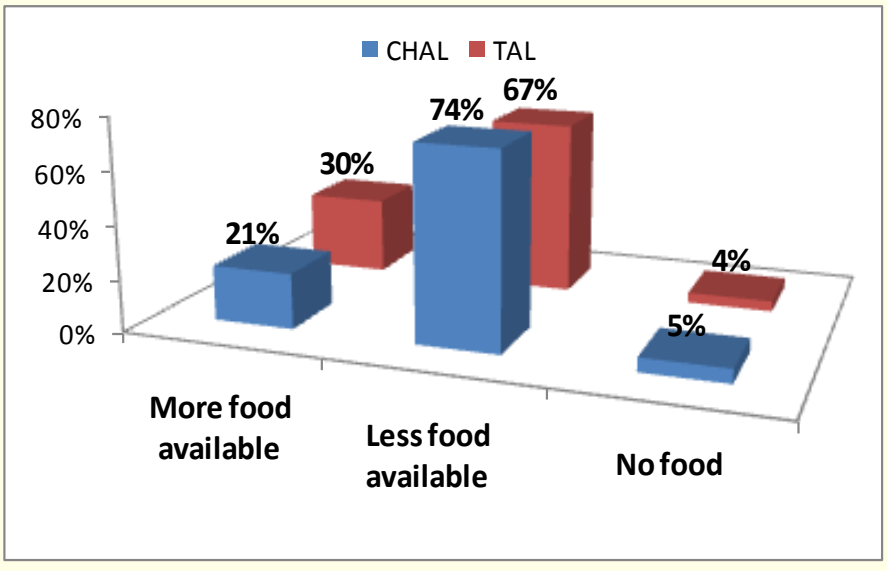


Diagram 4-40: How people were impacted?



Source: HH Survey 2012

According to ***Diagram 4-39***, most of the respondents perceived agriculture sector is mostly impacted which resulted in reduction of food availability. Over 70% respondents in CHAL and TAL have expressed that the availability of food has decreased due to climate change (see ***Diagram 4-40***). One third respondents of TAL and one fifth respondents of

CHAL found to be in opinion that food production has increased due to CC. It was difficult to verify the statement as several factors (such as availability of fertilizer, seeds etc) impact on food production. Respondents were asked to tell the main reason of reduction of food availability. Responses presented in ***Table 4-38.***

Table 4-38: Reason for less food production (%)

Landscape	Lack of irrigation and low rainfall	Lack of cultivable land	Lack of fertilizer and seed	Others	Total
CHAL	***55***	***14***	***11***	***11***	***55***
TAL	***58***	***19***	***8***	***12***	***58***

Source: HH Survey, 2012

The data in ***Table 4-38*** reveals that most common reason for less production is lack of irrigation due to low rainfall. This follows by lack of cultivable land and lack of fertilizer and seed. There are a number of respondents saying lack of workforce, insect and pest attacks as reason of low productions which are non climatic factors.

b) Water Resources

Communities during the HH survey were asked about their experiences on the impact of CC on water resources. Majority of the respondents were of the opinion that the climate change has high impact on water resources (see ***Diagram 4-41*** & ***Diagram 4-42)*** mostly reducing the availability of water in terms of quantity.

Diagram 4-41: Impact on water resources

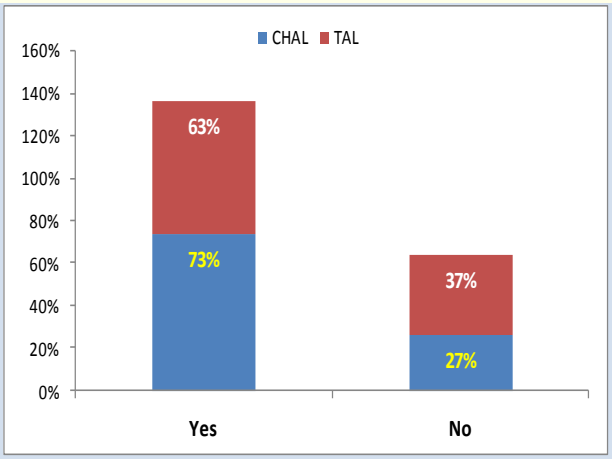
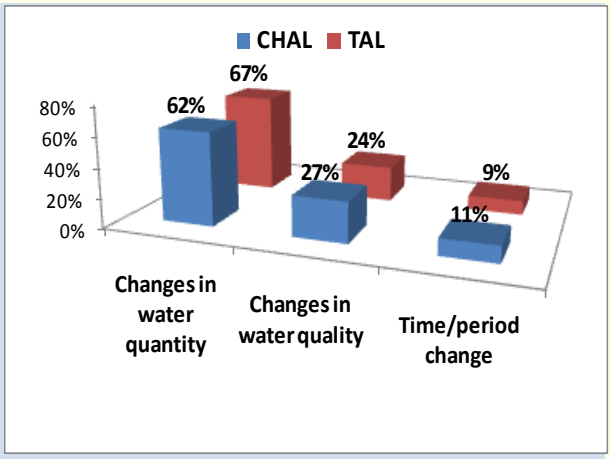


Diagram 4-42: Areas of impact



Source: HH Survey 2012

While assessing the areas of impacts, almost two third respondents said availability of water has been decreased (see ***Diagram 4-42***). A quarter of respondents said that it has also reduced water quality and almost one tenth perceived that it has changed time and period of rainfall. Drying out of water resources due to climate change was highlighted by most of the participants during the FGDs. Reduction in agriculture production and increase in diseases

Table 4-39: Consequences of Impacts (%)

Land scape	Reduced production	Increased diseases	Death of animals
CHAL	**42**	**39**	**19**
TAL	**44**	**35**	**22**
Total	**43**	**36**	**21**

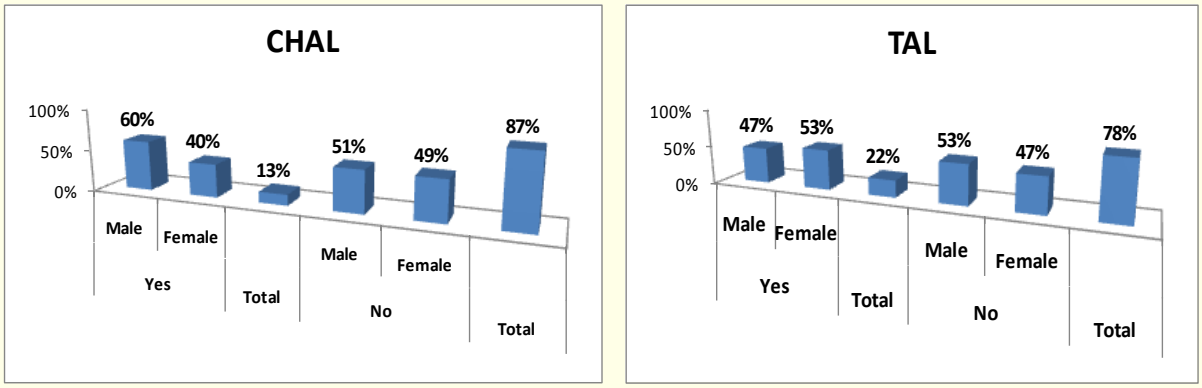
Source: HH survey 2012

in human; livestock and agriculture were identified as major consequences of reduction of water availability during the HH survey (*see* ***Table 4-42***).

c) Public Health

Most of the respondents both in CHAL and TAL do not think that climate change has impacted on human health (see ***Diagram 4-43***). The Diagram indicates that around 80% respondents perceived that the climate change has not impacted their health. The ratio of responses between male and female in CHAL and TAL seem almost similar.

Diagram 4-43: Perception of People on the Impact of CC on Health



Source: HH Survey 2012

However, during the FGDs in Chitwan, participants had highlighted increasing health problem such as Dengue and Kalaajar is a result of climate change.

d) Forest and Biodiversity

Forests play due role in climate change. It is both source and sink of carbon dioxide. Though forest is considered as a most efficient means of mitigation and adaptation to climate change, it itself is also severally impacted due to climate change. The analysis of HH survey revealed that a majority (59%) of the respondents in CHAL and TAL agreed that climate change has impacted forest and biodiversity (*see* ***Diagram 4-44***).

Diagram 4-44: Perception on Impacts on Forest and Biodiversity

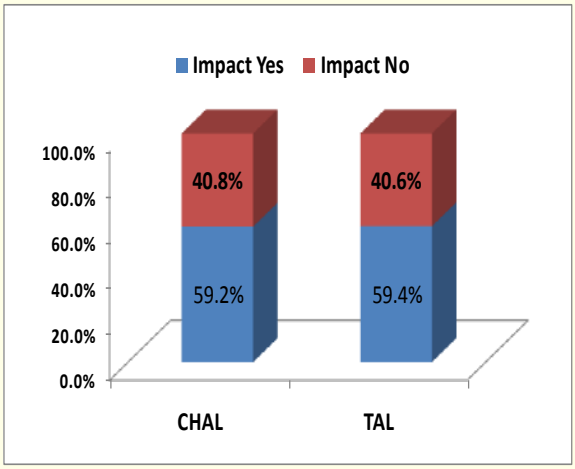
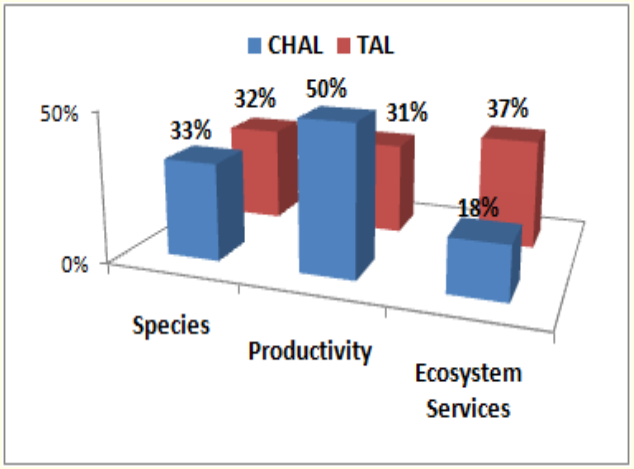


Diagram 4-45: Area of Impacts



Source: HH Survey 2012

Regarding the impacts, the responses of HH survey between CHAL and TAL were found to be different (*see* ***Diagram 4-45***). The respondents of TAL were found to have opined that climate has impacted all the areas including species change and forest productivity change

and change in ecosystem services. But, the respondents of CHAL seemed to have different opinion as almost half argued that the forest productivity has been changed due to climate change and one third expressed that species composition has been changed due to climate change.

Regarding pest and disease, it is interesting to note that majority of respondents were in the opinion of either constant or decreasing rate of pest and disease situation (See ***Table 4-40***). Very few respondents (29%) were in the opinion of increasing rate of pest and disease.

Table 4-40: Impact of Pest and Disease in Forests

Landscape	Increasing	Constant	Decreasing
CHAL	20%	41%	39%
TAL	18%	40%	41%
Total	19%	41%	41%

Source: Field Survey, 2012

Regarding new plants, insect and animals, majority of the respondents (73%) expressed that new plants, insects and animals are not seen in their surroundings (see ***Table 4-42***) The ***Table 4-41*** indicates that there is not much difference of opinion between male and female in both landscape.

Table 4-41: New plants, insects and animals observed in the surroundings

Clusters	Yes		Total	No		Total
	Male	Female		Male	Female	
CHAL	50%	50%	22%	53%	47%	78%
TAL	48%	52%	29%	53%	47%	71%
Total	48%	52%	27%	53%	47%	73%

Source: Field Survey, 2012

The discussions during the FGDs and other consultations were found to be different. Most of the participants during the consultation expressed that ***Michenia species*** has been a problem for them especially in forest areas. A community in Gorkha reported that they are having series of problems of Red Ant which is eating up root and sap of most of the sal trees. They have almost destroyed the forests. No control method was found to address the problems. The participants repeatedly mentioned that increasing mosquito and flies is also another problem in high altitude. Similarly, some participants have observed Cobra snake in hill areas.

e) Changes in Income and Opportunities

The findings of the above sections indicated that climate change has more or less impacted in all the areas prioritized by NAPA. Impact of climate change in income opportunities was assessed during HH survey. A summary of responses is presented in ***Table 4-42*** below. The data in ***Table 4-42*** reveals that almost half of the respondents' income opportunities have been impacted due to climate change. The impact seemed to be high in CHAL area than in TAL. In general, 79 % of the impacted respondents expressed that their income has been decreased due to climate change whereas 16% expressed constant and 5% expressed that their income has been increased.

During the FGD, few participants have expressed that their income has been increased due to favorable condition for agriculture crops such as apple and vegetable production in high altitude, grain production in low land as duration of crop has been decreased.

Table 4-42: Impact of Climate Change on Income (Responses %)

Clusters	Impact						Trend of income changes		
	Yes		Total	No		Total	Income Increased	As it is	Income Decreased
	Male	Female		Male	Female				
CHAL	57	43	58	45	55	42	2	14	84
TAL	51	49	43	52	48	57	8	16	76

Source: HH Survey 2012

Same question was asked in different way during the HH survey to understand the impact in income opportunities. Respondents were asked whether they have missed any income opportunities due to climate change in the last five years and, if so, what were the areas. The summary of responses is presented in ***Table 4-43*** below.

Table 4-43: Missing Income Opportunities

Clusters	Missing of income opportunity						Missing areas				
	Yes		Total	No		Total	Closed enterprise	Job termin	Less agricult	Death of	Others
	Male	Female		Male	Female						
CHAL	55.9	44.1	23.5	50.7	49.3	**76.5**	3.4	0.7	70.3	2.1	23.4
TAL	49.3	50.7	22.5	52.1	47.9	**77.5**	4.9	3.8	64.3	1.4	25.5
Total	51.2	48.8	22.8	51.7	48.3	**77.2**	4.5	2.9	66.1	1.6	24.9

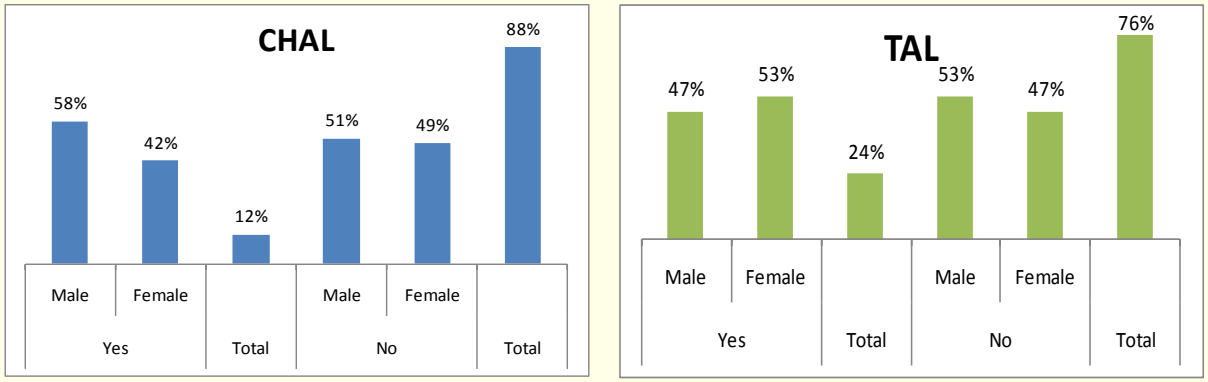
Source : HH survey, 2012

The data in ***Table 4-43*** reveals that nearly a quarter of respondents have missed income opportunity due to climate change and it seems mostly loosing agriculture production. The table also indicates that few respondents have closed their enterprise, few lost job and livestock. It is very difficult to conclude that these missing are due to climate change or not but whatever the result, it is alarming to all.

4.5.3 Experience on Shocks and Coping/ Adaptation Strategy and Capacity

Measuring the impact of climate change is not an easy job as it takes long time to see the real impact. However, anecdotal information such as analyzing various climate change related shocks will give indication of the impact of climate change. An assessment of various shocks (***Table 4-14***) experienced by the people in last five years was done during the HH survey. The analysis revealed that little more than one tenth respondents in CHAL and nearly a quarter respondents in TAL had experienced shocks in last five years (see ***Diagram 4-46).***

Diagram 4-46: Experienced Shocks due to CC



Source: HH Survey 2012

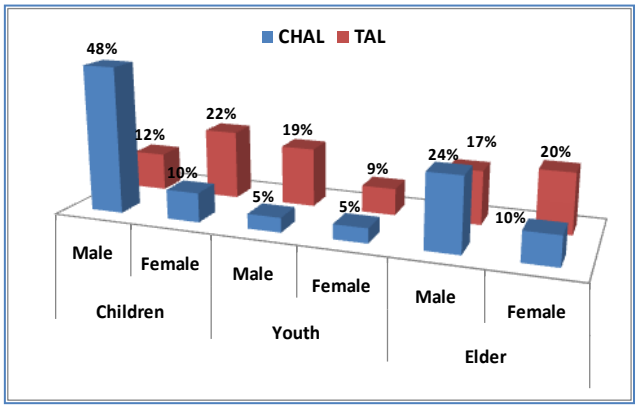
Frequency and trend of different shocks were recorded during the HH survey. The findings of the survey are presented in ***Table 4-44***. The *table* indicates that flood is prevalent in TAL whereas landslide is more prevalent in CHAL. Family illness has been indicated as second serious shocks of climate change in TAL. Drought also seems to be serious problem in TAL.

Table 4-44: Frequency and Trend of Shocks Experienced by Respondents (Responses in Nos.

Land scape	Flood			Land slide			Fire			Drought			Submerge			Family Illness		
	Freq	Trend		Freq	Trend		Freq	Trend		Freq	Trend		Freq	Trend		Freq	Trend	
		Incrs	Decrs		Incrs	Decrs		Incrs	Decrs		Incrs	Decrs		Incrs	Decrs		Incrs	Decrs
CHAL	99	21	8	109	32	13	27	7	3	70	20	3	6	1	2	31	14	1
TAL	598	156	80	46	8	5	152	52	20	237	99	18	180	56	25	407	115	32
Total	697	177	88	155	40	18	179	59	23	307	119	21	186	57	27	438	129	33

Source: HH Survey, 2012

Diagram 4-47: Flood Affected Individuals



Source: HH Survey 2012

Looking at the trend, the data reveals that all the climatic hazards are in increasing rate. Very few respondents expressed that these hazards are decreasing. Looking at mostly affected people, the ***Diagram 4-47*** indicates that children and elder are mostly affected in both CHAL and TAL**.** Female children and elders seem mostly affected in TAL where as in contrary it is male in CHAL. Escaping from house during flood/inundation and changing crop variety for prolonged drought is reported to be the measures taken by the affected communities as an immediate adaptive measure.

People were asked what they do if there prevails is prolonged food shortages. Borrowing money was found to be the preferred options. Migration and selling properties are not prevalent in both the landscapes.

During the FGDs, a number of shocks related to climate change were recorded including big landslide in Keshavtar killing three people, incessant hailstorm and flood damaging dams and irrigation channel in Tanahun, high melting rate of snow resulting in flood that damaged irrigation systems and drinking water sources in Mustang, Floods swept away plantation, killed calves, horses and damaged houses, increased health problem, submerged agriculture land etc. In Kailali, due to flood, agriculture crops are cleaned up, they frequently lose houses-4-5 houses every year. Loss of life and properties due to lightning and thundering was what the participants in TAL and CHAL repeatedly expressed.

The HH survey respondents were requested to suggest appropriate adaptation activities to be taken in future. Summary of findings are presented in ***Table 4-45*** below.

Table 4-45: Suggested Coping strategies (responses in %)

Clusters	*Change crop verity*	*Agriculture technology*	*Change cropping pattern*	*Adopt water conservation mechanism*	*Increase bio-engineering work in construction*	*Labor contribution change between male and female*	*Others*
CHAL	52.3	22.5	12.1	6.8	3.1	0.5	2.8
TAL	40.0	33.3	11.9	11.5	2.0	0.5	0.8
Total	43.5	30.2	12.0	10.1	2.3	0.5	1.4

Source: HH survey 2012

Data in ***Table 4-45*** indicates that most of the respondents suggested changing crop variety. Other priority adaptation strategies include improving agriculture technologies, changing cropping pattern and adopting water conservation mechanism.

During the FGDs, participants were asked to list out the adaptation activities to be conducted in future. The summary of their responses is presented below.

- Increase production of fodder/grass and fuel wood through plantation and management;
- Increase forest coverage through plantation and management;
- Increase hybrid and improved breeds of livestock;
- Expand alternative energy supports that save firewood (voice of youth);
- Conserve biodiversity controlling poaching, illegal felling of trees and collection of valuable species (voice of women, youth and elder);
- Provide skill development training and promote skill development activities;
- Conduct awareness raising and training related to forest conservation and management;
- Support communities for improved agriculture techniques including change in crop verity and pattern;
- Improve irrigation system that saves water sufficing for irrigation;
- Construct bio-engineering structure in the most vulnerable areas such as Loharpur of Darakh VDC in Basanta Corridor of Kailali where 300 HH are vulnerable;
- Conserve and manage river basin according to watershed management plan;
- Supply water through boring and encourage payment system for water supply; and

- Promote compost fertilizer and bio-pesticides.

4.5.4 Vulnerability and Adaptability

Vulnerability and adaptation capacity situation for project districts were analyzed from the Climate Change Mapping Report 2010, for Nepal. The summary is presented in ***Table 4-46***. Lamjung and Banke district are reported to be the most vulnerable to CC. Gorkha, Dhading and Manang in CHAL and Parsa and Chitwan in TAL are reported to be high vulnerable districts. Regarding Adaptive Capacity, Gorkha, Dhading, Manang and Rasuwa Districts in CHAL and Kapilbastu and Rautahat Districts in TAL are reported to have low adaptive capacity.

Table 4-46: Vulnerability and Adaptability Index

CHAL			TAL		
District	**Adaptation Capability Index**	**Vulnerability Index**	**District**	**Adaptation Capability**	**Vulnerability**
Tanahun (Mid Seti,Madi)	Moderate (0.167-0.336)	Moderate (0.356-0.60)	Rautahat (Nijgadh)	Low (0.337-0.520)	Moderate (0.356-0.60)
Gorkha (Daraudi upper/Marsyandi)	Low (0.337-0.520)	High (0.601-0.786)	Bara (Nijgadh)	Moderate (0.167-0.336)	Moderate (0.356-0.60)
Lamjung (Nagdi, Dordi and Marsyandi)	Moderate (0.167-0.336)	Very high (0.787-1)	Parsa	Moderate (0.167-0.336)	High (0.601-0.786)
Dhading	Low (0.337-0.520)	High (0.601-0.786)	Makwanpur	Moderate (0.167-0.336)	Moderate (0.356-0.60)
Manang	Low (0.337-0.520)	High (0.601-0.786)	Chitwan (CNP-BZ)	High (0.064-0.336)	High (0.601-0.786)
Rasuwa (Trisuli)	Low (0.337-0.520)	Moderate (0.356-0.60)	Nawalparasi (CNP-BZ)	Moderate (0.167-0.336)	Moderate (0.356-0.60)
Nuwakot (Trisuli)	Moderate (0.167-0.336)	Low (0.181-0.355)	Kapilbastu	Low (0.337-0.520)	Low (0.181-0.355)
Kaski (Phewa Upper Seti)	Very high (0-0.063)	Moderate (0.356-0.60)	Dang (Lamahi)	Moderate (0.167-0.336)	Low (0.181-0.355)
Palpa (Dovan)	Moderate (0.167-0.336)	Very low (0-0.180)	Banke (Kamdi)	Moderate (0.167-0.336)	Very high (0.787-1)
Synjha (Adhikhola)	Moderate (0.167-0.336)	Low (0.181-0.355)	Bardiya (Karnali)	Moderate (0.167-0.336)	Low (0.181-0.355)
Parbat	Moderate (0.167-0.336)	Moderate (0.356-0.60)	Kailali (Basanta)	Moderate (0.167-0.336)	Low (0.181-0.355)
Baglung	Moderate (0.167-0.336)	Moderate (0.356-0.60)	Kanchanpur ((Sukla BZ)	Moderate (0.167-0.336)	Low (0.181-0.355)
Myagdi	Moderate (0.167-0.336)	Moderate (0.356-0.60)			
Mustang (Upper Kali)	Moderate (0.167-0.336)	Moderate (0.356-0.60)			

Source : Climate Change Mapping for Nepal, 2010

The study team tried to estimate the vulnerability and adaptation capacity of two project clusters based on the methods prescribed by IPCC Livelihood Vulnerability Index Assessment 2007. Most of the site specific data for criteria were used from HH survey whereas the unavailable data were used from district value given in the report as well as from the UNDP index. The findings of the analysis are presented in ***Table 4-47*** below.

Table 4-47: Vulnerability and Adaptability Capacity

Landscape	District	Cluster	Indicators of Vulnerability			
			Adaptive Capacity	Sensitivity	Exposure	Vulnerability
CHAL	Tanahun	Mid-Seti/ Khairenitar	0.53	0.36	0.45	-0.03
TAL	Banke	Kamdi/Baijapur	0.44	0.31	0.49	0.013

Source: HH Survey 2012, Climate Change Vulnerability Mapping of Nepal 2010, UNDP HDR 2004

With the estimated value, according to NAPA category, Khairenitar has very low adaptive capacity whereas in the case of Kamdi it is low. Regarding the vulnerability, based on the LVI-IPCC 2007, Khairanitar falls under moderately vulnerable whereas Kamdi falls under low vulnerable.

During the HH survey, respondents were asked whether they are aware of climate change adaptation plans. A total of 14% respondents in CHAL and 19% respondents are aware of the climate change adaptation plan.

Table 4-48: Response of HH on incorporation of adaptation activities in various plans (in %)

Landscape	**FOPS**	**CAP**	**VDC Plan**
CHAL	83	8	9
TAL	67	16	17
Total	**71**	**14**	**15**

Source: HH Survey 2012

Most of the respondents reported not having climate change adaptation plan in their village in both CHAL and TAL areas. The ratio of response between male and female in both landscapes was found to be similar. The HH survey further revealed that most of the activities related to CC adaptation are incorporated in Forest Operational Plans (*See* ***Table 4-48***). Among the respondents who are aware of adaptation plan, more than two third in both CHAL and TAL said adaptation activities are incorporated in FOPs. Adaptation activities incorporated in VDC plans and separate CAPs developed are less in both TAL and CHAL. In some cases they are incorporated in VDCs plan especially in Chitwan. CF adaptation plans seemed to be developed in Kanchanpur, Banke and Bardia. However, the exact information is not available.

The UK aid Project "Livelihood and Forestry Program (LFP)" had been working on Climate Change Adaptation activities in their project districts till 2011. Though, these districts are not the immediate target districts of the Hariyo Ban Project, the information related to adaptation planning process will be valuable for the project. It is reported that a total of 89 Local Adaptation Plan of Action (LAPA) and 994 Community Adaptation Plans (CAP) were developed in five districts. Details are presented in ***Table 4-49***.

Altogether a total of 10 LAPAs in CHAL and 79 in TAL; 649 CAPs in CHAL and 392 CAPs in TAL were developed. Similarly, 54 CFUGs have incorporated adaptation activities in their CFOPS.

Table 4-49: Number of CC Adaptation Plan Developed in LFP Areas								
S.N	Description	Unit	District					Total
			Baglung	Parbat	Myagdi	Rupandehi	Nawalparshi	
1	LAPA Developed	VDCs	6	2	2	35	44	89
2	CAP Developed	CFUG	214	221	167	63	18	683
3	CAP Developed	PILMGs	0	0	0	144	167	311
Source: LFP, 2011								

The secondary information collected from districts revealed that a total of 14 CAPs were developed in Rasuwa and 23 in Syanjha. Similarly, secondary information showed that a total of 54 CFUGs in Dhading and Rasuwa have incorporated activities related to CC adaptation in their operational plans with a separate chapter.

Looking at the responses during the HH survey majority (54%) of the respondents in TAL and almost half (45%) respondents said that plans are implemented (See ***Table 4-50***). It is reported that LFP had supported communities financially for implementing plans.

Regarding participation of respondents in planning process, majority of respondents who know the adaptation plan said that they were involved in planning process. Nearly half female respondents in CHAL and over two fifth in TAL said that they were involved in planning process (see ***Table 4-50***).

Table 4-50: Participation in Planning Process and Plan Implementation Status (%)								
Landscape	Participation						Implementation status	
	Yes		Total	No		Total	Yes	No
	Male	Female		Male	Female			
CHAL	52	48	85	38	62	15	45	55
TAL	56	44	59	46	54	41	60	4
Total	**55**	**45**	**65**	**45**	**55**	**35**	**56**	**44**
Source: HH Survey, 2012								

Overall, almost half of the respondents during HH survey expressed that they received no benefit of climate change adaptation plan (see ***Table 4-51***). But in TAL, majority respondents expressed that they have received benefit from the plan. Those benefitted expressed that they received support in various forms such as credits, technical support, seed and fertilizer, materials and so on.

Table 4-51: Benefits of Adaptation Plan (Responses %)							
Land scape	Benefit from plan Implementation			Benefits/Support Received			
	Yes	No	Total	Credit	Technical	Seed/ Fertilizer	Others
CHAL	43	57	88	13	16	3	68
TAL	52	48	292	14	20	7	59
Total	**50**	**50**	**380**	**14**	**19**	**6**	**61**
Source: Field Survey, 2012							

Regarding the plan implementation monitoring mechanisms, majority (59%) of the respondents expressed that monitoring system exists (See ***Table 4-53***). Most of the respondents in CHAL expressed that there is a monitoring mechanism in place whereas half of the respondents of TAL were in the same opinion.

Table 4-52: Monitoring Mechanism (Responses %)

Clusters	***Implementation monitoring***			***Monitoring mechanism***				***Total***
	Yes	***No***	***Total***	***Internal***	***External***	***Joint***	***Others***	
CHAL	*84*	*16*	*63.5*	*6.8*	*29.7*	*0.0%*	*84*	*16*
TAL	*52*	*48*	*29.1*	*5.3*	*64.9*	*0.7*	*52*	*48*
Total	***59***	***41***	***40.4***	***5.8***	***53.3***	***0.4***	***59***	***41***

Source: HH survey 2012

The ***Table 4-52*** reveals that internal as well as joint monitoring mechanisms are prevalent in both CHAL and TAL. More than half respondents in TAL expressed having joint monitoring mechanism whereas almost two-third respondents in CHAL expressed having internal mechanism.

4.5.5 Creation, Amendment and Execution of Adaptation Policies and Strategy

Climate Change is a new but important issue to be dealt with. Government of Nepal is developing a number of policies and plans related to Climate Change. Below is the status of policies and plans related to CC adaptation.

Existing: Environmental Protection Act, 2053 (1997 AD); Nepal Environment and Policy Action Plan 1993; Rural Energy Policy 2063 (2007AD); Environmental Protection Regulations 2055 (1999); Subsidy Policy for Renewable (Rural) Energy 2066 (2010); Climate Change National Policy 2011; and National Adaptation Program of Action 2010.

In Process: Low Carbon Emission Strategy

4.6 Capacity Building and Income Generating Activities

4.6.1 Trainings

Training and capacity building activities have been one of the major interventions of forest and other NRM related projects in Nepal. Numerous trainings and capacity building programs have been regularly carried out by different agencies. Therefore training and capacity building activity was one of the areas that the baseline survey intended to get information from the respondents of HH survey and secondary sources. It is believed that this information would give general scenario of awareness level and knowledge of ordinary people on NRM related issues. Therefore it is assumed that such information would be very important and also be a good reference while designing any capacity building related activities under Hariyo Ban Program in future.

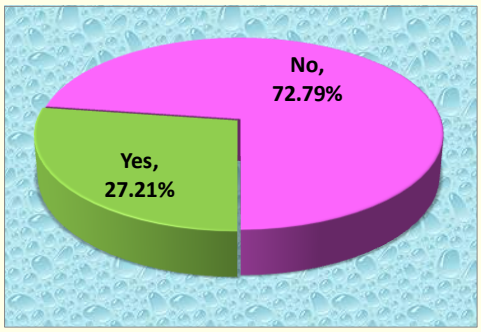
About 27% (585 HHs) respondents reported that they have received some kind of forestry or NRM related trainings; however 73% of them responded that they have not received any training. Please see ***Diagram 4-48*** for details.

Table 4-53: Status of Training Recipients

Landscape	Yes	No	Total
CHAL	224	394	618
TAL	361	1,171	1,532
Total	**585**	**1,565**	**2,150**

Source: HH Survey 2012

Diagram 4-48: Status of Training Recipients



There are some differences between responses of two landscapes. CHAL area seems little better than TAL in terms of capacity building. In CHAL, over 36% respondents reported that they have received training whereas the percentage is 24% in TAL. Please see ***Table 4-53*** for details.

Type of trainings that people have been receiving in NRM related area was another field of interest of researchers. The survey data shows that forestry is the most common training that many people have been receiving. A total of 412 people from the sampled HHs have received forestry related trainings. Gender and social inclusion is another training which is received by 338 people. Similarly, biodiversity, soil conservation and watershed management, climate change adaptation and REDD are other important training that people of CHAL and TAL areas have received.

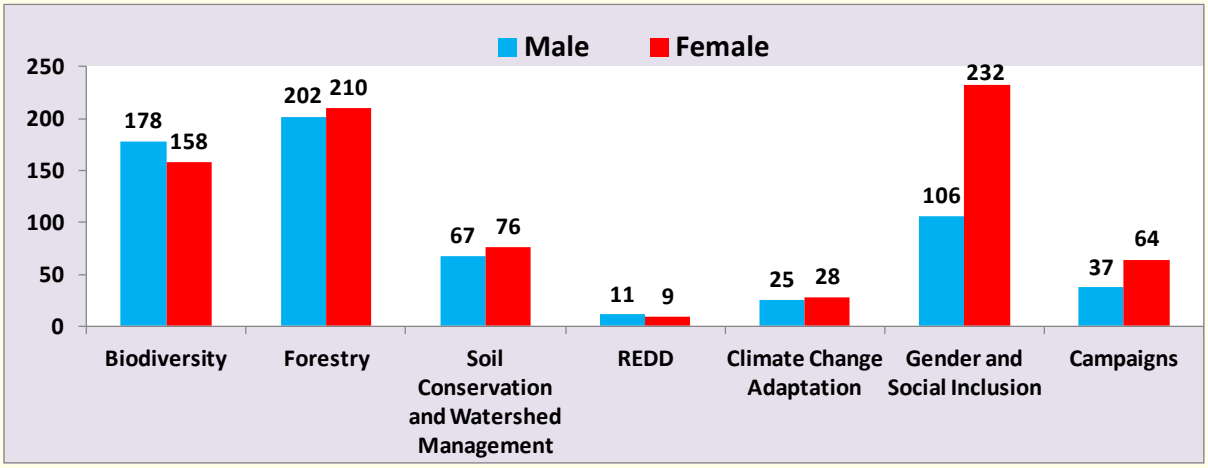
People also reported that they have attended number of issue-based campaigns as well. It is noteworthy that percentage of women participants (55%) in training is higher than men (45%). Please see ***Table 4-54*** and ***Diagram 4-49*** for details on general NRM related and other trainings as reported by respondents during HH survey.

Table 4-54: Status of General NRM Related and Other Trainings

Training Type	Male	Female	Total
Biodiversity	178	158	**336**
Forestry	202	210	**412**
Soil Conservation and Watershed Management	67	76	**143**
REDD	11	9	**20**
Climate Change Adaptation	25	28	**53**
Gender and Social Inclusion	106	232	**338**
Campaigns	37	64	**101**
Total	**626**	**777**	**1,403**
Percentage	**44.62%**	**55.38%**	**100.00%**

Source: HH Survey 2012

Diagram 4-49: Status of General NRM Related and Other Trainings



Source: HH Survey 2012

Training information was sought from secondary sources too. No agency was able to provide complete and up-to-date information about the trainings they have conducted in the field. The agencies, however, have provided some information that was available with them. Following are some of the training events and their participants reported by different agencies.

Table 4-55: General NRM Related and Other Trainings - SAGUN

SN	Activity	Unit	Progress	Total	Women	*Dalits*	Poor	MJJ
1	Participatory Governance Assessment	Event/No	1,381	41,161	20,695	5,308	11,822	17,123
2	Participatory Well-Being Ranking	Event/No	1,381	53,605	18,926	3,969	24,051	30,218
3	Public Hearing and Public Auditing	Event/No	2,114	155,340	66,326	15,994	42,459	46,141
4	Governance Literacy Class	Centre	628	15,429	15,115	2,575	5,648	3,893
5	Orientation on Constitution/FOP	Event/No	1,874	69,512	41,213	6,638	11,866	18,240
6	Capacity Building Activities	Event/No	2,049	51,734	27,730	8,202	15,599	20,202
Total			**9,427**	**386,781**	**190,005**	**42,686**	**111,445**	**135,817**
Percentage				**100.00%**	**49.12%**	**11.04%**	**28.81%**	**35.11%**

Source: Project Completion Report, SAGUN, 2009

Strengthened Actions for Governance in Utilization of Natural Resources (SAGUN) Program which was implemented by CARE Nepal in partnership with three other agencies was probably one of the major projects focused on capacity building of local population. The program was implemented in six districts of Nepal (Banke, Bardia and Kailali in TAL and Gorkha, Lamjung and Dhading in CHAL). Some 387,000 people were directly involved in the capacity building program and had received number of trainings from the program. The program also supported women, Dalits, Poor and Marginalized Janajatis (MJJs). Over 49% participants of the project were women, some 35% MJJ, nearly 29% Poor and about 11% Dalits. The ***Table 4-55*** shows details of capacity building activities and peoples' involvement in the activities.

The Terai Arc Landscape Project (TAL) which is being implemented by WWF itself is helping rural poor to improve their lives in sustainable ways and supporting them to build their capacity. The project has also conducted number of NRM related and other trainings in the field. Some 67,328 people have attended different trainings conducted by the projects. Out of the total beneficiaries, nearly 45% are women, some 50% JJs and some 7% Dalits. Please see the ***Table 4-56*** below for details of the trainings.

Table 4-56: General NRM Related and Skill Based Trainings – TAL/WWF

Trainig Type	Female	Male	Total	Dalits	Poor	MJJs
NRM Related Training	7,252	13,636	20,888	1,523	NA	10,575
Skill Based Training	22,826	23,614	46,440	3,071	NA	23,394
Total	**30,078**	**37,250**	**67,328**	**4,594**	**NA**	**33,969**
Percentage	**44.67%**	**55.33%**	**100.00%**	**6.82%**		**50.45%**

Source: TAL, WWF, 2012

FECOFUN, a formal network of community forest user groups of Nepal, is also working on the capacity building of local community particularly those who are associated with forest related groups and committees. In collaboration with SAGUN program, FECOFUN has conducted several trainings and capacity building programs in Nepal. As per the report, the network has trained some 1,342,379 people so far. Out of them over 40% participants are women, some 24% MJJ and nearly 4% Dalits. The ***Table 4-57*** shows the details of training events and their participants.

Table 4-57: General NRM Related and Skill Based Trainings – FECOFUN/SAGUN

S.N.	Project Activities	No of Event	Participants								
			Overall			Dalit			MJJ		
			Men	Women	Total	Men	Women	Total	Men	Women	Total
1	Workshop (Central, regional & district level)	35	1,219	337	**1,556**	31	17	48	271	76	347
2	Strengthened internal Governance of FUGs in terms of Transparency, Accountability, Participation, Inclusion and Equity	152	6,081	4,186	**10,267**	326	427	753	1,285	1,323	2,608
3	Mobilization of adocay forum at different levels (including Formation)	186	3,053	1,026	**4,079**	207	110	317	794	310	1,104
4	Support for Social movement / campaign and policy dialogue	416	779,559	529,525	**1,309,084**	31,884	21,972	53,856	169,365	139,199	308,564
5	Issues based workshops/seminars	146	8,271	2,957	**11,228**	689	309	998	1,999	890	2,889
6	Capacity Enhancement and Strenthenging Network Federation and Alliances	122	2,951	1,886	**4,837**	162	219	381	673	530	1,203
7	Window Opportunities/ Exchnage gain	7	86	87	**173**	3	7	10	27	36	63
8	Media Advocacy Campaign	38	956	199	**1,155**	17	13	30	182	55	237
Total		**1,102**	**802,176**	**540,203**	**1,342,379**	**33,319**	**23,074**	**56,393**	**174,596**	**142,419**	**317,015**
Percentage			**59.76%**	**40.24%**	**100.00%**			**4.20%**			**23.62%**

Source: FECOFUN, 2012

Further Livelihood Forestry Program (LFP), one of the DFID-funded projects also was working in the forest sector development and capacity building of local people. Through LAPA/CAP project, LFP supported capacity building of some 82,144 people.

Table 4-58: General NRM Related and Skill Based Trainings – LFP (LAPA & CAP)

S.N	Decription	Unit	District			Total
			Baglung, Parbat & Myagdi	Rupandehi	Nawalparshi	
1	Sensitization and Awareness Raising to FUGs representatives, Users and local community by different means	Person	46,927	7,893	20,359	**75,179**
2	Capacity Development of PNGOs, VFCC and C/FUGsrepresentative, Political representative, PNGOs staff, DFO and Other Line Agency		3,561	3,404		**6,965**
	Total		**50,488**	**11,297**	**20,359**	**82,144**

Source: LFP (LAPA/CAPA), 2011

The project was basically working in five hilly districts of western Nepal and major areas of support were sensitization and awareness raising of local community, representatives of political parties, local NGOs, government offices and so forth (***Table 4-58***).

Table 4-59: General NRM Related and Skill Based Trainings – Percentage

Training Type	Overall Participation in Trainings				
	Male	Female	Dalits	Poor	MJJs
Capacity Building	54.62%	45.38%	8.64%	23.61%	33.39%
NRM Based	65.28%	34.72%	7.29%	NA	50.63%
Skill Based	50.85%	49.15%	6.61%	NA	50.37%
Advocacy Related	59.74%	40.26%	4.16%	NA	23.60%
Governance Related	57.24%	42.76%	10.20%	33.64%	42.56%
Workshop (Central, Regional, District level)	75.48%	24.52%	3.35%	NA	3.64%

Source: DFOs and other Offices of CHAL and TAL Districts, 2012

As stated earlier, there was no consolidated data available for any specific area that the survey team wanted to gather from different agencies. However the data mentioned above shows that there has been great effort to develop capacity of local community in forestry and other NRM related sectors. All in all, the participation of women seems between 40-45%. Similarly MJJs are nearly 35%, Poor 20% and Dalits 6% (***Table 4-59***).

Further attempt was made to collect the names of major trainings and other capacity building activities. As per the report of DFOs, following are -***Table-60,*** the major NRM related and other trainings conducted in CHAL and TAL areas.

Table 4-60: List of NRM Related and Other Trainings in CHAL and TAL

CHAL	TAL
• Accounting and Record Keeping • Biodiversity Recording • CC Adaptation • CF Management • Enterprises Development • Fire Control • Forest Based Entrepreneur Skill Development Herbal Plant Processing • Herd Management • High Himal Forest Management and Shelter Improvement • Hotel Management • Impact Evaluation • Leadership Training • Micro Enterprises Professional Planning Orientation • NTFP Cultivation & Management • NTFP Management • Nursery Management • Operational Plan Facilitation • Participatory Governance • Planning Workshop • Silviculture Technique • Snow Leopard Conservation • Social Mobilization	• Accounting and Record Keeping • Bamboo and Betbas Processing • Bee Keeping • Biodiversity Monitoring • CC Adaptation • CF Management • Cooperative Management • Enterprises Development • Fire Fighting • Herbal Plant Processing • Intense Stick Making • Leadership Development • Micro Enterprises Professional Planning Orientation • NTFP Cultivation & Management • Operational Plan Facilitation • Organizational Development • Participatory Governance • Proposal Writing • Social Mobilization • Training of Trainers • Vegetable Farming

Source: DFOs of CHAL and TAL districts

4.6.2 Skill-based Training on Enterprises Development

As stated, numbers of agencies have been providing skill and non- skill based training to the forest beneficiaries and other residents in the project area of Hariyo Ban Program. The major trainings reported by the HH survey respondents are forest-based training, agriculture-based training, livestock-based trainings and other trainings (***Table 4-61***).

Table 4-61: Status of Skill Based Trainings

Status by Training Type and Sex			
Type of Training	**Male**	**Female**	**Total**
Forest based Training	3	2	**5**
Agriculture based training	37	24	**61**
Livestock oriented training	15	22	**37**
Other skill oriented training	35	116	**151**
Total	**90**	**164**	**254**

Training Recipients - Total			
Landscape	Yes	No	Total
CHAL	40	578	**618**
TAL	130	1,402	**1,532**
Total	**170**	**1,980**	**2,150**

Source: HH Survey 2012

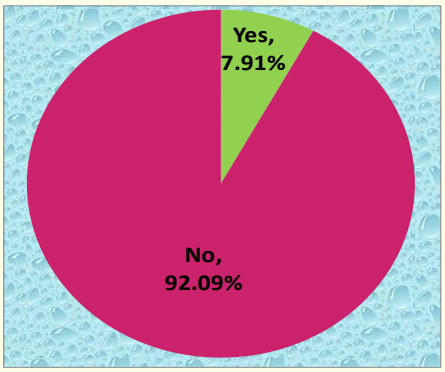
Some people have received skill-based training in the area; however, as per the baseline survey the number of recipients is minimal. The survey data shows that only 8% respondents (170 out of 2,150 HHs) said that their family members have received skill-based trainings. Other 92% (1,980 HHs) said that they have not received any skill-based training. Total number of people who have received such trainings from the sampled HHs is 254. Among them, 90 are male and 164 are female. Please see ***Table 4-62*** and ***Diagram 4-50*** for details on skill based trainings.

Table 4-62: Training Participants – Skill and None Skill

Participants	NRM Related General Training	Skill Based Training	Total
Women	7,252	22,826	**30,078**
Dalits	1,523	3,071	**4,594**
Poor	NA	NA	**NA**
MJJ	10,575	23,394	**33,969**
Total	**19,350**	**49,291**	**68,641**

Source: WWF Nepal, June 2011

Diagram 4-50: Training Recipients – Skill Based



4.6.3 Situation of Enterprises and Income

Only a few people have been doing enterprises other than traditional jobs in the project area. Out of 170 HHs who reported to have attended the skillobased training, 104 respondents said they have been using the skills and also are running some enterprises. Though number of HHs running enterprises is very low (less than 5%) as compared to the total surveyed 2,150 HHs, the percentage is high in comparison to the number of people who have received skill-based trainings. The data shows that over 61% of trained people from surveyed HHs have been using their skills to run enterprises, which probably is a good situation. The ratio of male and female who have been running enterprises seem good. Out of 104 enterprises, 58 are run by male and 46 by female. Please see the ***Table 4-63*** and ***Diagram 4-51*** below for details of enterprises of sampled HHs.

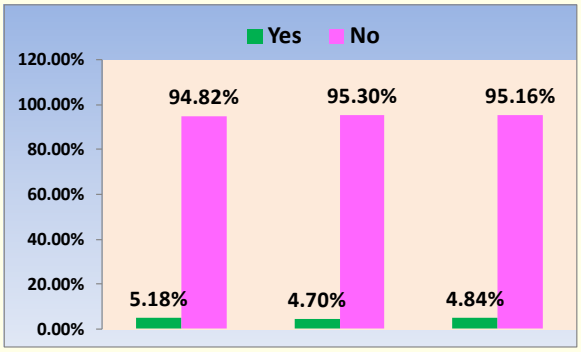
Table 4-63: Use of Skill to Run Enterprises

Clusters	Status of Skills to Run Enterprises					
	Yes			**No**		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
CHAL	**18**	**14**	**32**	**303**	**283**	**586**
Adhikhola	2		2	33	32	65
Upper Kali	2		2	16	12	28
Phewa Upper Seti	3	2	5	32	33	65
Mid Seti	7	5	12	37	41	78
Madi Lower Seti	1	2	3	42	42	84
Daraudi Upper Marsyandi	2	2	4	40	45	85
Nagdi Upper Marsyandi	1		1	33	26	59
Dordi - Mid Marsyandi				55	40	95
Trisulli		3	3	15	12	27

TAL	**40**	**32**	**72**	**748**	**712**	**1,460**
Nijgadh	2		2	64	52	116
Buffer Zone	15	17	32	152	152	304
Dobhan	1		1	32	28	60
Lamahi	10	5	15	52	49	101
Kamdi Banke	1	2	3	69	65	134
Karnali Bardia	7	5	12	200	196	396
Basanta Ghodaghodi	2	2	4	42	38	80
Shukla Bufferzone	2	1	3	137	132	269
Total	**58**	**46**	**104**	**1,051**	**995**	**2,046**

Source: HH Survey 2012

Diagram 4-51: Use of Skills for Enterprises



Source: HH Survey 2012

Out of 104 enterprises, 32 are in CHAL area and 72 in TAL. The enterprises consist of forest-based, agriculture-based and other skill-oriented and numbers of enterprises in each category are 10, 46 and 48 respectively. Moreover, as per the survey report 77 enterprises are operational (running) now and remaining 27 are closed. Please see **Table 4-64** for details.

Table 4-64: Type of Enterprises and Current Status

Type of Enterprises	CHAL	TAL	Total
Forest Based Enterprises	6	4	**10**
Agriculture Based Enterprises	11	35	**46**
Other Skill Oriented Enterprises	15	33	**48**
Total	**32**	**72**	**104**

Landscapes	Current Status		
	Running	**Closed**	**Total**
CHAL	27	5	**32**
TAL	50	22	**72**
Total	77	**27**	**104**

Source: HH Survey 2012

Information on average income from their enterprises was collected during the survey period. The average income is divided into three major categories, i.e. less than Rs. 10,000/annum, Rs. 10,000 – 50,000/annum and Rs. 50,000 and plus per annum. The survey data shows that skill-oriented enterprises are the most lucrative businesses at the community level. Out of total 48 such enterprises, 22 are earning more than Rs. 50,000 per year. Forest-based enterprises also seem profitable too. Out of total 10 such enterprises, 7 of them are making over Rs. 50,000 per year. Details of enterprises types and their average annual income are shown in the ***Table 4-65***.

Table 4-65: Income Level from Different Enterprises

(Amount in NRs)

Type of Enterprises	CHAL			TAL			Total		
	<10,000	10,000 - 50,000	50,000+	<10,000	10,000 - 50,000	50,000+	<10,000	10,000 - 50,000	50,000+
Forest Based Enterprises	2	0	4	1	0	3	**3**	**0**	**7**
Agriculture Based Enterprises	4	2	2	7	8	3	**11**	**10**	**5**
Livestock Related Enterprises	2	1	0	7	1	9	**9**	**2**	**9**
Other Skill Oriented Enterprises	4	4	7	7	11	15	**11**	**15**	**22**
Total	**12**	**7**	**13**	**22**	**20**	**30**	**34**	**27**	**43**

Source: HH Survey 2012

4.7 Good Governance, Gender and Social Inclusion

4.7.1 Membership with Group/Committee/Association

The baseline survey was conducted in different clusters which are nearby forest and other protected areas. Association of sampled households with local level committee/group was one of the interests of the research team to know about. The survey result reveals that a vast majority (nearly 69%) of the HHs sampled have been member of local committee, group, society and so forth. It is interesting to note that both male and female are at the equal footing on membership issue as association of both sexes with different groups is nearly 69%.

The situation in CHAL and TAL areas is little different. Over 80% respondents said they are associated with different groups in CHAL area whereas the percentage is nearly 64 in TAL. Please see ***Table 4-66*** and ***Diagram 4-52*** and ***Diagram 4-53*** for details.

Table 4-66: Membership Situation – Household Level

Landscape	Membership Situation						Percentage for Yes
	Yes			No			
	Male	Female	Total	Male	Female	Total	
CHAL	258	239	497	63	58	121	80.42%
TAL	503	478	981	285	266	551	64.03%
Total	**761**	**717**	**1,478**	**348**	**324**	**672**	**68.74%**

Source: HH Survey 2012

Diagram 4-52: Membership – Male

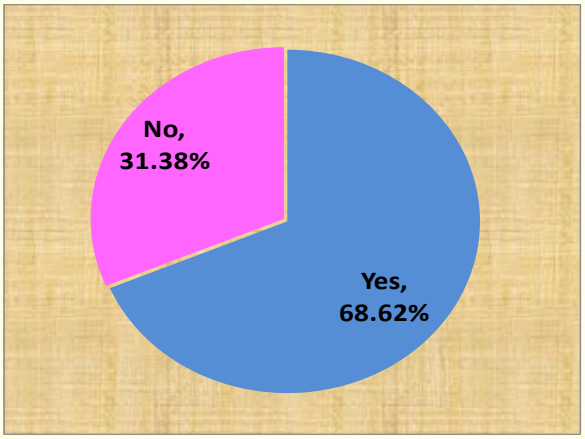
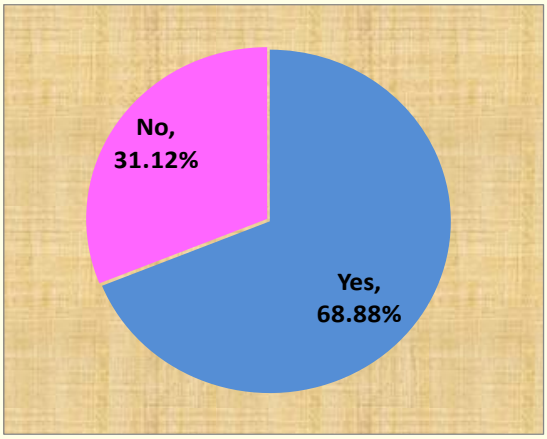


Diagram 4-53: Membership – Female



Source: HH Survey 2012

The respondents have reported that they are associated with number of community group, committee and association. Major such community structures reported are Community Forest Users Group (CFUG), Collaborative Forest Management Committee (CFMC), Leasehold Forestry Group (LFG), Buffer Zone Users Committee (BZUC), Conservation Area, Water Users Group/Association (WUG/A), Cooperative Society and others (like mothers' groups, savings and credit groups etc.).

Number of people associated with CFUG is the highest one, 979 people out of 3,070 (46%) followed by other groups 923 (43%). With 579 members (27%), cooperative society is at the third ranking. Please see ***Table 4-67*** for details.

Table 4-67: Membership with Different Group/Committee/Association

Name of Group/Committee/Association	Male	Female	Both	Total	Percentage
Community Forest Users Group (CFUG)	599	288	92	979	45.53%
Collaborative Forest Management Committee (CFMC)	44	28	5	77	3.58%
Leasehold Forestry Group (LFG)	25	21	7	53	2.47%
Buffer Zone Users Committee (BZUC)	125	79	40	244	11.35%
Conservation Area	35	13	1	49	2.28%
Water Users Group/Association (WUG/A)	107	54	5	166	7.72%
Cooperative Society	215	312	52	579	26.93%
Others (like mothers groups, saving and credit groups etc.)	73	756	94	923	42.93%
Total	1,223	1,551	296	3,070	

Source: HH Survey 2012

Table 4-68: Membership with Different Group/Committee/Association (in %)

Name of Group/Committee/Association	Male	Female	Both
Community Forest Users Group (CFUG)	61.18%	29.42%	9.40%
Collaborative Forest Management Committee (CFMC)	57.14%	36.36%	6.49%
Leasehold Forestry Group (LFG)	47.17%	39.62%	13.21%
Buffer Zone Users Committee (BZUC)	51.23%	32.38%	16.39%
Conservation Area	71.43%	26.53%	2.04%
Water Users Group/Association (WUG/A)	64.46%	32.53%	3.01%
Cooperative Society	37.13%	53.89%	8.98%
Others (like mothers groups, saving and credit groups etc.)	7.91%	81.91%	10.18%
Total	**39.84%**	**50.52%**	**9.64%**

Source: HH Survey 2012

Table 4-68 shows an interesting fact that female are dominating in terms of membership in NRM related groups and associations. Out of total 3,070 members, over 50% are female, 40% are male and some 10% are both male and female. Female members are influential in cooperative society and other groups whereas male have been in lead role in other association and groups. Number of male members is significantly high in conservation group, WUG/A and CFUGs. Male are also leading in CFMF, BZUC and LFG. Please see ***Table 4-68*** above for details.

Table 4-69: Membership by Caste/Ethnicity

Type of Group/Association	Caste/Ethnicity				
	B/C	Janajati	Dalits	Others	Total
Community Forest Users Group (CFUG)	319	486	150	24	**979**
Collaborative Forest Management Committee (CFMC)	24	42	8	3	**77**
Leasehold Forestry Group (LFG)	10	33	9	1	**53**
Buffer Zone Users Committee (BZUC)	79	83	82		**244**
Conservation Area Management Committee (CAMC)	12	30	7		**49**
Water Users Group/Association (WUG/A)	74	58	32	2	**166**
Cooperative Society	210	287	75	7	**579**
Others (like mothers groups, saving and credit groups etc.)	292	461	151	19	**923**
Total	**1,020**	**1,480**	**514**	**56**	**3,070**
Percentage	**33.22%**	**48.21%**	**16.74%**	**1.82%**	**100.00%**

Source: HH Survey 2012

The result of membership by caste/ethnicity very much follows the proportion of total population of the country. Over 48% members are from Janajati group and some 33% from Brahmin/Chhetri community. Similarly, some 17% are from Dalits and nearly 2% from other minority groups. This indicates that there is adequate representation of various caste/ethnic groups to the local level forest and other organizations. Please see ***Table 4-69*** for details.

4.7.2 Role and Attendance

The survey data confirms that all caste/ethnic groups are well represented in their respective executive committees. Brahmin and Janajati are slightly over represented as compared to their memberships with groups/associations/committees. There is under representation of Dalits in executive committee. The percentage of Dalits' representation in executive committee is 10 whereas their representation in group membership is 17%. Interestingly representation of other group is more in executive committee and representation in

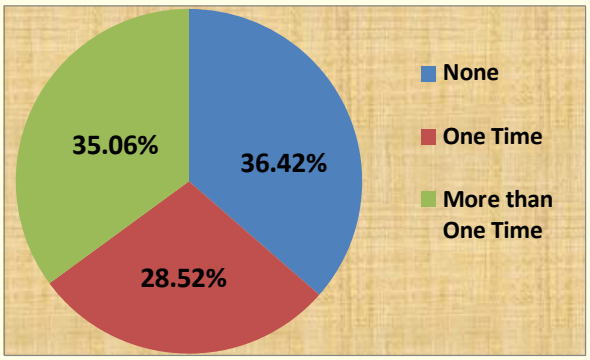
committee is 5%. In fact, the general membership of the groups is reported to be nearly 2%. Please see ***Table 4-68*** and ***Table 4-70***.

Table 4-70: Representation of Caste/Ethnicity in Executive Committee

Type of Group/Association	Caste/Ethnicity Representation in Executive Committee				
	B/C	Janajati	Dalits	Others	Total
Community Forest Users Group (CFUG)	97	132	29	20	**278**
Collaborative Forest Management Committee (CFMC)	13	28	6	4	**51**
Leasehold Forestry Group (LFG)	7	24	6	1	**38**
Buffer Zone Users Committee (BZUC)	7	24	6	1	**38**
Conservation Area Management Committee (CAMC)	13	27	5	0	**45**
Water Users Group/Association (WUG/A)	33	31	7	1	**72**
Cooperative Society	75	89	19	6	**189**
Others (like mothers groups, saving and credit groups etc.)	95	136	21	16	**268**
Total	**340**	**491**	**99**	**49**	**979**
Percentage	**34.73%**	**50.15%**	**10.11%**	**5.01%**	**100.00%**

Source: HH Survey 2012

Diagram 4-54: Participation in General Assembly in Last 3 Years



Source: HH Survey 2012

Over one third members (nearly 36%) do not seem to be attending general assembly at all. However, some others said they have attended such meetings either, once or twice, in the last three years. Nearly 35% said they attended the meeting more than one time and the remaining other (nearly 28%) said they attended such meeting once in a year. Please see ***Diagram 4-54***.

The research team also conducted FGDs to get perception of women and other disadvantaged groups about their representation in executive committees and participation in different meetings. The FGD participants confirmed that physical representation of disadvantaged group in executive committees is very good and the progress made on this in recent years is satisfactory. Good representation of disadvantaged group in the committee was result of Government's new rules and Local governance Act as it has mandated to have at least 33% women in the committees. Moreover, in some case, particularly in Baijapur, Banke the representation is nearly 50%. Some women and other disadvantaged groups are holding even executive role, i.e. Chairperson, Vice Chair etc. The group also confirmed that they attend general assembly and other meetings regularly.

4.7.3 Decision Making

a) Decision Making at Institutional Level

Decisions in various committees/groups are generally made by executive committees. Over 72% respondents said that the decisions are made by committees; however some 15%

respondents mentioned that chairperson and secretary make most of the decisions. Further nearly 13% said the decisions are made only by chairperson. Please see ***Diagram 4-56***.

The respondents also were asked whether their voices are heard. Nearly 15% said their voices are always heard but over 41% reported that their voices are heard occasionally. However nearly 44% reported their voices are never heard. The ***Table 4-71*** shows that the situation of male and female seems more or less same. Hence, it can be concluded that sex is not the matter for poor or strong voice; it is rather affected by other factors. Situation in CHAL area is little better than TAL area as nearly 22% respondents in CHAL mentioned that their voices are always heard whereas the percentage is nearly 12 in TAL. Similarly, about 40% respondents in CHAL and 45% in TAL reported that their voices are never heard in the committees. Please see ***Table 4-71*** and ***Diagram 4-55*** for details.

Table 4-71: Situation on Voice Listening

Landscape	Situation on Voice Listening								
	Always			Occasionally			Never		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
CHAL	79	56	**135**	122	115	**237**	120	126	**246**
%	12.78%	9.06%	**21.84%**	19.74%	18.61%	**38.35%**	19.42%	20.39%	**39.81%**
TAL	101	87	**188**	336	318	**654**	351	339	**690**
%	6.59%	5.68%	**12.27%**	21.93%	20.76%	**42.69%**	22.91%	22.13%	**45.04%**
Total	**180**	**143**	**323**	**458**	**433**	**891**	**471**	**465**	**936**
%	**8.37%**	**6.65%**	**15.02%**	**21.30%**	**20.14%**	**41.44%**	**21.91%**	**21.63%**	**43.53%**

Source: HH Survey 2012

Diagram 4-55: Voice Listened

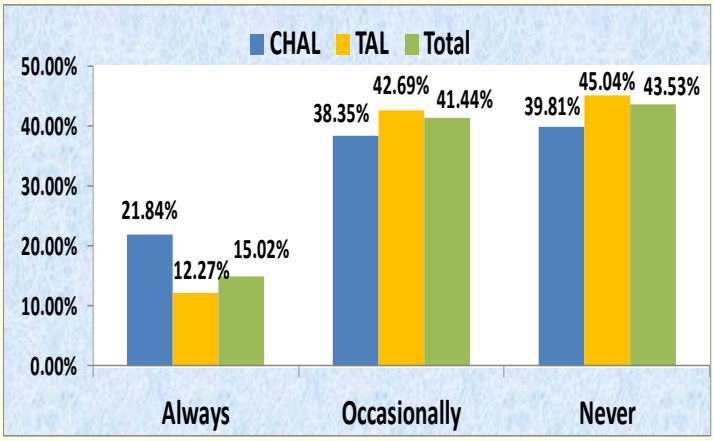
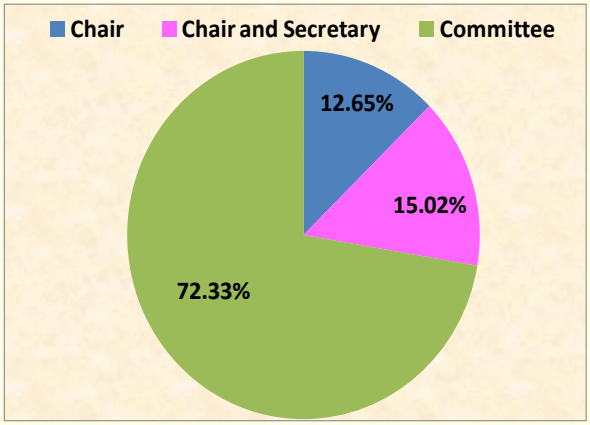


Diagram 4-56: Decision Makers



Source: HH Survey 2012

Women and disadvantaged groups' roles in decision making and other processes also were discussed during FGDs. The participants confirmed that they are given some roles which they have been performing well. The committees and lead persons also listen to some of their common issues and address them; however when there are critical issues, particularly benefit-sharing or so, male members or elites dominate the discussions. They further said, on the overall decisions of executive committees, about 25% decisions are participatory. Therefore the group members believe that there is still need for meaningful participation. An interesting case has been reported by FGD members (PVSE) of Rautahat and Banke districts. They mentioned that their request to punish the local poacher was rejected as the person was elite of the community. The decision was taken in favour of the poacher. This indicates there are still many cases that voices of disadvantaged groups are not heard and raised issues are not addressed by the authorities at local level.

> Voices of all poor, Dalits, women and other disadvantaged groups are heard and common issues are addressed too but when there are important issues, e.g. benefit sharing and so, the male members (elites) influence the decision.
>
> **FGD (PVSE), Kaski**

> Request of PVSE members to punish the local poacher was rejected as the person was elite of the community.
>
> **FGD (PVSE), Rautahat**

The FGD members (women group) in Tanahun however mentioned that their voices are heard and addressed even in the case of critical issue. They were able to punish one culprit after they raised their voice against him. They also however admitted that their voices on some financial issues are not still heard and addressed.

b) Decision Making at Household Level

Decision making pattern is an important aspect to understand situation of women empowerment and gender equality in a family. The baseline survey data reveals that women's role in decision making process in general is low as compared to their male counterpart. However the report further states that the women are consulted in major decision in the family. More than 38% respondents said that the decision on marriage related matters are taken by only male whereas the percentage of only women is nearly 9. Over 53% said the decisions are taken jointly by both male and female. The decision making pattern on land purchase and sale, livestock buy and sale, family expenditure and other expenses is more or less same as marriage related matters. Please see ***Table 4-72*** for details.

> Women's role in decision making process in general is low as compared to their male counterpart.

Table 4-72: Household Decision Making Pattern

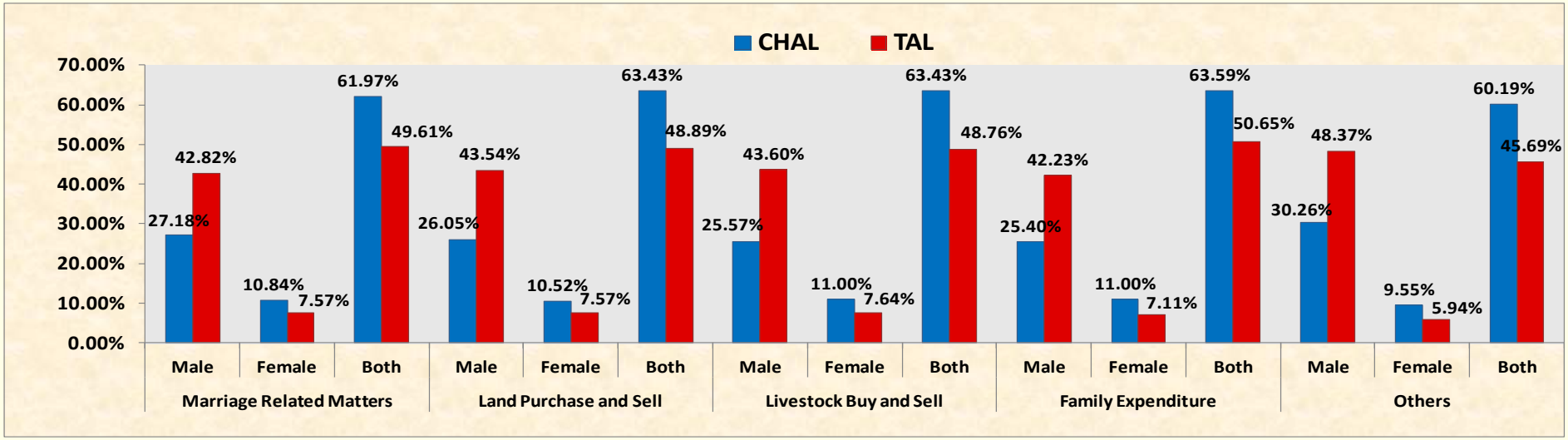
Landscape	Marriage Related Matters			Land Purchase and Sell			Livestock Buy and Sell			Family Expenditure			Others		
	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both
CHAL	27.18%	10.84%	61.97%	26.05%	10.52%	63.43%	25.57%	11.00%	63.43%	25.40%	11.00%	63.59%	30.26%	9.55%	60.19%
TAL	42.82%	7.57%	49.61%	43.54%	7.57%	48.89%	43.60%	7.64%	48.76%	42.23%	7.11%	50.65%	48.37%	5.94%	45.69%
Total	**38.33%**	**8.51%**	**53.16%**	**38.51%**	**8.42%**	**53.07%**	**38.42%**	**8.60%**	**52.98%**	**37.40%**	**8.23%**	**54.37%**	**43.16%**	**6.98%**	**49.86%**

Source: HH Survey 2012

Vast majority of household decisions are taken by both male and female in CHAL area.

The role of male and female seem different in CHAL and TAL areas. The gap between the roles of male and female is high in TAL area whereas the situation is slightly better in CHAL. Vast majority of household decisions are taken by both male and female in CHAL area. It is interesting to note that the percentage of only women decision makers in all household issues in TAL area is less than the percentage of women decision makers in CHAL area. Please see ***Diagram 4-57*** for details.

Diagram 4-57: Decision Making Pattern



Source: HH Survey 2012

4.7.4 *Participatory Governance Assessment (PGA)*

The respondents were also asked about some questions on participatory governance assessment (PGA). Effort was made to get information about their knowledge on the issue. Nearly 32% respondents who are member of community groups/committees/associations said that they have some knowledge on PGA and are familiar with the issue. However, other 68% do not have any idea on that. Please see ***Table 4-73*** for details.

Table 4-73: Knowledge on Participatory Governance Assessment (PGA)

Landscape	Knowledge Situation								
	Yes			No			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
CHAL	65	43	108	194	195	389	259	238	497
TAL	198	163	361	305	314	619	503	477	980
Total	263	206	469	499	509	1,008	762	715	1,477

Source: HH Survey 2012

The knowledge level seems relatively poor in CHAL area as compared to TAL. Nearly 22% respondents of CHAL area said they are familiar with the issue whereas the percentage is nearly 37% in TAL. Amongst the women who are members of local groups/committees, only 29% are familiar with PGA issue and remaining 71% are not aware of the issue. Please see ***Diagram 4-58*** and ***Diagram 4-59*** for details.

Diagram 4-58: Knowledge on PGA – Total Members

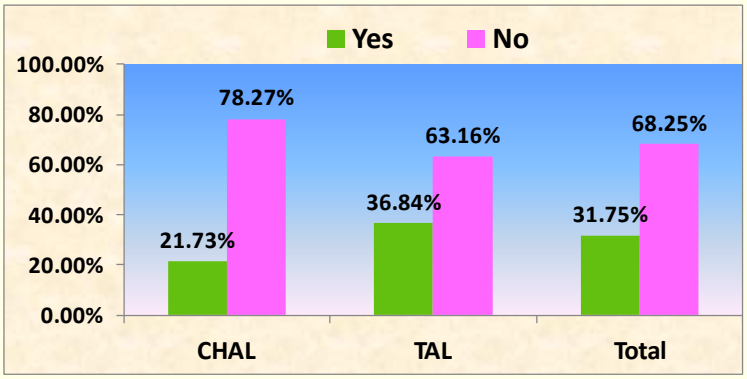
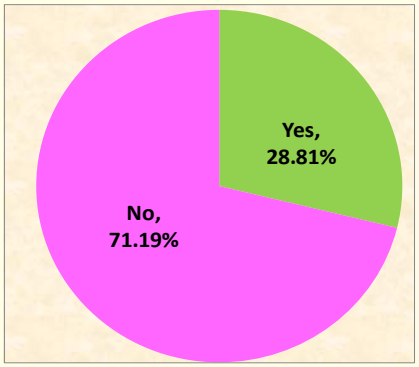


Diagram 4-59: Knowledge on PGA – Female Members



Source: HH Survey 2012

People's involvement in planning process was another issue that the study team wanted to get information from the respondents. Nearly 41% respondents said they are involved in the process whereas another 59% said they were not part of the process. Out of the total 715 female respondents nearly 38% said they have been involved in planning process and remaining 62% said they are not involved. Interestingly there is delicate balance between CHAL and TAL areas on participation in planning process as percentages of yes and no in the areas are approximately 41 and 59. Please see ***Table 4-74***, ***Diagram 4-60*** and ***Diagram 4-61*** for details.

Table 4-74: Participation in Planning Process - Sex

Landscape	Status of Participation in Planning Porcess								
	Yes			No			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
CHAL	114	87	201	145	151	296	259	238	497
TAL	215	186	401	288	291	579	503	477	980
Total	**329**	**273**	**602**	**433**	**442**	**875**	**762**	**715**	**1,477**

Source: HH Survey 2012

There is balance between caste/ethnic groups' participation in planning process. Brahmin/Chhetri group seems little ahead in participation whereas Dalits are little behind. As shown in ***Table 4-75*** the percentage of Brahmin/Chhetri who participate in planning process is higher (34%) than that of those who do not participate (29%). However percentage of Dalits who participate in the planning process is less (14%) than that of non participating Dalits (19%). Nevertheless, the situation of Dalits is slightly better in CHAL as compared to TAL. Please see ***Table 4-75*** for details.

Table 4-75: Participation in Planning Process - Caste/Ethnicity

Landscape	Status of participation									
	Yes					No				
	B/C	Janajati	Dalit	Other	Total	B/C	Janajati	Dalit	Other	Total
CHAL	64	101	35	1	**201**	90	148	56	2	**296**
%	31.84%	50.25%	17.41%	0.50%	**100.00%**	30.41%	50.00%	18.92%	0.68%	**100.00%**
TAL	143	199	48	11	**401**	168	276	114	21	**579**
%	35.66%	49.63%	11.97%	2.74%	**100.00%**	29.02%	47.67%	19.69%	3.63%	**100.00%**
Total	**207**	**301**	**83**	**12**	**603**	**258**	**425**	**170**	**23**	**876**
%	**34.44%**	**49.92%**	**13.82%**	**1.99%**	**100.17%**	**29.52%**	**48.51%**	**19.45%**	**2.63%**	**100.11%**

Source: HH Survey 2012

Diagram 4-60: Participation in Planning Process – Total Members

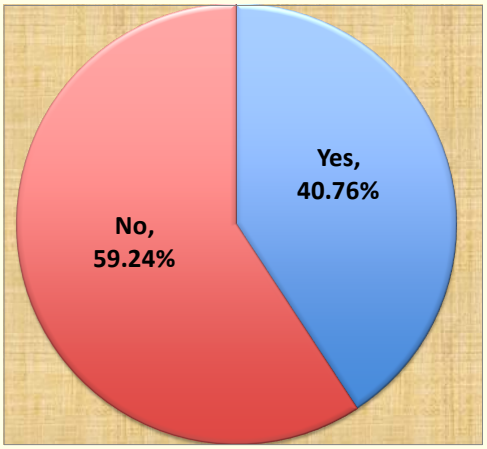
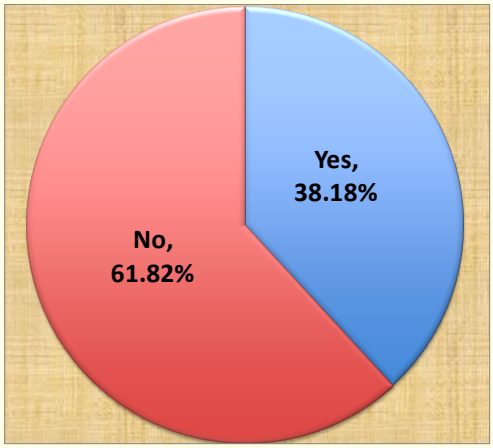


Diagram 4-61: Participation in Planning Process – Female Members



Source: HH Survey 2012

Complete and updated information on number of participatory governance assessment (PGA) was not available in most of the cases. However, some information on the status of

PGA was gathered from different districts. As per District Forest Offices (DFOs), 30 CFUGs of Rasuwa and Nuwakot districts have conducted PGAs in the districts. Similarly, PA offices in CHAL reported that there are some 26 PGAs conducted in the area.

DFOs of Bara, Dang, Banke and Bardia districts reported that there are 38, 400, 135 and 295 PGAs conducted in the districts respectively. There was no information available from other districts in TAL area. In fact, it has been reported that most of the groups in Banke and Bardia have conducted PGAs.

4.7.5 Participatory Well-being Ranking (PWBR)

Knowledge on participatory well-being ranking (PWBR) was another question asked to the respondents in the study. Nearly 39% respondents, out of 1477, who are members of the community organizations, said they are familiar with the issue, however nearly 61% showed their ignorance. The awareness level amongst the women respondents was little lower than that of total average. Nearly 37% women are aware of the issue and remaining 63% do not have any idea on PWBR. Situation between CHAL and TAL areas is different and TAL is in better off position as compared to CHAL. Some 46% respondents in TAL area said they have knowledge on PWBR whereas only 25% respondents are familiar with the issue in CHAL area. Please see the following ***Table 4-76***, ***Diagram 4-62*** and ***Diagram 4-63*** for details.

Table 4-76: Knowledge on PWBR - Total

Landscape	Knowledge on PWBR								
	Yes			No			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
CHAL	66	57	123	193	181	374	259	238	497
TAL	244	205	449	259	272	531	503	477	980
Total	376	604	980	161	150	311	40	25	65

Source: HH Survey 2012

Diagram 4-62: Knowledge on PWBR - Total

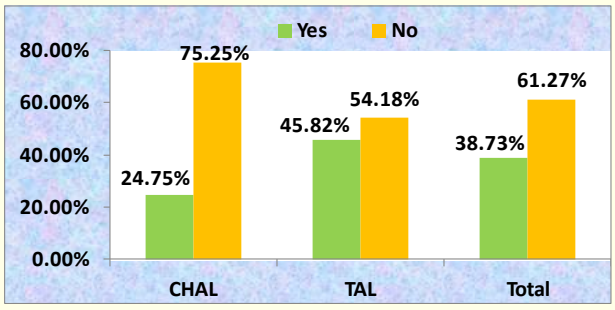
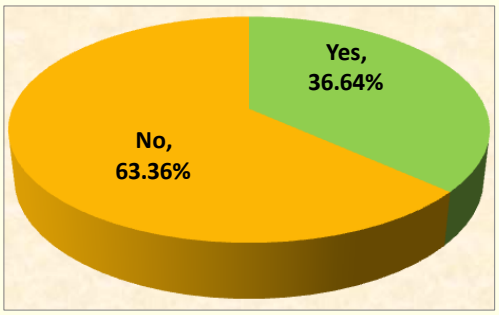


Diagram 4-63: Knowledge on PWBR - Female



Source: HH Survey 2012

Knowledge among caste/ethnic groups on PWBR is more or less same in comparision to their knowledge on other subjects. Like other subjects, Brahmin/Chhetri is ahead on the knowledge as compared to other caste/ethnic groups. As shown in ***Table 4-77*** the percentages of Brahmin/Chhetri who have knowledge on the subject is 35% (141 out of 409) and who do not have knowledge is 34% (29 out of 84). However, the percentages of Janajati and Dalits who have knowledge on the subject are less than the percentages of not having

knowledge. Interestingly knowledge of Janajati on the subject is much higher in CHAL (65%) as compared to TAL (49%). Please see ***Table 4-77*** for further details.

Table 4-77: Knowledge on PWBR – Caste/Ethnicity

Landscape	Knowledge Situation									
	Yes					No				
	B/C	Janajati	Dalit	Other	Total	B/C	Janajati	Dalit	Other	Total
CHAL	24	63	10	0	**97**	11	3	0	0	**18**
%	24.74%	64.95%	10.31%	0.00%	**100.00%**	61.11%	16.67%	0.00%	0.00%	**100.00%**
TAL	117	152	28	14	**311**	17	34	14	0	**65**
%	37.62%	48.87%	9.00%	4.50%	**100.00%**	26.15%	52.31%	21.54%	0.00%	**100.00%**
Total	**141**	**216**	**38**	**14**	409	**29**	**37**	**14**	**0**	**84**
%	**34.53%**	**52.73%**	**9.32%**	**3.42%**	100.00%	**34.06%**	**44.25%**	**16.67%**	**0.00%**	100.00%

Source: HH Survey 2012

Information was also sought from survey respondents whether PWBR has been conducted in their community groups/organizations. Only one-third (33%) of respondents said PWBRs are being conducted in their groups, however two-third (66%) said there has been no PWBR. The place where PWBR are conducted, some 83% members are attending the event. The following ***Table 4-78*** shows details of PWBR conduction and participation situation in both CHAL and TAL areas.

Table 4-78: PWBR Conduction and Participation

Landscape	Conducting PWBR During Last 5 Years			Situation of Participation					
	Yes	No	Total	Yes			No		
				Male	Female	Total	Male	Female	Total
CHAL	115	382	497	48	49	97	9	9	18
TAL	376	604	980	161	150	311	40	25	65
Total	491	986	1477	209	199	408	49	34	83
Percentage	33.24%	66.76%		51.23%	48.77%	83.10%	59.04%	40.96%	16.90%

Source: HH Survey 2012

Issue of PWBR conduction was discussed with members of FGDs in various places. Most of them said there is no PWBR conducted in their groups but they are planning to do so soon. FGDs in Kailali and Banke said that they are on the process to conduct PWBR. They further added that due to small NRM activities in their groups no rich family is attracted, so most of the members who join such groups are from poor and middle class families. FGD participants in Tanahun and Kaski reported that PWBRs are conducted in their groups but they do not know which category they fall under. They also stated that most of them are selected as executive committee members by the chairperson, so they have little influence in the committee. Chairperson and other elite groups are influential and they put all disadvantaged groups in the wellbeing ranking as per their interest. Participants in Rautahat

> The PVSE people are selected as executive members by chairperson, so they have little influence in the committee and their wellbeing ranks are also determined by chairperson and other elites of the committee.
>
> **FGD (PVSE), Tanahun**

and Banke said wellbeing ranking was done in their groups and they were actively participated.

There is no consolidated data available on conduction of PWBR in the project area and the country as a whole, however information are available in some of the CHAL and TAL districts. As per the information, some 102 community forestry users groups (CFUGs) have conducted PWBR in Rasuwa, Nuwakot and Syangja districts. It is also reported that some 20% CFUGs have conducted PWBR. Similarly as per the District Soil Conservation Offices (DSCOs) there are some 294 PWBRs conducted in Gorkha, Lamjung, Dhading and Parbat districts.

In TAL area Bara, Dang, Banke and Bardia districts have conducted 38, 400, 135 and 295 PWBRs respectively but no data was available for Parsa district. Similarly, the numbers of PWBRs in Kailali and Kanchanpur districts are 108 and 33 respectively. It is reported that some 35% groups have conducted PWBRs in the area. In addition, some 37 PWBRs are conducted in protected area of TAL[1].

The respondents who had knowledge on PWBR were also asked whether they were involved in the PWBR process. Nearly 86%, 429 respondents out of 501 gave affirmative answer but remaining said 'no'. The percentages of respondents in CHAL and TAL are more or less same. Further, the respondents were also asked which wellbeing category they belong to. Over 59%, 298 out of 501 said they are in middle class group, nearly 20% said they are poor and some 13% reported to be rich. Some 8% respondents were not aware of their positions. ***Table 4-79*** shows the details of involvement of members and also their positions as per PWBR.

Table 4-79: PWBR Process and Identification of PVSE Members

Landscape	Involved in PWBR Process		Position as per PWBR			
	Yes	No	Rich	Middle	Poor	Don't know
CHAL	104	18	14	78	21	9
TAL	325	54	50	220	79	30
Total	**429**	**72**	**64**	**298**	**100**	**39**

Source: HH Survey 2012

4.7.6 Support to Poor Vulnerable and Socially Excluded (PVSE)

The respondents also reported that poor, vulnerable and socially excluded (PVSE) groups are getting benefits or support from their community organizations. A total of 501 families have received support from the local organizations in the study area. The major sector that they are getting support is livestock. Out of 501, 168 (approx 34%) families are receiving support in the sector. Agriculture stands at second position and a total of 115 (23%) families are receiving benefits in the sector. Similarly, other areas that the poor families are getting supports are, education – 87 families, enterprises – 44 families, general subsidy – 28 families, land allocation – 21 families and others – 38 families. Please see details of such support by clusters in ***Table 4-80***.

[1] The information about PWBR were given by DFOs, DISCOs and PA offices of respective districts.

Table 4-80: Benefits received by the PVSE members in the Clusters

Landscape	Areas and PVSE Beneficiaries							
	Livestock	Agriculture	Land Allocation	Support in Enterprise	Support in Education	General Subsidy	Others	Total
CHAL	47	38	4	6	13	6	8	122
TAL	121	77	17	38	74	22	30	379
Total	**168**	**115**	**21**	**44**	**87**	**28**	**38**	**501**

Source: HH Survey 2012

FGD participants in Tanahun and Kaski districts stated that some of the PVSE members are not aware of the benefits they are entitled to get from their groups/committees. Therefore they are deprived of such opportunities. This information is normally kept with chairperson of the committees and some elites. There is no any special facilities given to them, however they are given priority in firewood and grass collection. The members in Rautahat and Banke however mentioned that they are given some opportunities by the groups. Major areas that they are getting support are health, education and income generating activities (goat raising, tailoring, and small shops etc.).

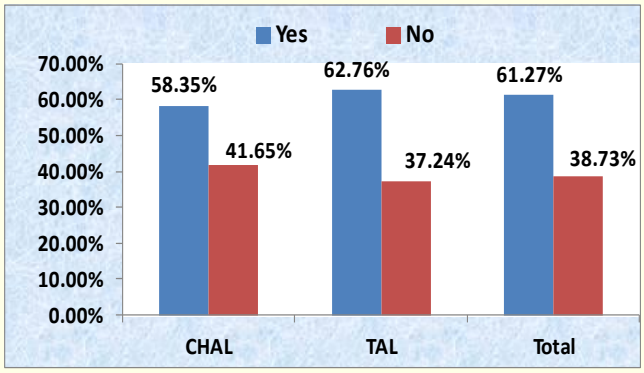
4.7.7 Public Hearing and Public Auditing (PHPA)

Public hearing and public auditing (PHPA) and awareness level of local people on various issues was another important question asked to the respondents. By and large, the people are aware of PHPA. As per the HH survey, over 61% respondents have knowledge on PHPA but nearly 39% do not have. TAL area is little better on knowledge level and nearly 63% respondents in the area said they have knowledge on the issue. The percentage of respondents who reported to have knowledge in CHAL is nearly 58. Further, the situation between male and female, male respondents seem little ahead as compared to female. There are nearly 64% male who are familiar with the issue but the percentage of female having knowledge on the issue is 59. Please see ***Table 4-81*** and ***Diagram 4-64*** for details.

Table 4-81: Knowledge on PHPA – Male/Female

Landscape	Knowledge of PHPA			
	Yes		No	
	Male	Female	Male	Female
CHAL	62.16%	54.20%	37.84%	45.80%
TAL	64.61%	60.80%	35.39%	39.20%
Total	**63.78%**	**58.60%**	**36.22%**	**41.40%**

Diagram 4-64: Knowledge on PHPA – Landscape



Source: HH Survey 2012

Knowledge of caste/ethnic groups on PHPA was also another area of interest of the research team. Like situation of participation in planning process (***Table 4-75***), Brahmin/Chhetri are little ahead on the knowledge of PHPA and Dalits are lagging behind. Out of total

respondents (906) who have knowledge on PHPA, 33% are Brahmin/Chhetri and 14% are Dalits. On the other hand, out of 573 respondents who do not have knowledge on the issue, 29% are Brahmin/Chhetri and 24% are Dalits. Percentages of Janajati for both having knowledge and not-having are 51 and 45 respectively. It is interesting to note that percentage of Janajati who have knowledge on PHPA in CHAL area (56%) is higher than that of TAL (49%) but in contrary knowledge of Brahmin/Chhetri in TAL (34%) is higher than that of CHAL (31%). Please see ***Table 4-82*** for details.

Table 4-82: Knowledge on PHPA – Caste/Ethnicity

Landscape	Knowledge of PHPA									
	Yes					No				
	B/C	Janajati	Dalit	Other	Total	B/C	Janajati	Dalit	Other	Total
CHAL	89	161	39	1	290	65	88	53	1	207
%	30.69%	55.52%	13.45%	0.34%	**100.00%**	31.40%	42.51%	25.60%	0.48%	**100.00%**
TAL	210	304	86	15	615	101	171	84	9	365
%	34.15%	49.43%	13.98%	2.44%	**100.00%**	27.67%	46.85%	23.01%	2.47%	**100.00%**
Total	**299**	**466**	**125**	**16**	**906**	**166**	**259**	**137**	**10**	**573**
%	**33.04%**	**51.39%**	**13.81%**	**1.77%**	**100.00%**	**29.03%**	**45.27%**	**23.95%**	**1.75%**	**100.00%**

Source: HH Survey 2012

The respondents were also asked whether PHPAs are being conducted in their respective groups/committees and the frequency they are being held. Nearly 61% respondents said the PHPAs are being held in their groups/committees but some 39% respondents did not have any information on PHPAs. Further over 57% respondents reported that the events were held three and more times in their places for the last three years, however 22% said it was held twice and another 20% said the event was held only once during the period.

Table 4-83: Conduction of PHPA for Last 3 Years

Landscape	Conduction of PHPA for Last 3 Years				
	Yes				No
	Once	Twice	Thrice and more	Total	
CHAL	13.80%	12.46%	73.74%	58.93%	41.07%
TAL	23.84%	27.10%	49.06%	61.50%	38.50%
Total	**20.45%**	**22.16%**	**57.39%**	**60.61%**	**39.39%**

Source: HH Survey 2012

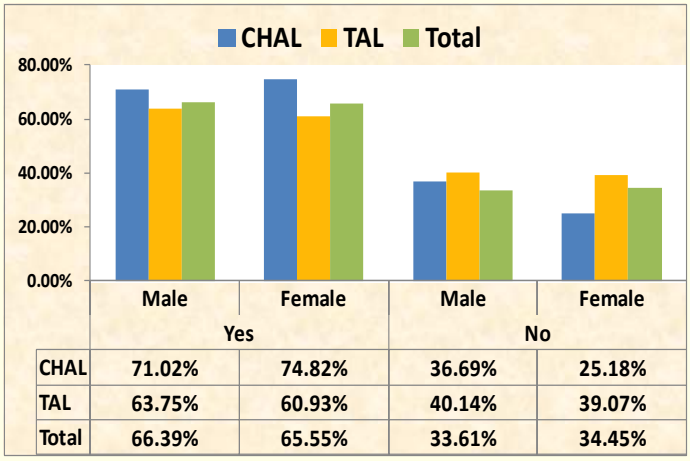
The situation is similar in CHAL and TAL areas where nearly 59% and 61% reported the PHPAs are being held in the areas respectively. The percentage of respondents who reported the events were held at least thrice in last three years is significantly high (nearly 74%) in CHAL as compared to TAL where only 49% had reported so. The ***Table 4-83*** shows the details of conduction of PHPA in CHAL and TAL areas.

Information was also collected on total number of PHPAs in CHAL and TAL areas from DFOs, DISCOs and PA Offices. There is no clear, consolidated and updated data available, however as per the DFO reports, some 296 CFUGs in Rasuwa, Nuwakot, Syangja districts have conducted PHPAs. The number is over 30% of the total CFUGs in the districts. It has also been reported that most of the CFUGs conduct such PHPAs during general assembly. Further, as per the reports of PA Offices in CHAL area, 44 PHPAs have been conducted in the region. Further, information received from DSCOs reveals that there are some 1,049 in CHAL area; however the reports mention that information of Tanahun, Manang, Palpa, Baglung and Myagdi districts are not available.

Likewise, Bara, Dang, Banke and Bardia districts have also conducted PHPAs. As per the DFOs record, 38, 400, 135 and 295 PHPAs are conducted in the mentioned districts respectively. There are some 77 and 44 PHPAs conducted in Kailali and Kanchanpur districts. It has been also reported that most of the CFUGs conduct such PHPAs during general assembly in the mentioned districts.[2]

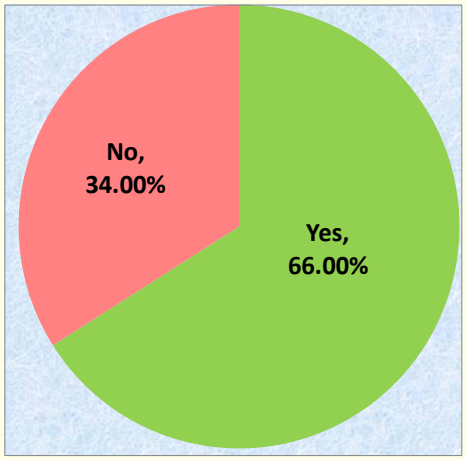
The participation level amongst the members in PHPA looks good. In total, 66% respondents replied that they participate in such public events. The level is even better in CHAL area where some 71% male and nearly 75% female reported that they attend PHPA events. However, in TAL some 64% male said they do participate in PHPA whereas percentage of female is nearly 61. Please see ***Diagram 4-65*** and ***Diagram 4-66*** for details.

Diagram 4-65: Participation in PHPA



	Yes		No	
	Male	Female	Male	Female
CHAL	71.02%	74.82%	36.69%	25.18%
TAL	63.75%	60.93%	40.14%	39.07%
Total	66.39%	65.55%	33.61%	34.45%

Diagram 4-66: Participation in PHPA



Source: HH Survey 2012

The respondents were also asked about the issues they normally raise in PHPA and situation whether the raised issues are addressed. Fund generation and utilization is one of the major issues they normally raise in the PHPA and planning and monitoring issue has been the second priority issue. Similarly, participation in decision making and other institutional issues were major issues raised in the meeting. The respondents also confirmed that most of the issues raised in the meetings are addressed. 494 respondents out of 596, who responded to this questions, said the issues raised are addressed and required actions are taken in this connection. However, 56 people said the issues are not normally addressed. Other 44 people said they do not have any information whether the issues are addressed or not. Please see the ***Table 4-84*** and ***Table 4-85*** for details.

[2] Information were received from DFOs, DSCOs and PAs

Table 4-84: Issues Raised in PHPA

Issues Raised	Nos.
Fund generation and utilization	291
Planning and monitoring related issues	128
Participation and decision making	70
Others	107
Total	**596**

Table 4-85: Issues Addressed in PHPA

Issues Addressed	Nos.
Yes	496
No	56
Don't Know	44
Total	**596**

Source: HH Survey 2012

Most of the people seem aware of income and expenditure situation of their respective groups/committees/associations. Over 66% respondents said that they do have information about income and expenditure of their organizations but remaining nearly 34% said they are unaware about it. Similarly, awareness level of male and female seems similar. Interestingly percentage of women is little high as compared to men.

The respondents were also asked as to why they were not aware about income and expenditure situation. Nearly 42%, 207 out of 495, said that they were not aware due to their absence in the meetings. Some 15% reported that there was no meeting so that they could not get any information. Remaining 212 respondents (nearly 43%) mentioned various reasons for not being aware on the issue. Please see ***Table 4-86*** for further details.

Table 4-86: Status of Awareness on Income and Expenditure

Landscape	Status of Awareness on Income and Expenditure									Reason for not Being Aware		
	Yes			No			Total			No Meeting	My Absence in Meeting	Others
	Male	Female	Total	Male	Female	Total	Male	Female	Total			
CHAL	152	139	291	107	99	206	259	238	497	24	95	87
TAL	352	339	691	151	138	289	503	477	980	52	112	125
Total	**504**	**478**	**982**	**258**	**237**	**495**	**762**	**715**	**1,477**	**76**	**207**	**212**
Percentage	**66.14%**	**66.85%**	**66.49%**	**33.86%**	**33.15%**	**33.51%**	**51.59%**	**48.41%**	**100.00%**	**15.35%**	**41.82%**	**42.83%**

Source: HH Survey 2012

4.7.8 Participation in Issues Based Campaigns

Community people do not seem having great interest on issue-based campaign. Only 21% respondents of sampled HHs said they have participated in issue-based campaigns. Participation of male and female seems similar. 22% male respondents said they have participated in such campaign whereas the percentage of female is nearly 20. Please see ***Table 4-87*** for details.

Table 4-87: Status of Participation in Issue Based Campaign

Landscape	Status of Participation in Campaigns								
	Yes			No			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
CHAL	45	45	90	276	252	528	321	297	618
TAL	199	168	367	589	576	1,165	788	744	1,532
Total	244	213	457	865	828	1,693	1,109	1,041	2,150
Percentage	22.00%	20.46%	21.26%	78.00%	79.54%	78.74%	100.00%	100.00%	100.00%

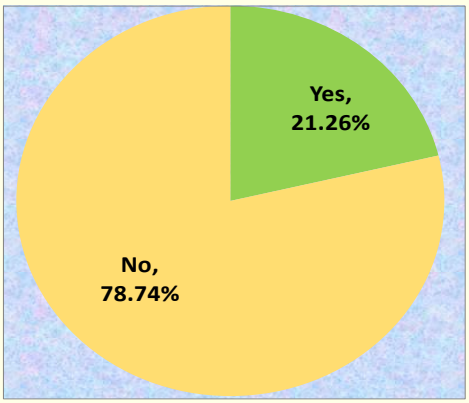
Source: HH Survey 2012

Table 4-88: Issues of Campaign

Issues	CHAL	TAL	Total
Conservation	23	139	**162**
Governance	7	40	**47**
General Awareness	57	180	**237**
Others	3	8	**11**
Total	**90**	**367**	**457**

Source: HH Survey 2012

Diagram 4-67: Participation in Campaign



Some 457 respondents seem involved in such campaigns. General awareness related campaign was the most attended campaign. Out of 457 respondents, 237 said they have participated in such campaign. Similarly conservation related campaign is another campaign participated by many people. Other reported campaigns are related to governance and other themes. Please see ***Table 4-88*** and ***Diagram 4-67*** for further information.

Chapter v

5. Conclusion, Key Learning and Recommendations

5.1 Conclusion

The increasing concern to conserve biodiversity and landscapes appears not only a challenge but also a responsibility of government and non-government institutions as well as local communities. The study has generated huge amount of data beyond the need of Monitoring and Evaluation Plan of the program. Though the findings of this study are project specific that is solely based on the project document and M&E Matrix, the concerns, issues and other information collected during the study could be useful for other endeavours as well. The data generated by the study contribute highly in program activity planning and implementation. Similarly, a number of people were trained and involved in this survey. The program can use these resources in future.

Most of the data related to demographic characteristics are found similar to the national references. However, there is difference in population of various age groups. Looking at the gender perspective, joint decision by male and female was mostly prevalent in CHAL. Remittance and domestic employment are found to be the major sources of income in both landscapes which is mostly used for food items. Overall, nearly 5% people are found to be landless, this will implicate in management of forest resources.

Awareness of people on biodiversity conservation was found high in TAL and low in CHAL. The local breeds of livestocks and variety of agriculture crops are severely dominated by hybrids and improved ones. Most of the people believe that the status of biodiversity has been improved in the last 20 years. The current existence of wild animal population validates the people's perception. Participation of local communities in biodiversity conservation is found to be encouraging. Establishment of around 400 CBAPOs and their function demonstrates their participation. As participation of local communities has been crucial for wildlife conservation, expanding and strengthening CBAPOs can be a window for Hariyo Ban Program. Compensation mechanisms for damage and casualty made by wild animals can reduce human-wildlife conflict. Among the surveyed, very insignificant number of people received compensation. Program can support to develop policy for justifiable amount and to make the process for compensation short and simple.

Forests in TAL and CHAL are managed under various forest management regimes including community forests, leasehold forests, collaborative forests, buffer-zone community forests, conservation areas, protected areas, protection forests and government-managed forests. More than half million hectares of forests are managed under community-managed forests which are mostly dominated by community forests. It is interesting to note that more than half number of CF exist in TAL than CHAL, the area coverage in TAL is estimated to be higher than CHAL. More than 25% FOPs are waiting for revisions among which 535 CFs have area of more than 200 hectares that need either IEE or EIA for revision. The dense and very dense forests in TAL are decreasing by more than half percentage as a result area of medium forests is increasing. In contrary, dense and very dense forests in CHAL are increasing. However, in both the case areas of degraded forest has been decreased. Forest fire, illegal felling, uncontrolled grazing and encroachment are identified as major drivers of deforestation and forest degradation. Though Payment for Ecosystem Services especially

REDD and CDM is found to be new for many people, more than 1.1 million US$ has already been received under CDM in the project area.

Climate change is a new issue for most of the people in CHAL and TAL. Negative impacts of climate change have been experienced in agriculture, water resources and forests. Impact on health seemed to be realized. Some positive impacts of CC have been noticed especially in high altitude in agriculture sector. A number of people have experienced climate change shocks such as fire, flood, landslide, illness, draught etc in the last five years and the increasing trend is reported. Initiatives to support communities to reduce negative impact of climate change have already been taken in both the landscapes, supporting in developing climate change adaptation planning and implementation process at community, local and national level. Several policy documents are developed and some are under the process of development to address climate change.

A number of capacity building events for communities and local level institutions in the area of natural resources management, climate change, biodiversity, landscape management, REDD, gender, social inclusion and skill development have been organized in both the landscapes. However, a number of people involved and benefitted is found to be very less. Good Governance Practices were initiated by SAGUN program but the scope of support in this area is very high. These are window of opportunities for the project intervention.

5.2 Key Learning and Observations

This study was conducted in a short period of time and there were number of strikes during the study period. The study team gained several learning from the study which will be valuable in future. Key learning and observations are presented below.

- Time was critical factor for the completion of project. Two phases of study was realized as the best way for conducting survey. The phases may include survey design and implementation. Allocation of sufficient time would further help accomplish high quality output.
- A statistical control over the sample size and its composition is very important. The clear sample design on the basis of sex and ethnicity was very useful to streamline the sample at local level. This provided total control on sample size during the whole study.
- It was difficult to identify particular sample household based on the voters list which was the basis for household identification. Due to changing modality of election commission it was difficult to find voters list but was managed with other alternative measures like - VDC profile, individual consultation and other channels in many areas.
- The assumptions on the availability of data at central, regional and local level did not meet full expectation. The required data were not available at the local and regional level and those available were not properly organized.
- There is a misunderstanding among the key project partners/stakeholders on program objectives, outputs and implementation mechanisms. In many cases, these partners were reluctant to provide data.
- Capacity (technical, human and financial) of the project key partners revising FOPs and developing sub-watershed management plans were limited though priority areas for DFOs and DSCO.

- Adequate training for field crew increases their efficiency and improves accuracy of data. It is felt that some contingency plan and resources is necessary for endeavour like this.
- Mobilization of human resources for a short period of time is a tricky issue, so contingency plan for such activity is required.
- Incorporation of comments received from sectoral coordinators made the questionnaires for HH survey quite lengthy and it took more than normal time for interview.
- In some areas the need of program intervention is highly apprehended that can be used as potentiality for program intervention.
- A lot of human resources have been trained, formally and informally, during this study that can be utilized as future service cadre at local level.
- The project has already initiated its intervention in some areas that may have affected the baseline value. There are expectations of people for project intervention in all surveyed sites. Meeting their expectation will be challenging for the project.
- The input level of key experts for the completion of the assignment was far higher than was estimated as there were a number of unplanned meetings and additional tasks were added to the project core team.

5.3 Recommendations

Based on the analysis and observation, the following specific and general recommendations are offered.

a) Specific Recommendations

- This baseline survey has produced huge amount of information beyond the need of baseline value as required by the monitoring matrix. However, they should be used in planning purposes.
- More than 45 minutes should not be practiced while designing questionnaire for HH survey. Information in which the project will have no linkage or cannot make any changes after implementation should be avoided.
- Program needs to carry out extensive awareness activities in CHAL and TAL on REDD, Climate Change Adaptation and Biodiversity. Radio, Televisions and workshops are recommended as preferred means for outreach.
- Estimate of forest carbon stock was calculated based on Landsat satellite images only. To validate and adjust estimated stock, ground truthing will be necessary.
- Vulnerability and adaptability of two clusters were estimated. Similar estimate will be needed for remaining clusters where project will intensively involve in future.
- As there is a misunderstanding on the program among the project partners/ stakeholders especially DFOs, DSCOs and PAs authorities, this can be resolved through joint planning and implementation of the project activities. It is recommended to address the urgent requirement of these institutions as there are no other projects to address them.

- Review of FOPs and development of catchment level management plans of sensitive sub-watershed seems highly important. Project should pilot a sustainable mechanism for doing these activities.
- Database management was found to be very weak in all institutions. This is one area where project can support for developing their capacity on sustainable database management.
- Training Needs Assessment (TNA) related to technical, organizational and marketing is necessary before conduction of training. The existing human resources in the area and their capacity should also be considered during capacity building process.
- There are high expectations of project beneficiaries in all clusters and districts. So, project should ensure a minimum level of interventions in these areas. However, areas and level of interventions should be based on the felt-need of the sites.
- Record of training, workshops, campaigns and enterprises should not be considered as baseline data as they are hard to establish and for monitoring purpose, project reports are sufficient based on which impacts are monitored at the end of the project.

b) General Recommendations

- Though time always becomes constraint, the time availability for this assignment was really insufficient. This type of the study should be divided in to two phases including designing and implementation. If study is well designed, the implementation goes smooth. Hence, at least three months will be required for designing and another six months for implementation.
- For Good governance, a separate representative study should be conducted to assess the real situation on the ground. Data like Participatory Governance Assessment (PGA), Participatory Well-being Ranking (PWBR) and Public Hearing and Public Auditing (PHPA) should be linked with Community Forest Central database and also should be updated time to time. It is highly recommended that this type of information should be managed through MIS.
- Project should focus on sustainability of the process and the results generated by the project. This can be done by putting in motion a strategic planning for implementing partner to build a network among the student representatives so that the implementing partner and the network can continue the process and the results collaboratively.
- Peer or stakeholder monitoring, learning and sharing must be placed to inspire young people, students and youth political leaders in the future program. And a conscious and structured plan should be made so that the project KAP is properly utilized.
- There is high potentiality of "Clean Development and Green Enterprise" that harnesses with specific target in some areas.
- It is necessary to encourage students and young people to absorb the principles and practices and empower them to take active participation in the conservation processes in the context of newly emerging democracy. This project should provide ample opportunities to the various stakeholders by focusing on a twofold approach - 'learn and practice'.

- The project is stretched over east to west and south to north, covering a huge area. Different approaches for different ecology, area, management, stakeholders and situation would add value for which a decentralized micro-planning is necessary.

References

- Acharya M, et al, (2004), *"Caste and Ethnicity in Nepal"*, CBS/DFID, 2004.
- Acharya, KP and Dangi, RB, (2009), "*Case Studies on Measuring and Assessing Forest Degradation: Forest Degradation in Nepal*": Review of Data and Methods, FAO, 2009.
- AEPC & BSP (2012), *"Database on Support for Alternative Energy and Payment Claimed under Clean Development Mechanism"*, Alternative Energy Promotion Centre of MoE and Biogas Support Program, 2012.
- ANSAB (2012), *"Report on Forest Carbon Stock of Community Forest in three Watersheds"*, ANSAB, ICIMOD and FECOFUN, 2012.
- CARE Nepal, (2009), *"Strengthened Actions for Governance in Utilization of Natural Resources (SAGUN) Program - Final Report"*, 2009.
- CBS (2001), *"Population Census 2001"*, Central Bureau of Statistics, Thapathali, Kathmandu, Nepal, 2001.
- CBS, (2001/2), *"Agriculture Census of Nepal"*, Central Bureau of Statistics, Kathmandu, Nepal, 2001/2.
- DNPWC, (2010), *"Annual Report"*, Department of National Park and Wildlife Conservation, Kathmandu, Nepal, 2010.
- DNPWC, (2011), *"Annual Report"*, Department of National Park and Wildlife Conservation, Kathmandu, Nepal, 2011.
- DNPWC, (2011), *"Compilation of Policies Related to Wildlife Conservation"*, Department of National Park and Wildlife Conservation, Kathmandu, Nepal, 2011.
- DNPWC, (2011), *"Conservation Areas of Nepal"*, Department of National Park and Wildlife Conservation, Kathmandu, Nepal, 2011.
- DNPWC, (2012), *"Poaching Incident and Trade Conviction"*, Department of National Park and Wildlife Conservation, Kathmandu, Nepal, 2012.
- DoF, (2012*), "Community Forest Dataset"*, CF Division, DoF, Kathmandu, Nepal, 2012.
- ERI, (2011), *"Forest Sector Employment Study"*, MoFSC/LFP/ERI, 2011.
- FRA, (2010), "*Forest Resource Assessment in Nepal: An Assessment of Data Needs*", FRA, Department of Forest Research and Survey, Kathmandu, July 2010.
- GoN 2010, *"National Adaptation Program of Action (NAPA)"*, Government of Nepal, Ministry of Environment, Kathmandu, Nepal, 2010.
- GoN, (2010), *"Climate Change Vulnerability Mapping for Nepal"*, Ministry of Environment, Government of Nepal, Kathmandu, Nepal, 2010.
- GON, (2010), *"Nepal's Readiness Preparation Proposal – REDD"*, Government of Nepal, Ministry of Forest and Soil Conservation, Kathmandu, Nepal, 2011.
- Hariyo Ban Program, 2012, Draft Report of Rapid Assessment of CHAL area, Hariyo Ban Program WWF/CARE/FECOFUN/NTNC, 2012.

- MoE, (2010), *"Climate Change Policy - 2067"*, Ministry of Environment, Science and Technology, Kathmandu, Nepal.
- Gurung, M B., and Kokh, M., (2011), "*Forest Carbon Accounting Study Report: Baseline, Optimum Sequestration Potential and Economics of REDD+ in the Terai Arc Landscape of Nepal"*, WWF Nepal, 2011.
- Hariyo Ban Program, (2011), "*Monitoring and Evaluation Plan (25 Nov 2011 - 25 Aug 2016)"*, WWF, 2011.
- Lenny, B., et al., (2007), *"Climate Change 2007: Synthesis Report - Summary for Policymakers"*, 2007.
- LFP, (2011), *"Progress Report on Climate Change Adaptation Planning and Implementation"*, Livelihood and Forestry Program, 2011.
- MOFSC, (2002), *"Nepal Biodiversity Strategy"*, MOFSC, Kathmandu, Nepal, 2002.
- New Era, (2006 and 2011), *"Demographic and Health Survey – 2011"*, New Era, 2006/2011.
- NPC, (2010), *"Economic Survey"*, National Planning Commission, Kathmandu, Nepal, 2010.
- Parry. M. L., et al, (2007), *"Climate Change: Impacts, Adaptation and Vulnerability - Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change"*, IPCC, Cambridge University Press, 2007.
- UNDP, (2004), *"Nepal Human Development Report – 2004"*, UNDP, 2004
- USAID/Nepal, (2007), *"Gender And Inclusion Assessment"*, USAID/Nepal, 2007
- USAID/Nepal, (2009), *"An Assessment of Climate Change, Forests, and Biodiversity in Nepal"*, USAID/Nepal, 2007
- WWF, (2011), *"Database of WWF and Hariyo Ban Program"*, WWF, 2011
- WWF, (2011), *"Technical Application/Proposal for Hariyo Ban Nepal Ko Dhan Program in Partnership with CARE, FECOFUN and NTNC"*, WWF, 2011

Annexes

Annex 1: Study Team

SN	Name of the Team Member	Responsibility
Central Team		
1	Mr Basanta Lamsal	Team Leader
2	Mr Shambhu Dangal	NRM/Bio-diversity/REDD/Forestry Expert
3	Mr Bishwa N. Paudyal	Policy and Governance Expert
4	Ms Sony Baral	Climate Change/Adaptation Expert
5	Mr Manish Kokh	GIS Expert
6	Ms Sita Acharya Gautam	Gender and Social Inclusion Expert
7	Mr Laxman Ghimire	Statistician
8	Mr Kiran Timilsina	Field Coordinator
9	Mr Yam Kumar Basnet	Field Coordinator
10	Mr Madan Basyal	Field Coordinator
11	Mr Pawan Gautam	Field Coordinator
12	Mr Resham Khadka	Field Coordinator
13	Mr Thakur Prasad Magrati	Field Coordinator
14	Mr Dilip Subedi	Field Coordinator
15	Mr Bharat Sharma	Field Coordinator
16	Ms Renu Thapa	Admin/Finance Officier
Field Team		
17	Ms Nitu Ghimire	Enumerator, Rautahat
18	Mr Saroj Dahal	Enumerator, Bara
19	Mr Santosh Dhakal	Enumerator, Bara
20	Mr Kamal Khadka	Enumerator, Chitawan
21	Ms Muna Shrestha	Enumerator, Chitawan
22	Mr Anil Subedi	Enumerator, Chitawan
23	Ms Amrita Sapkota	Enumerator, Chitawan
24	Ms Srijana Lamsal	Enumerator, Nawalparasi
25	Mr Bishnu Kafle	Enumerator, Nawalparasi
26	Mr Manoj Basyal	Enumerator, Palpa
27	Mr Raj Kuamr Chaudhary	Enumerator, Dang
28	Ms Sarita Chaudhary	Enumerator, Dang
29	Mr Khim Bdr. Pariyar	Enumerator, Banke
30	Ms Meena Chaudhary	Enumerator, Banke
31	Ms Sunita Pariyar	Enumerator, Banke
32	Mr Om Prakash Tharu	Enumerator, Bardiya
33	Ms Devi Malla	Enumerator, Kailali
34	Mr Pashupati Chaudhary	Enumerator, Kailali
35	Ms Hera Moti Chaudhary	Enumerator, Kailali
36	Mr Hem Absti	Enumerator, Kailali
37	Mr Karan Saud	Enumerator, Kailali

38	Mr Dipendra Chaudhary	Enumerator, Kailali
39	Ms Barkha Chaudhary	Enumerator, Kailali
40	Mr Kiran Kumar Mahto	Enumerator, Kailali
41	Mr Bhagi Ram Chaudhary	Enumerator, Kanchanpur
42	Mr Ankit KC	Enumerator, Kanchanpur
43	Mr Sumit Karki	Enumerator, Kanchanpur
44	Ms Nisha KC	Enumerator, Kanchanpur
45	Mr Dan Bdr Saud	Enumerator, Kanchanpur
46	Mr Chok Bd. Gurung	Enumerator, Syangja
47	Mr Kumar Rokka	Enumerator, Syangja
48	Ms Rima Gurung	Enumerator, Mustang
49	Ms Chhiring Lamhu	Enumerator, Mustang
50	Mr Shree Bd Thapa	Enumerator, Mustang
51	Ms Khopdevi Gurung	Enumerator, Mustang
52	Mr Bhawana Rijal	Enumerator, Kaski
53	Ms Puspa Rana	Enumerator, Kaski
54	Ms Amrita Regmi	Enumerator, Tanahun
55	Ms Kirpa Pokhrel	Enumerator, Tanahun
56	Ms Naumati Gurung	Enumerator, Tanahun
57	Ms Saraswoti Dawadi	Enumerator, Gorkha
58	Ms Amrit Nepali	Enumerator, Gorkha
59	Ms Rita Dhungana	Enumerator, Lamjung
60	Mr Kamal Gurung	Enumerator, Lamjung
61	Mr Nishan Tamang	Enumerator, Lamjung
62	Ms Muna Gurung	Enumerator, Lamjung

Annex 2: Sampling and Stratification

Area	Clusters	Districts	Sample VDCs	Sample Allocation According to Stratified Sample										Grand Total
				B/C		Dalit		Janajati		Other		Total		
				M	F	M	F	M	F	M	F	M	F	
CHAL	Adhikhola	Syanja	Arjun chaupari	21	20	3	3	10	10	0	0	34	33	**67**
	Upper Kali	Mustang	Charang	2	2	0	0	7	7	0	0	9	9	**18**
			Surkhang	0	0	0	0	6	6	0	0	6	6	**12**
	Phewa Upper Seti	Kaski	BhadaureTamagi	6	6	7	7	6	6	0	0	19	19	**38**
			Chapakot	8	8	5	5	3	3	0	0	16	16	**32**
	Mid Seti	Tanahu	Khairanitaar	14	14	9	9	22	22	0	0	45	45	**90**
	Madi Lower Seti	Tanahu	Dharampani	1	1	16	15	1	1	0	0	18	17	**35**
			Keshavtar	3	3	4	4	20	19	0	0	27	26	**52**
	Daraudi Upper Marsyandi	Gorkha	Simjung	5	4	3	4	13	12	0	0	21	20	**41**
			Warpak	0	0	1	1	22	22	1	1	24	24	**48**
	Nagdi Upper Marsyandi	Lamjung	Bahundanda	6	6	2	1	8	7	0	0	16	14	**30**
			Ghermu	0	0	2	2	13	13	0	0	15	15	**30**
	Dordi-Mid Marsyandi	Lamjung	Bharte	8	8	2	2	6	5	0	0	16	15	**31**
			Bhoteoodar	14	13	5	5	14	14	0	0	33	32	**64**
	Trisulli	Rasuwa	Thulogoun	2	2	1	1	12	12	0	0	15	15	**30**
Sub Total				**90**	**87**	**60**	**59**	**163**	**159**	**1**	**1**	**314**	**306**	**618**
TAL	Nijgadh	Rautahat	Judibela	9	9	7	7	4	4	2	2	22	22	**44**
		Bara	Ratanpuri	9	9	2	2	25	25	1	1	37	37	**74**
	CNP Bufferzone	Chitwan	Ayodhyapuri	22	22	19	19	15	15	1	1	57	57	**114**
			Padampur	14	14	7	7	32	32	0	0	53	53	**106**
		Nawalparasi	NayaBelhani	17	17	27	27	14	14	0	0	58	58	**116**
	Dobhan	Palpa	Dobhan	10	10	3	4	17	17	0	0	30	31	**61**
	Lamahi	Dang	Sisahaniya	5	5	2	2	51	51	0	0	58	58	**116**
	Kamdi Banke	Banke	Bejapur	4	4	2	2	26	26	0	0	32	32	**65**
			Kamdi	9	9	10	10	8	8	9	9	36	36	**72**
	Karnali Bardia	Bardia	Patabhar	11	11	2	2	35	35	0	0	48	48	**96**
		Kailali	TikapurN.P.	54	54	20	20	76	76	6	6	156	156	**312**
	Basanta Ghodaghodi	Kailali	Darakh	17	17	3	3	18	18	4	4	42	42	**84**
	Shukla Bufferzone	Kanchanpur	Beldandi	28	28	7	7	19	19	4	4	58	58	**115**
			Suda	45	45	6	5	25	25	2	2	78	77	**157**
Sub Total				**254**	**254**	**117**	**117**	**365**	**365**	**29**	**29**	**765**	**765**	**1,532**
Total				**344**	**341**	**177**	**176**	**528**	**524**	**30**	**30**	**1,079**	**1,071**	**2,150**

Sample Selection Criteria:

a) Clusters/Districts/VDCs Selection:

- Bio-diversity, Climate Change, REDD, Economic Activities, GESI, Bio-Geo Zones and River

b) Wards Selection:

- Three wards will be selected from each VDC
- Selected wards will be diverse in caste, ethnicity and economic status (poor and non poor)
- Close to forest/protected areas

c) HH Selection:

- Proportional representation of poor family (as per VDC record, if available)
- Proportional representation of all ethnic groups (see the table above)

Proportional representation of men/women (ratio of men/women respondents is as per the population ratio at VDC level)

Major Clusters/watersheds, VDCs/ Municipalities, HH and Population:

Area	S.N.	Cluster/watershed	Nos of VDCs/ Municipalities	HHs	Population
CHAL	1	Adhikhola	40	47,111	228,302
	2	Upper Kali	8	1,258	5,884
	3	Phewa Upper Seti	14	50,344	218,995
	4	Mid Seti	8	12,767	60,630
	5	Madi Lower Seti	50	51,943	249,962
	6	Daraudi Upper Marsyandi	32	34,241	165,683
	7	Nagdi Upper Marsyandi	6	3,191	16,176
	8	Dordi-Mid Marsyandi	13	8,064	40,163
	9	Trisulli	60	77,859	398,986
Sub Total			**231**	**286,778**	**1,384,781**
TAL	1	Nijgadh	14	23,141	130,049
	2	CNP Bufferzone	43	108,153	547,416
	3	Dobhan	7	24,231	119,103
	4	Lamahi	13	23,808	142,732
	5	Kamdi Banke	19	22,785	136,491
	6	Karnali Bardia	19	40,690	258,265
	7	Basanta Ghodaghodi	21	36,317	252,677
	8	Shukla Bufferzone	13	49,972	304,589
Sub Total			**149**	**329,097**	**1,891,322**
Total			**380**	**615,875**	**3,276,103**

Cluster, Total Population and Sample Size:

Area	Selected Clusters	Districts Covered	Selected VDCs	Ethnic Group				Total population	HH number	Sample size	Average HH size
				Brahmin/ Chhetri	Dalits	Janajati	Others (Minorities)				
CHAL	Adhikhola	Syanja	Arjun Chaupari	3,912	540	1,904	56	6,412	1,357	67	4.73
	Upper Kali	Mustang	Charang	160	4	497	0	661	142	18	4.65
			Surkhang	15	3	497	0	515	114	12	4.52
	Phewa Upper Seti	Kaski	BhadaureTamagi	1,226	1,384	1,219	2	3,831	762	38	5.03
			Chapakot	1,577	894	610	0	3,081	638	32	4.83
	Mid Seti	Tanahu	Khairanitaar	2,703	1,804	4,140	21	8,668	1,822	90	4.76
	Madi Lower Seti	Tanahu	Dharampani	95	3,599	214	6	3,914	709	35	5.52
			Keshavtar	662	726	4,025	10	5,423	1,054	52	5.15
	Daraudi Upper Marsyandi	Gorkha	Simjung	861	670	2,456	10	3,997	823	41	4.86
			Warpak	12	223	4,458	132	4,825	966	48	4.99
	Nagdi Upper Marsyandi	Lamjung	Bahundanda	936	249	1,218	13	2,416	474	30	5.10
			Ghermu	22	219	1,727	0	1,968	382	30	5.15

	Dordi-Mid Marsyandi	Lamjung	Bharte	1,871	369	1,242	24	3,506	623	31	5.63
			Bhoteoodar	2,470	813	2,559	55	5,897	1,295	64	4.55
	Trisulli	Rasuwa	Thulogoun	171	106	1,220	25	1,522	293	30	5.19
Sub Total	**(9 Clusters)**	**(7 Districts)**	**(15 VDCs)**	**16,693**	**11,603**	**27,986**	**354**	**56,636**	**11,454**	**618**	**4.94**
TAL	Nijgadh	Rautahat	Judibela	2,106	1,585	1,018	462	5,171	881	44	5.87
		Bara	Ratanpuri	2,114	286	5,920	59	8,379	1,486	74	5.64
	CNP Bufferzone	Chitwan	Ayodhyapuri	4,589	3,957	3,113	145	11,804	2,310	114	5.11
			Padampur	2,886	1,491	6,784	8	11,169	2,137	106	5.23
		Nawalparasi	Naya Belhani	3,399	5,372	2,753	70	11,594	2,348	116	4.94
	Dobhan	Palpa	Dobhan	2,108	765	3,865	1	6,739	1,226	61	5.50
	Lamahi	Dang	Sisahaniya	1,370	529	13,639	71	15,609	2,356	116	6.63
	Kamdi Banke	Banke	Bejapur	1,208	736	8,994	53	10,991	1,308	65	8.40
			Kamdi	1,964	2,379	1,946	2,187	8,476	1,479	72	5.73
	Karnali Bardia	Bardia	Patabhar	3,159	499	10,437	10	14,105	1,930	96	7.31
		Kailali	Tikapur N.P.	13,319	5,068	18,927	1,408	38,722	6,287	312	6.16
	Basanta Ghodaghodi	Kailali	Darakh	4,821	967	5,268	1,115	12,171	1,694	84	7.18
	Shukla Bufferzone	Kanchanpur	Beldandi	7,107	1,772	4,940	996	14,815	2,311	115	6.41
			Suda	11,441	1,324	6,646	323	19,734	3,162	157	6.24
Sub Total	**(8 Clusters)**	**(10 Districts)**	**(13 VDCs and 1 Municipality)**	**61,591**	**26,730**	**94,250**	**6,908**	**189,479**	**30,915**	**1,532**	**6.13**
Total	**(17 Clusters)**	**(17 Districts)**	**(28 VDCs and 1 Municipality)**	**78,284**	**38,333**	**122,236**	**7,262**	**246,115**	**42,369**	**2,150**	**5.81**
Total HH Number				13,477	6,599	21,043	1,250	42,369			
Number of sample HHs				684	335	1,068	63	2,150			
Percentage of sample taken				31.81%	15.58 %	49.67 %	2.95%	100.00 %			
Sample intensity (% of sample representation)				5.08%							

Annex 3: List of Agencies Contacted

A. Central Level

1. Department of Forests
2. Department of National Park and Wildlife Conservation
3. Department of Soil Conservation and Watershed Management
4. National Trust for Nature Conservation
5. Alternative Energy Promotion Centre
6. Biogas Support Program
7. Forest Resource Assessment Project
8. Hariyo Ban Program/WWF
9. International Centre for Integrated Mountain Development
10. Asia Network for Sustainable Agriculture Bio-resources
11. Federation of Community Forests Users Nepal
12. Leasehold Forestry Program
13. Biodiversity Sector Program for Siwalik and Terai
14. Rupantaran Nepal
15. Central Bureau of Statics
16. CARE Nepal

B. Field Level

1. District Forest Offices
2. District Soil Conservation Offices
3. District Agriculture Development Offices
4. District Livestock Support Offices
5. National Parks- Chitwan, Banke, Bardia and Langtang
6. Wildlife Reserve- Parsa and Suklaphanta
7. Conservation Areas- Annapurna and Makalu
8. District Development Committees
9. Village Development Committees and Municipalities

Annex 4: HH Survey Questionnaire

Serial no:

Cluster:		**HH**			

HARIYO BAN NEPALKO DHAN PROGRAM

Questionnaire for HH Survey

My name is:

We are from the Environmental Resources Institute (ERI) to conduct Baseline Survey for Hariyo Ban Program of WWF. The Hariyo Ban Program is being implemented by WWF in collaboration with USAID. We would like to get some information regarding your personal and family in connection with baseline for Hariyo Ban Program. The outcomes of the information that you will give us will be used to set up a benchmark for Hariyo Ban Program and will be compared with the achievement in future. The details of the survey results will help us to implement project in future.
This interview is completely voluntary, but your support and cooperation is very important to make the study complete and successful. Furthermore, this is an opportunity for you to share your experience and knowledge with your friends in the community and outside. The information will be treated in the strictest confidentiality.

Name of Enumerator:

Name of Supervisor:

Date:

(Please tick (√) answer or write the answer in the given field)

1.	**Background Information**					
1.1	Name of Respondent:					
1.2	Relation to Head of HH					
1.3	Name of Landscape:	1. CHAL			2. TAL	
1.4	Name of district:					
1.5	Name of VDC:			Ward No		
1.6	Name of settlement:					
1.7	Residing in this area since:					
1.8	Age:					
1.9	Sex	Male:	Female:	Other:		
1.10	Marital Status:	Married	Unmarried	Separated	Widow	Other:
1.11	Details of Family Members:			HH Size:		

	Name	**Age**	**Sex**	**Education** *	**Occupation**

	* Illiterate = 1, Literate but not school educated = 2, High School educated = 3, College and above = 4					
1.12	Caste/Ethnicity:	Brahmin/Chhetri	Janajati	Dalit		Other
1.13	Religion:	Hindu	Buddhist	Muslim	Christian	Others
1.14	Who makes major decisions in your family?			Male	Female	Both
1.15	Is female member consulted in decision-making process?			Yes		No
	If yes, in what areas the female members are consulted?			1. Marriage		
				2. Land Purchase		
				3. Livestock sell/purchase		
				4. Family expenses		
				5. Others		
1.16	What are the major sources of income of your family livelihood? (On priority basis by 5 -1)					

	Source		**Estimated Annual Income in NRs**
	Agriculture/Crop	Production Quantity	
	• Rice		
	• Wheat		
	• Maize		
	• Others		

	Employment/Trade						
	Livestock						
	Remittance						
	Others						
1.17	What are the major expenditures of your family? (write from Highest 5 to Lowest 1)						
	Food	Non food (cloths, housing, soap)	Services (health, education)	Others			
1.18	How much land do you or your family have? (Write in Ropani or Kattha)						
1.19	How much land does your family possess? Ropani Kattha						
	Irrigated		Non irrigated cultivated				
1.20	Who owns the land/property in your family?	None	Male	Female	Both		
1.21	What is your status of food sufficiency from your own production?						
	< 3 months	3-6 months	6-9 months	9 months +			
1.22	If deficit, how do you manage your food in the deficit period? (write from Highest 4 to Lowest 1)						
	Purchasing	Borrowing	Credit	Other			
1.23	Type of roof of your house (please √ as observed)						
	Thatch	Slate	GI Sheet	Concrete	Other		
1.24	Do you have a toilet?	Yes	No (Go to QN 1.26)				
1.25	If yes, What type of toilet do you have? (Please √ as appropriate).						
	Water seal	Pit	Traditional				
1.26	What is the source of your drinking water? (please √ as appropriate)						
	Pipe Tap	Well/ Tube well	Natural tap/spring (kuwa)	River	Deep boring	Rain water harvest	
1.27	Who fetches the water?	Male	Female				
1.28	How long it takes to bring water from the source? (per trip in minute)						
1.29	What following asset do you own? (please √ as appropriate and write number also)						
	Radio	TV	Telephone/ Mobile	Pressure cooker	Cycle	Motorcycle	Cart	Tractor

1.30	Which of the following source of energy of your family do you use most for daily propose? (please √ as appropriate and mark the using purpose also)		
	Source	**Cooking**	**Heating/ Lighting**
	Firewood		
	Biogas		
	LP Gas		
	Kerosene		
	Electricity		
	Solar		
	Bio-briquette		
	Dried cow dung		
	Others		

1.31	If the family does not have bio-gas, why?	Economic Reason	No Livestock	No Human Resources	
1.32	If the family has biogas, what is the capacity of your bio-gas plant? (Capacity in m^3)	4	5	6	8+
1.33	Have you connected your toilet to the bio-gas plant?	Yes		No	
1.34	What is level of sufficiency of the gas based on your household need (%)	¼ (25% or less)	½(50%)	2/3(66%)	100%

2.	**Landscape Management**				
2.1	What are the major crops productions that your family has?				
	Name of major crops	**Varieties**			
	Rice				
	Wheat				
	Maize				
	Millet				
	Beans				
	Potato				
	Vegetables				
	Others				
2.2	How do you rank the condition of agriculture productivity in your farmland during last five years?	Increasing		Constant	Decreasing
2.3	How do you see flood and landslides in your surrounding for last five years?	Increasing		Constant	Decreasing
2.4	What is your observation on the water availability during last 5 years in your nearby ponds, rivers, streams, waterfalls, wells, wetland etc.?	Increasing		Constant	Decreasing
2.5	If decreasing, what are the areas affected?	Drinking		Irrigation	Cattle use
2.6	What are the reasons for decrease?	Drought	Deforestation	Demand Increase	Others
2.7	Have you seen any new invasive species in/around your farmland?	Yes		No (Go to QN 2.9)	
2.8	If yes, what are they?	1			
		2			
		3			
2.9	Have you seen any new invasive species in/around the water sources (lake, pond etc) during last 5 years?	Yes		No (Go to QN 2.12)	
2.10	If yes, please write the name of major 3 invasive species:	1			
		2			
		3			

2.11	If yes, how do you rank their impact on lakes?	Low	Medium	High
2.12	How do you rank the forest condition in your surrounding?	Very Good	Good	Degraded
2.13	How do you observe the forest condition at your surrounding during last 15 years?	Improving	Constant	Degrading
2.14	What are the major threats for forest conservation?	1		
		2		
		3		
2.15	Have you seen any new invasive species in the forest during last 5 years?	Yes	No (Go to QN 2.17)	
2.16	If yes, Please write major invasive species:	1		
		2		
		3		

2.17	What are the major forest products you collect and collection practices? (please √ as appropriate)					
	Forest Products	**Who collects?**			**How long it takes (Per trip in hours)**	
		Male	**Female**	**Both**		
	Timber					
	Firewood					
	NTFPs					
	Fodder					
	Leaf-litter					
	Other					
	None					
2.18	What is your average annual income from sale of major forest products? (in NRs)					NRs:
2.19	What are the major livestock does your family have?					
	Types of major livestock	**Breeds**				
	Buffalo					
	Cow/Yak					
	Goat/Sheep					
	Horse/Donkey					
	Pig					
	Poultry					
	Others					

2.20	How do you rate the availability of fodder/forage?	Surplus	Sufficient	Deficit
2.21	Have you heard the payment can be received for conservation and management of forests?		Yes	No (Go to QN 2.23)
	If yes, how do you know? (please √ as appropriate)			
	Television/Radio / Newspaper / Training/ Workshop / Community		Formal Education	Other
2.22	Has your community organization received any payment for the conservation of forest resources and reducing carbon emission? (REDD)		Yes	No
2.23	Have your community organization received any payments/support under Clean Development Mechanism (CDM) or Payment for Ecosystem Services (PES)?		Yes	No
3.	**Biodiversity Conservation**			
3.1	Do you understand what biodiversity conservation is?		Yes	No (Go to

							QN 3.3)
3.2	If yes, how did you know?						
	Radio/ Television	News paper	Workshops/ Training	Community Group		Formal education	Others (specify)
3.3	List type of major wild animals in your surroundings (list them on the basis of their available number) and tick their appearance in last 20 years						
	Name	Increasing	Constant	Decreasing	If decreasing? Why?		
3.4	Are there any protected areas/corridors near in these areas?			Yes		No (Go to QN 3.7)	
3.5	If yes, how do you rank the condition of protected area (in terms of protection)?			Improving		Similar	Degrading
3.6	If degrading, reasons?	Poaching	Illegal logging	Invasive Species	Encroachment	Fire	Others
3.7	If your family has experienced wildlife attack, please give the following information related to human wildlife conflict did your family experience during last five years?						
	Incidence	**Which animal**	**Once in a year**		**Twice in a year**		**Thrice and more**
	Crop Damaged						
	Property Damaged						
	Livestock depredation						
	Human Injured		Male	Female	Male	Female	Male / Female
	Human casualties		Male	Female	Male	Female	Male / Female
3.8	Did your family get the compensation for the harm?			Yes		No (Go to QN 3.10)	
3.9	If yes, how much money you received?					NRs:	
3.10	Have you involved in activities related to forest management/ biodiversity conservation/soil conservation?			Yes		No (Go to QN 3.12)	
3.11	If yes, list out the activities ecosystem/species management you are involved in.						
	Activity	Involvement (Per Year)					
		Male (Days)		Female (Days)		Total Days	
	1 Plantation						
	2 Water Conservation						
	3 Forest Protection						
	4 Fire Protection						
	5 Bio-engineering						
3.12	Are you aware of community based anti-poaching activities (CBAP)?			Yes		No (Go to QN 3.15)	
3.13	If yes, are you involved in anti-poaching activities?					Yes	No

3.14	If yes, how many times during did you/your family members participate in anti-poaching activities, patrolling, awareness raising etc. during last year?					
3.15	How do you rate the relationship between park/conservation authority/administration and local people?					
	Good		Fair		Poor	
3.16	Do you believe better ecosystem can help to improve people's livelihood?			Yes	No	
3.17	What are the benefits you are receiving from conservation/protected areas?	1				
		2				
		3				
3.18	Do you think we need to protect wild animals?		Yes	No	I am not sure	
4.	**Climate Change and Adaptation**					
4.1	People say climate is being changed; have you experienced changes in climate during last 20 years?		Yes		No (Go to QN 4.3)	
4.2	If yes, what changes you have experienced due to climate change in the following areas?					
	Over Rainfall		Increasing		Decreasing	
	Low Rainfall		Increasing		Decreasing	
	Temperature		Increasing		Decreasing	
	Drought		Increasing		Decreasing	
	Flood/landslide		Increasing		Decreasing	
	Snow fall/hailstorm		Increasing		Decreasing	
	Fire		Increasing		Decreasing	
4.3	Do you know about Climate Change?			Yes	No (Go to QN 4.5)	
4.4	If yes, from where? (Please √ as appropriate)					
	Radio/ Television	News paper	Workshops/Training	Community Group	Formal education	Others (specify)
4.5	Do you think Climate Change has impacted on the agricultural productivity and food security for your household in last 20 years?				Yes	No (Go to QN 4.8)
4.6	If yes, mention how Climate Change has impacted on the agricultural productivity and food security?					
	More food available		Less food available		No food	
4.7	What is the reason, do you think, to this change in food availability?		1. Lack of irrigation and low rainfall			
			2. Lack of cultivable land			
			3. Land of fertilizer and seed			
			4. Pest and disease			
			5. Others			
4.8	What did you do if there is prolonged period of food shortage? (Please √ and score as 1 to 5 based on priority)					
	Lending money from money lender	Off farm activities	Sell goods,	Migrate	Other	
4.9	Do you think climate change has impacted on Forest and Biodiversity (forest, wetlands and grassland)?				Yes	No (Go to QN 4.12)
4.10	If yes, what is your observation on changes (Write in priority 1 to 3)					

	Changes in species and composition	Changes in productivity	Changes in ecosystem services like water source protection, clean air etc
4.11	What is the reason do you think to above mentioned impact?		
4.12	Have you experienced new health problems to you and your family in last five years?	Yes	No (Go to QN 4.14)
4.13	If yes, What are they?	1	
		2	
		3	
4.14	What do you do when your family members get sick? (please √)		

	Treatment Methods	Male	Female
	Traditional remedies		
	Go to Health Centres		
	Do not care much		

4.15	Do you think Climate Change has impacted to water sources?	Yes	No (Go to QN 4.18)	
4.16	If yes, what are the impacts of Climate Change in water sources?	Changes in water quantity	Changes in water quality	Time/period change
4.17	What are the major impacts?	1		
		2		
		3		
4.18	Do you think climate change has impacted to infrastructures like - houses, road etc?	Yes	No	
4.19	How is affect of new pests/diseases, crops and livestock in your surrounding and forest? (Please tick√)			
	Forest	Increasing	Constant	Decreasing
	Agriculture Crop	Increasing	Constant	Decreasing
	Livestock	Increasing	Constant	Decreasing
4.20	Have you observed new plant, insects and animals in your surroundings during last 5 years?	Yes	No (Go to QN 4.22)	
4.21	If yes, what are they?			
4.22	Have you experienced shocks due to climate change in last 5 years?	Yes	No (Go to QN 4.24)	
4.23	If yes, give the following information			

	Shocks	How many times	Trend		Who in your family mostly affected						How did you cope with it?
			Increasing	Decreasing	Children		Youth		Elder		
					M	F	M	F	M	F	
	Inundation of House										
	Fire										
	Decrease agriculture yield										
	Death of livestock										
	Family Illness										
	Force migration										
	If any others - specify										

4.24	Do you think climate change has impacted on your income opportunities (on-farm and off-farm)?	Yes	No (Go to QN 4.26)
4.25	If yes, how did it impact?	Income Increase	Income Decrease
4.26	Have you or your family members missed any income opportunities due to Climate Change?	Yes	No (Go to QN 4.28)
4.27	If, yes, what?	1	
		2	
		3	
4.28	Are there any new income opportunities that have arisen in the past 10/20 years?	Yes	No (Go to QN 4.30)
4.29	If yes, what?	1	
		2	
		3	
4.30	Is your income sufficient to cover your basic needs (food, clothing, schooling, and healthcare)?		
	Income is more than sufficient	Sufficient	Less than sufficient
4.31	What strategies or mechanisms you think will help you most to adapt the current changes? (Tick the write answer)	1. Change crop verity 2. Agriculture technology 3. Change cropping pattern 4. Adopt water conservation mechanism 5. Increase bio-engineering work in construction 6. Labour contribution change between male and female 7. Others	
4.32	Has your community developed any plan to adapt the climate change?	Yes	No (Go to QN 5.1)
4.33	If yes, what are they	1. Incorporated in Forest Operational Plan	
		2. CC adaptation Plan	
		3. Incorporated VDC plan	
4.34	If plan is developed, did you participate in preparing it?	Yes	No
4.35	Is the plan implemented?	Yes	No
4.36	If plan is developed, have you received any benefit from implementing the plan?	Yes	No (Go to QN 4.38)
4.37	If yes, what are the benefits?	1	
		2	
		3	
4.38	Is there any mechanism to monitor the plan implementation?	Yes	No (Go to QN 5.1)
4.39	If yes, what are the monitoring mechanisms?		
	Internal/Participatory	External	Others

5.	**Capacity Building and Income Generating activities**		
5.1	Did you/your family member attended training and campaigns in during the last 5 years?	Yes	No (Go to QN 5.3)
5.2	If yes, give the following information		

	On What	Who Participated (Times)	Who provided

		Female	Male	
	Biodiversity			
	Forestry			
	Soil Conservation and watershed management			
	REDD			
	Climate Change Adaptation			
	Campaigns			
	Gender and Social Inclusion			

5.3	Have you received skilled-based training for enterprise development and income generating activities in last five years?	Yes	No (Go to QN 5.5)

5.4	If yes, give the following information on skilled-based training for enterprise development and income generating activities you have received in last five years:			
	On what	How many times		Who provided
		Male	Female	

5.5	Have you used the skills to run enterprises?	Yes	No (Go to QN 6.1)

5.6	If yes, give the following information on started or upgraded enterprise for income generations after the training				
	What are they	New	Upgraded	Operational	Closed
5.7	What is your annual earning from these enterprises? Rs.....				

6.	**Governance and Social Inclusion**			
6.1	Have you or your family member been a member of any forest related user/management group?	Yes	No (Go to QN 6.25)	
6.2	If yes, name of associated users/management group			

Type of Group/Association	**Male**	**Female**	**Both**
Community Forest Users Group (CFUG)			
Collaborative Forest Management Committee (CFMC)			
Leasehold Forestry Group (LFG)			
Buffer Zone Users Committee (BZUC)			
Conservation Area Management Committee (CAMC)			
Water Users Group/Association (WUG/A)			
Cooperative Society			
Others (like mothers groups, saving and credit groups etc.)			

6.3	What is your or your family members' position in a group?	Executive committee member		General member	
		Male	Female	Male	Female
6.4	How many times you participate in the General				

	Assembly in a year? (Write the frequency in number)				
6.5	If Executive Committee member, how many times in a year do you participate in the meeting? (Write the frequency in number)	General Assembly		EC Meetings	Others
6.6	How do you rate your voice listened in the meetings?	Always		Occasionally	Never
6.7	Who makes decisions in your group?	Chairperson	Chairperson & Secretary		Committee
6.8	Do you know about Participatory Governance Assessment (PGA)?			Yes	No (Go to QN 6.11)
6.9	How many times your community group conducted participatory governance assessment (PGA) in last five years?				
	Once	Twice		Thrice and more	
6.10	Are you involved in the participatory governance assessment (PGA) process?			Yes	No
6.11	Do you know what is Participatory Well-Being Ranking (PWBR)?			Yes	No
6.12	Did your group (conservation/ management group) conduct participatory well-being ranking (PWBR) within your group in last five years?			Yes	No (Go to QN 6.17)
6.13	If yes, did you participate in participatory well-being ranking (PWBR)?			Yes	No
6.14	Did the participatory well-being ranking (PWBR) process identify Poor Vulnerable and Socially Excluded (PVSE) members?			Yes	No
6.15	Which category of wellbeing do you belong according to PWBR?	Rich	Middle class	Poor	Don't know
6.16	What benefit the PVSE members received after their identification?	1. Livestock			
		2. Agriculture			
		3. Land allocation			
		4. Support in enterprises			
		5. Support in education			
		6. General subsidy			
		7. Others			
6.17	Were you involved in planning process of your group during last 5 year?			Yes	No
6.18	Do you know about Public Hearing and Public Auditing (PHPA)?			Yes	No
6.19	If yes, did your group conduct public hearing and public auditing (PHPA) in last three years?			Yes	No (Go to QN 6.24)
6.20	If yes, how many times (last 3 years)?				
	Once	Twice		Thrice and more	
6.21	Did you participate in public hearing and public auditing (PHPA)?			Yes	No (Go to QN 6.24)
6.22	If yes, what were the issues raised during the PHPA? (Major 3)	1			
		2			
		3			

6.23	Are the issues raised in PHPA addressed?	Yes	No	Don't know
6.24	Are you aware of income and expenditure status of your group?		Yes	No
6.25	If not, why? Pease write.			
6.26	Have you or your family participated in issue based campaign?		Yes	No
6.27	If yes, List the campaign names.	1		
		2		
		3		

Name of Surveyor		**Date**	
Signature			
Name of Supervisor		**Date**	
Signature			

Annex 5: Checklist for Focus Group Discussion

A. FGD Themes and Locations:

Component	Themes	Participants	Location
Cross-cutting/ GESI	Women in decision making process in NRM mgmt (participation, position, roles and responsibilities, access, institutional policies and mechanisms)	Executive Committee Women Members of NRM groups. Invite women members from surrounding NRM groups. Insure women from mixed participation from ethnic groups including Poor (Vulnerable and Socially Excluded members)	Chapakot (Kaski)
			Dharampani (Tanahun)
			Baijapur (Banke)
			Tikapur (Kailali)
			Ratanpuri CFM (Bara)
PVSE	Participation in governance, and benefits	Poor members of different groups (male and female mix)	Chapakot (Kaski)
		Poor members of different groups (male and female mix)	Dharampani (Tanahun)
		Poor members of different groups (male and female mix)	Rangapur CFM (Rautahat)
		Poor members of different groups (male and female mix)	Baijpur (Banke)
Climate Change	Change perception, CC impact, community and ecosystem resiliency, adaptive capacity of community	Elders from various ethnic groups	Charang (Mustang)
			Keshavtar (Tanahun)
			Padampur (Chitwan)
			Darakh (Kailali)
		Women from various ethnic groups	Charang (Mustang)
			Keshavtar (Tanahun)
			Padampur (Chitwan)
			Darakh (Kailali)
		Youth (male and female) from various ethnic groups	Charang (Mustang)
			Keshavtar (Tanahun)
			Padampur (Chitwan)
			Darakh (Kailali)
Landscape management	D&D, Understanding of REDD, Measure to address D&D, Benefit to Community protection and management of forests (REDD+), Understanding on PES (upstream and downstream linkage and	CF/CFM Committee Members. (Invite EC members from different group)	Rautahat Rangapur CFM
			Dhading - (ask RIMC)
			Beldandi (Kanchanpur)
		Women (invite women from different group representing all ethnic groups)	Rautahat- Rangapur CFM
			Dhading- (ask RIMC)
			Beldandi (Kanchanpur)
		Invite elders and youth members of different groups representing ethnic groups)	Rautahat Rangapur CFM
			Dhading- (ask RIMC)
			Beldandi (Kanchanpur)

Component	Themes	Participants	Location
	suggested payment mechanism)		
Biodiversity	Human Wildlife Conflict	Buffer zone CF EC-1, Forest Product trader-1, Conservation project-1, Local entrepreneurs (hotelier, guide etc)-1, School Teacher-1, Buffer-zone Common People (Male and Female)-4	Ayodhyapuri (Chitwan)
		Buffer zone CF EC-1, Forest Product trader-1, Conservation project-1, Local entrepreneurs (hotelier, guide etc)-1, School Teacher-1, Buffer-zone Common People (Male and Female)-4	BZ (Bardia)
		Buffer zone CF EC-1, Forest Product trader-1, Conservation project-1, Local entrepreneurs (hotelier, guide etc)-1, School Teacher-1, Buffer-zone Common People (Male and Female)-4	Suda VDC BZ (Kanchanpur)
	Status of biodiversity (ecosystem and species), Conservation issues-including poaching, Participation in conservation	Buffer zone CF EC-1, Forest Product trader-1, Conservation project-1, Local entrepreneurs (hotelier, guide etc)-1, School Teacher-1, Buffer-zone Common People (Male and Female)-4	Rasuwa -Thulogaun
		CF EC-2, Local Knowledgeable people (male and female) - 4, Rep. from Local NGO working in NRM - 1, Forest Product Traders-1, Cattle Hurdler-1, School teacher-1	Simjung (Gorkha)
		Buffer zone CF EC-1, Forest Product trader-1, Protected area rep-1, Conservation project-1, Local entrepreneurs (hotelier, guide etc)-1, School Teacher-1, Buffer-zone Common People (Male and Female)-4	Parsa BZ
	Policies	Buffer-zone Management Committee and representative of buffer zone CF EC	Chitwan
	CBAPOs	Buffer-zome Forest Users EC members	Dalla (Bardia)
		Buffer-zone users	Naya Belhani

Component	Themes	Participants	Location
		(Representative of all ethnic groups and male/female)	(Nawalparasi)

C. Checklist for Focus Group Discussion and Exercises

Areas	Methods
Socio- Economic	
Number of CC Vulnerable HH and their livelihoods, list of economic and livelihood activities in villages, main resources	Plenary discussions. This will create an environment for further discussions.
Institutional Mapping	
Institutions/project working in the areas on Biodiversity, REDD, CC adaptation (Institutional mapping- name of institutions, their workings areas and intensity of involvement)	Venn Diagram/Institutional Matrix
Biodiversity	
Existing situation of species diversity and ecosystem diversity (wild based)	Listing of species and ecosystem through discussions
Invasive species and extend	List of invasive species, where they are seen, their extent years (sparse, moderate and dense), locate in the map
Threats to wetlands- areas, location and scale of threats (1-5)	Prepared list of threats, rank threats with scale (1-5), mark the area on a map the location of threats
Human and wild animal conflicts	List out the wild animal attacks in last 5 years, casualties and compensations. List out other conflict between protected areas and communities
Community Based Anti-poaching	Discussed in the plenary – CBAPOs- number, how they work and cases
CC Mitigation-REDD+	
Situation of forest and wetlands (rate of deforestation and degradation, area of forest land)	Develop a trend of resource availability trend line using scale (1-5) for last 15 years
List out the threats to deforestation and forest degradation (area and location)	Prepared list, rank them with scale (1-5), mark the area on a map
Alternative energy and energy saving mechanism- ICS, Metal Stove and Bio-gas, Bio-briquette , Solar	List out the alternative/energy saving activities and estimate the number of HH adopting
Payments for Ecosystem Services	Through discussions prepare a list of ecosystem services received payments and amount
CC adaptation	
Climate hazards mapping and major shocks	Conduct climate hazards trend map for last 15 years
Shocks during last 5 years (inundation, fire, poor	List out major shock and how community

crop yield, illness/death of human and livestock, loss of land, migration etc)	cope with them
Current vulnerable bio-physical sites and improved sites	Through plenary discussions, identify sites and mark in a map
Understanding on CC adaptation ➢ 50% population ➢ 30-50% population ➢ 10-30% population ➢ <10% population	Through discussion
Name of organization mainstreaming CC adaptation in their policies and plans	Plenary Discussions
Local plans integrating CC adaptations activities	List out the local level plans and ask the group whether CC adaptations activities are included there.
Development of CAP and LAPA	Discuss whether CAP has been developed. List out major adaptation activities listed in the CAPs
Implementation of CAPs	List out how many activities of CAP have been implemented.
Total number of people and vulnerable people benefitting from CAP activities.	Through plenary discussion develop estimate the number
Training and Awareness on CC	
Develop a list and number of training events conducted in last five years on Biodiversity, NRM, REDD, CC adaptation	Through Plenary Discussion develop table (name of training, number of events, targets, and organizer)
Issue base campaigns- List and number of issue based campaign organized in last five years, and list of providing institutions	Through Plenary Discussion develop table
Training events conducted on IGA	Through plenary discussions, list out training, organizing institutions, who participated and how they are using.
Cross-cutting – Governance, Gender and Social Inclusion	
Discuss the situation of governance, gender and social inclusion with reference to their respective community organization	Through plenary discussions, list out women in decision making process in NRM management (Participation, Position, roles, and responsibilities, access, institutional, policies and mechanisms)
List out the issues in the area of governance, gender and social inclusion and discuss one by one	Through plenary discussion
PVSE	
Discuss the situation of PVSE in the group and level of participation and benefit sharing at various levels.	Through plenary discussions, list out the situation of participation and benefit sharing mechanism for poor members and marginalized section of the group.
List out the issues in the area PVSE and discuss one	Through plenary discussion

by one.	

Note:

- One FGD in one VDC, venue should be accessible to members.
- Coordinate with VDC secretary/FUGs networks/DFO or Park staff to help in FGD. (we expect Hariyo ban project will help in organizing the events)
- Invite key informants of the community.
- It should be taken maximum of three hours so focus on key questions only.
- Prepare required materials in advance such as marker pen, met-cards, marker pens, map of particular area etc.

Annex 6: Checklist for Secondary Source of Information

S.N	Details of Information	Agency/Office				
		DFO	DSCO	PAs and C Area	DADO/ DLSO	Projects (Central + Field)
1.	Number and area of CF, LHF, Religion Forests, Private Forests, Collaborative Forests, Protection Forests	√				
2.	Area of National Forest in the district	√				
3.	Number of UGs revised OPs based on REDD+ requirement	√		√		WWF/TAL, BISEP-ST
4.	Number of BZUCs, BZUGs and CAMCs			√		
5.	List of functional CBAPOs in PAs and CAs			√		
6.	Number of people involved in CBPOs			PNP, CNP, BNP, SNP, ACAP,MCA		
7.	List of major sub-watershed identified in the district		√			
8.	List of sub-watershed mgmt plans prepared in the district		√			
9.	List of Sub-watershed mgmt plan implemented in the district		√			
10.	Number of people involved in plan implementation		√			
11.	List of varieties of Rice, Wheat, Maize, Breeds of Buffalo, Cow, Goat etc				DADO and DLSO	
12.	List of CFUGs/BZUCs/CAMCs conducted PGA	√		√		√
13.	List of CFUGs/BZUCs/CAMCs Participating PHPA	√		√		√
14.	List of CFUGs/BZUCs/CAMCs conducted PWBR	√		√		√
15.	Number of people involved in good governance practices in CFUGs/BZUCs/CAMCs	√		√		√
16.	List of training and number of people (including PVSE) received skilled based (on farm, off farm and green enterprise) training by	√	√	√		√

	poor/sex/caste/ethnicity					
17.	Number of people benefited from on and off farms IGAs- Disaggregated	√	√	√		√
18.	List/number of operational green enterprises	√	√	√		DCSIO, Project
19.	List of sustainable forest product enterprises	√	√	√		√
20.	List and number of issue based campaigns in last three years in the district	√	√	√		√
21.	# of people participating in issue based campaigns-disaggregated					√
22.	Number of people received training in forest inventory, GHG monitoring, equitable benefit sharing and REDD issues by sex, caste, ethnicity	√				Rupantaran, WWF, RECOFTC, Regional Training Centre (MoFSCl
23.	# of biogas plant established	√				ESAP,AEPC, other project
24.	# of people benefited from bio-gas and the capacity of biogas. If possible list them by segregating either they are linked with toilet or not.					ESAP,EPC, Other Project
25.	# of ICS distributed and metal stove					ESAP,EPC, Other Project
26.	# of people benefited from ICS & metal stove					ESAP,EPC, Other Project
27.	List the existence of PES financing mechanism and the amount generated from PES scheme including Bio-gas, Forest carbon, ecotourism, upstream/downstream watershed management, hydropower etc	√	√			WWF, DDC, other projects
28.	Source of Financing for PES	√	√			WWF, DDC, other projects
29.	List of training and awareness activity on cc adaptation					√
30.	Number of persons provided training, and awareness activities segregated by sex, caste ethnicity					√
31.	List of organizations (government and civil society) mainstreaming	√	√		√	√

	climate change adaptation into their policies and plans					
32.	# of people reached by those organizations who mainstreamed CC into their plan (government and civil society)-Disaggregated	√	√		√	√
33.	Number of organizations (government, civil society and academia) undertaking capacity building activities related to climate change vulnerability and adaptation	√	√		√	√
34.	Number of people reached by capacity building activities (Disaggregated)	√	√		√	√
35.	Number of people (government and civil society) received capacity building training in climate change adaptation (List of events and # participants by disaggregate)	√	√	√	√	√
36.	List of climate change adaptations activities/events-Such as training, workshops etc					√
37.	Number of CC Vulnerable people/HHs desegregated by sex caste and ethnicity					√
38.	List of CAP developed		√	√	√	√
39.	List of sites and area (in ha) have improved after CAP implementation	√	√	√	√	√
40.	Number of people (disaggregated) involved in CAP implementation	√	√	√	√	√
41.	Number of organizations (government and civil society) using standard participatory vulnerability monitoring system and tools # of organizations, (Number, Type of systems and tools used)					√
42.	Number of local level plans integrating climate change adaptation	√	√			DDC,VDC, Projects

Annex 7: Revised M&E Matrix

Annex 7 : M&E Plan matrix

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
Goal: To reduce adverse impacts of climate change and threats to biodiversity				
G1. Quantity of greenhouse gas emissions, measured in metric tons of CO2 equivalent, reduced or sequestered as a result of USG assistance	**GHG:** Greenhouse gases- Only CO2 sequestered in the forests and emissions related to deforestsation and degradation will be measured.	Forest Carbon Stock (Co2 equivalent)- Total: 1,645 Million Metric Tons; 959.12 Million Metric Tons in TAL and 686.08 Million Metric Tons in CHAL	Forest Carbon Accounting Report TAL 2010; LandSat Image (2010) Analysis, ERI 2012	Gound truthing is required in CHAL
G2. Number of people receiving USG supported training in global climate change including UNFCCC, greenhouse gas inventories, and adaptation analysis	**Training:** Need to be defined.	*LRPs Developed for Forest Carbon Measurement: TAL- 144 (ICIMOD/ANSAB/FECOFUN 81, WWF- 63); and CHAL- 131 (ICIMOD 97, NEFIN 34*	WWF 2012, ICIMOD 2012, NEFIN 2012	Partical Inforamtion as references only
G3. Number of people directly benefitting from IGAs and alternative energy in priority sites in TAL and CHAL	**Alternative energy means**: Should be defined.	In total, 95.7% HH still use firewood for cooking (98.2 in CHAL and 66.4 in TAL. 18% HH have biogass (21.7% in CHAL and 17.2% in TAL); *Number of Bio-gass: 60,505 in CHAL and 98,292 in TAL; ICS: 54,938 in CHAL (Tanahun, Lamjung, Dhading, Rasuwa, Kaski, Synjha) and 19,865 in TAL (Nawalparasi, Dang, Bardia)*	ERI HH Survey ERI 2012, AEPC 2012, Secondary Information from Districts, 2012	Overal % HH using alternative energy. Partical information on number of ICS.
G4. Number of people participating in USG supported REDD and climate adaptation activities	Participation in REDD and adaptation activities include awareness, orientation, esxposure visits, attending meetings, community consultations etc.	Not available		Baseline will start from zero
G5. Number of hectares in areas of biological significance under improved management as a result of USG assistance	Areas of biological significance:	Total area: 1,788,614 hectares (1,121,280 ha. in CHAL and 667,334 ha. TAL)	DNPWC Annual Report 2011	This data include beyond USG assistance

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
G6. % of men and women who consider the ecosystem status has improved in the last five years and their livelihood has improved from benefits coming out of ecosystem services	Ecosytem status from people's perspective means: Ecosystem services from people's perspective means:	People received benefit received: 7% timber, 14% firewood, 10% fodder, 3% NTFPs and 7% other in CHAL; 32% Timber, 67% firewood, 53% fodder, 3% NTFPs and 21% other from in TAL; Perception on benefit of ecosystem: 81.1% (51.5% Male and 48.5% Female) in CHAL; 83.3% (51.2% Male and 48.8% Female) in TAL; Status of ecosystem: 51.8% improving, 28.8% similar and 19.4% decliding in TAL and 50.5% improving, 26.0% similar and 23.7% decliding in TAL.	ERI HH Survey 2012,	
Component 1 Biodiversity Conservation				
Objective: Reduce threats to biodiversity in target landscapes				
IR 1 Biodoversity conserved				
1.1 Ha of biodiverse area (forest, wetlands, grasslands) under improved management	**Improved management:** Biodiverse area having legal management plans and being managed on a sustainable manner according to the plan	Total area: 1,788,614 hectares (1,121,280 ha. in CHAL and 667,334 ha. TAL)	DNPWC Annual Report 2011	This data include beyond USG assistance
1.2 Population of focal s**pecies increased**	**Focal species** include Tiger & Rhino,	Tiger - 155 (Census - 2009); Rhino- 534 (Census - 2011)	DNPWC Annual Report 2011	
Sub IR 1.1 Threat to target spacies reduced				
1.1.1 Poaching rate and trade for focal species reduced	Poaching incidents and trade convictions	Number of pocahing incident (2011/12): Tiger-1 & Rhino 12; *Trade Conviction-Information Not Available*	DNPWC, 2012	
1.1.2 Level of threats to target species reduced	Level of threats to species reduced by mobilizing CBAPOs in coordination with GLAs	CBAPOs Total- 411 (38 in buffer-zones and 340 in bottleneck and corridors in TAL; and 33 in CHAL)	WWF 2011 (June), Information from PAs 2012	
Sub IR 1.2 Threats to target landscape reduced				
1.2.1 Hectares of biodiverse area (forest, wetlands, grasslands) under improved management - **Refer to Indicator IR 1.1**		Total area: 1,788,614 hectares (1,121,280 ha. in CHAL and 667,334 ha. TAL)	DNPWC Annual Report 2011	This data include beyond USG assistance

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
1.2.2 Number of people receiving training in NRM and/or Bio-diversity consewrvation (BDC)	Number of poor, women, dalit, marginalized received training in NRM and BDC	*TAL: Number of events 901, Total number of participatns 19,984, Women 7,126, Dalit 1,405 and MJJs 10,042; CHAL: Inforamtion Not Available* About 27% (585 HHs) have received some kind of forestry or NRM related trainings.	WWF, 2012; ERI HH Survey, 2012	Partical Inforamtion as references only
1.2.3 Number of sub-watershed management plans developed and implemented	Plan for prioritized Sub watershed	*45 sub-watershed mgmt. plans developed and 32 are implemented (Gorkha, Lamjung, Parbat, Baglung, Myagdi and Mustang)*	ERI Survey 2012	Partical Inforamtion
Sub IR 1.3 Internal governance of community groups responsible for ecosystem management strengthened				
1.3.1 Number of community groups with strengthened good governance practiced	Strengthened good governance means NRM groups practising all of PGA, PWBR and PHPA.	SAGUN area: PGA Conducted by 1,381 FUGs; PHPA by 2,114 FUGs and PWBR by 1,381 FUGs; Knowledge on PGA: 47% (CHAL: 28% and TAL 58%), Practice of PGA: 70% (CHAL - 72%, TAL -70%), Knowledge on PWBR: 39% (CHAL -25% and TAL 46%), Practice of PWBR: 33% (CHAL - 23% and TAL - 38 %) , Knowledge on PHPA: 61% (CHAL - 58% and TAL - 63%), Practice of PHPA: 66% (CHAL- 73% and TAL- 62%)	Sagun Report, 2009, ERI HH Survey 2012	Landscape wise data is no available
Sub IR 1.4 Income from sustainable sources of livelihoods of forest dependent communities increased				
1.4.1 Numberf of people (forest dependent) with increased economic benefit from sustainable natural resource management and conservation	Number of forest depedent people with increased economic benefit from sustainable natural resources **Need to define economic benefit**	TAL: Number of events-2370, participants-total 46,440; women 22,826; Dalits 3071, MJJs 23394 CHAL: Information Not Available. Based on baseline HH survey - Individuals received skill based training: 8%, No of people received skill based training: CHAL: 40 TAL: 130 List of sustainable forest enterprises: • Herbal Plant Processing • NTFP Cultivation & Management • Nursery Management • Bamboo and Bet-bas Processing • Bee Keeping • Intense Stick Making • Vegetable Farming	WWF, June 2011; ERI HH Survey 2012	Partial infoprmation on numbers

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
1.4.2 Number of people benefitting from green enterprises (revenuw generated from green enterprises) increased	Here, green enterprise has been defined as sustainable forest and agro-based enterprise that has no negative impact on the local environment, community, society and economy	Number of Green enterprises in operation out of 2,150 respondents: Total 104; CHAL: 32, TAL: 72.	ERI HH Survey 2012,	Partical inforamtion
Sub IR 1.5 Creation, ammedment and enforcement of bio-diversity policies and strategies				
1.5.1 Number of policy documents supported (proposed, revised, formulated, approved) and implemented related to bio-diversity	Number of policy documents supported (proposed, revised, formulated, approved) and implemented related to bio-diversity	Existing: Act (1), Regulation (11) Policies and Strategies (6) Guidelines (2), Action Plan (3), InProcess (1) and Proposed 1.	Collection of Policy Documents, DNPWC 2011	
1.5.2 Number of issue based campaigns supported	Define issue based campaigns	Advocacy Campaigns supported 1,102; Participants: total 1.342 million (0.802 million Male and 0.54 million female), Dalit 56393 and MJJ 317,015.	FECOFUN, 2012	Partial inforamtion for reference
Component 2 Sustainable Landscape Management				
Objective: To build the structures, capacity and operations necessary for an effective sustainable landscapes				
IR-2 Greenhouse gas (GHG) emissions reduced and sequestration enhanced				
2.1 Hectares of deforested and degraded forest area under improved biophysical condition	**a.** Deforestation- forest canopy cover <10% or change of forest into other land use practices . **b. Degradation-** to be defined. **c. Biophysical condition**-Forest condition. **d.** improved Management as per FOPs.	Total forest under improved management: 605,217 hectares; CHAL- 208,008 hectare and TAL 397,209 hectare	DoF, 2012; DNPWC, 2012	
2.2 Rate of deforestation and forest degradation in the target landscape reduced		Total Forest Area in CHAL- 1,106,842 hectares out of which 22,896 hectares degraded. Total Forest Area in TAL 1,110,996 hectares out which 8,696 hectare degraded. Rate of Deforestation: CHAL-0.97% and TAL 0.18%	Forest Carbon Accountign Study for TAL 2011, ERI Landsat Image (2010) Analysis 2012	Ground truthing is required for CHAL and data need verification in TAL for deforestaion rate

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
2.3 Quantity of GHG emissions measured in MT of CO2 equivalent, reduced or sequestered as a result of USG assistance	GHG= Greenhouse gases- Only CO2 sequestered in the forests and emissions related to deforestsation and degradation will be measured.	Forest Carbon Stock (Co2 equivalent)- Total: 1,645 Million Metric Tons; 959 Million Metric Tons in TAL and 686 Million Metric Tons in CHAL	Forest Carbon Accounting Report TAL 2010; LandSat Image (2010) Analysis, ERI 2012	Gound truthing is required in CHAL
2.1 Analysis formulation and execution of REDD+ policies & strategies supported				
2.1.1 Number of REDD+ related policies and strategies proposed/approved/implemented	a. REDD Related policies- CC policy, Low Carbon devt policy; National land use policy	Existing: Climate Change Policy, Interim REED strategy, RPP, In Process and proposed : National Land Use Policy, National REDD Strategy, Social and Environmental Standards, REL and MRV; Policy for National Carbon Trust Fund;	RPP 2010, ERI Survey 2012	
2.2. Capacity for forest inventory and GHG monitoring,and equitable benefit sharing developed;				
2.2.1 Number of people (government and civil society) received capacity building training in forest inventory and GHG monitoring, equitable benefit sharing, and REDD+ issues	Define equitable benefit sharing	LRPs Developed for Forest Carbon Measurement: TAL- 144 (ICIMOD 81, WWF-63); and CHAL- 131 (ICIMOD/FECOFUN/ANSAB 97, NEFIN 34 (6F/28 M); ToT Graduates on Forest Carbon Measurement in TAL-23 (WWF)	WWF 2012, FECOFUN 2012, NEFIN 2012	Partial inforamtion for reference
2.2.2 Number of people participated in GHG monitoring, equitable benefit sharing and REDD related activities	**Equitable benefit sharing mechanism-**modalities could be based on performance and taking into account existing ideas of other benefit sharing mechanisms but further discussion will be required at a wider stakeholder level to develop the appropriate	Not available		
2.3: Drivers of deforestation and forest degradation analyzed and addressed				
2.3.1 Number of community forest operational plans revised/prepared in line with REDD+ guidelines		116 FoPs in TAL and 85 FoPs in CHAL	ERI Survey 2012	Partial inforamtion for reference

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
2.3.2 Number of people directly benefiting from alternative energy (biogas, ICS, metal stove) reducing threats to deforestation and degradation	**Alternative energy:** need to define	In total, 95.7% still use firewood for cooking (98.2 in CHAL and 66.4 in TAL. 18% HH have biogass (21.7% in CHAL and 17.2% in TAL); Number of Bio-gass: 60,505 in CHAL and 98,292 in TAL; ICS: 54,938 in CHAL(Tanahun, Lamjung, Dhading, Rasuwa, Kaski, Synjha) and 19,865 in TAL (Nawalparasi, Dang, Bardia)	ERI HH Survey ERI 2012, AEPC 2012, Secondary Information from Districts, 2012	Number ICS inforamtion is partial
2.3.3 Number of PVSE and marginal farmers received skill based trainings	**PVSE:** Poor, vulnerable and socially excluded **Marginal farmers** - traditionally marginalized, ethnic minority/religious groups	TAL: Number of events - 2,370, participants-total 46,440; women 22,826; Dalits 3071, MJJs 23,394 CHAL: Inforamtion Not Available. Information from HH survey: 8.0% respondents (170 out of 2,150) in total, 6.4 % of 618 in CHAL and 8.4% of 1,532 in TAL have received skilled training out of them 80% in CHAL and 55% in TAL have used acquired skills.	WWF June 2011, ERI HH Survey 2012	Partial inforamtion of number.
2.3.4 Level of key threats in priority sites to forest reduced	**Key threats:** include forest fire, grazing, illegal timber felling	Forest Fire : High (TAL and CHAL);Illegal felling high in TAL and medium in CHAL, grazing medium in TAL and CHAL, Encroachments Medium inTAL and Low in CHAL, Invasive Species Medium in TAL and Low in CHAL	ERI Survey, 2012	
:				
2.4.1 Revenue generated from successfully piloted PES schemes – biogas, forest carbon, ecotourism, hydropower etc. in CHAL and TAL	**a. Ecosystem Services-** Food, NTFPs, biodiversity, water regulation, soil conservation, eco-tourism etc. **b. Registry- Place/Institute where the carbon credits are registered**	Total generated under CDM (biogas)-1,156,942 US$ (255,152 in CHAL and 901,790 in TAL)	WWF 2012; BSP/AECP, 2012	Payment made by REDD piloting project is not included. Only payment under CDM-biogas included.
Component 3: Climate Change Adaptation				
Objectives: To increase the ability of target human and ecological communities to adapt to the adverse impacts of				
IR 3 Capacity to adapt to adverse impacts of climate change improved				

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
3.1 Number of people with improved adaptive capacity to cope with adverse impacts of climate change	**Adaptive capacity** denotes capacity of people in four areas (Resilient livelihood, DRR, Addressing underlying caused of Vulnerability and local organizational capacity) **Adverse impacts** denotes the effects of climate change in 6 different sectors (Forestry, Agriculture, Energy and Water, Health, Infras.) identified by NAPA	Adaptative Capacity of Khairenitar (mid seti) is very low and Kamdi Corridor is low.	ERI Analysis, 2012	Similar analysis for project intervening sites is needed
3.2 Rate of deforestation and degradation in forest, watersheds Rate of degradation in wetlands (invasive species, sedimentation and loss i.e. conversion to agriculture land) from non climate stresses reduced (Level reduction from baseline)	Deforestation and Degradation refers to nine drivers of RPP 2010 Non climatic stress denotes the adverse impacts from encroachment, land use change, grazing. Infrastructure & other development activities etc.	CHAL: Total Forest 1.106 millon hectares, Very Dense 7.79%, Dense 59.35%, Medium 30.78%, Degraded 2.98%; TAL: Total 1.110 hecatares, Very dense 10.5%, Dense 68.64% Medium 20.0% and Degraded 0.86%; Wetlands (Ramsar sites): Ttal number- 4, area 4,118 hectares (CHAL: number 1& area 1030 hectares and TAL: number 3 & area 3088 hectares)	Forest Carbon Accountign Study for TAL 2011, ERI Landsat Image (2010) Analysis 2012	Ground truthing is required for CHAL
3.3 Number of organizations (government and civil society) mainstreaming climate change adaptation into their policies and plans and implemented	**Mainstreaming:** denotes the process of incorporating CC related provisions into organizational policies and plans **Civil Society:** includes CBOs, CFUGs, other NRM groups and NGOs	CHAL: Govt-District Development Committees, District Forest Offices, District Soil Conservation Offices, Village Development Offices; Civil Society- CFUGS, BZCFUGs; 54 CFUGs in Rasuwa and Dhading incorporated CC Adaptation activities in their FoPS. Other record not available.	ERI Survey 2012	Partial inforamtion for reference
IR 3.1 Government and civil society understanding on vulnerabilities of climate change and adaptation options				
3.1.1 Number of organizations (government, civil society and academia) undertaking capacity building activities related to climate change vulnerability and adaptation	**Capacity Building:** includes orientation, awareness raising, training, sharing, exposure visits	Not available		

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
3.1.2 Number of people (government and civil society) received capacity building training in climate change adaptation	**Climate change adaptation** :	Not available		
3.1.3 Number of people participated in climate change adaptation related activities and events		TAL: 19% HH aware of CC plan but 59% (56 M & 44 F) of them participated ; CHAL 19% aware of CC plan but 85% (52M & 48F) of them participated.	ERI HH Survey, 2012	Change indicators from number to percentage
IR. 3.2 Pilot demonstration actions for vulnerability reduction conducted and expanded				
3.2.1 Number of vulnerable people/households benefiting from the implementation of Community Adaptation Plans (CAPs)	**Vulnerable people/households:** is idenfied by community through vulnerability assessment (VA) mapping **CAP:** is the plan prepared by community fed into Local Adaptation Plan of Action (LAPA) to address the adverse effects of the community	TAL: 19% HH aware of CC plan but 59% (56% male & 44% female) of them participated from which 20.6% benefited ; CHAL 19% aware of CC plan but 85% (52% male and 48% female) of them participated and 48.8% of participated were benefitted.	ERI HH Survey, 2012	Change indicators from number to percentage
3.2.2 No. of vulnerable sites showing improved biophysical condition after implementing CAPs	**Improved bio-physical condition** denotes watershed area managed, soil fertility improved, erosion & landslide prevented, land afforested, river controlled, ecosystem restored,	Not available		No need baseline as measuring inputs only
IR 3.3 Participatory and simplified systems for vulnerability monitoring established				
3.3.1 Number of organizations (government and civil society) using standard participatory vulnerability monitoring system and tools	**Standard participatory vulnerability monitoring system and tools:** denotes CARE's methodology on PM&E Civil Society includes CBOs, CFUGs, other NRM groups and NGOs	MoEnv, WWF, Practical Action, CECI, IUCN, Rupantaran Nepal	ERI HH Survey, 2012	Partial inforamtion for reference
IR 3.4 Creation, amendment and execution of adaptation policies and strategies supported				

Indicator	Operational definition of Indicator	Revised /Baseline Data	Sources	Remarks
3.4.1 Number of policies and strategies on climate change adaptation proposed/adopted/implemented (new and amendment)	**Policies and strategies:** denotes any laws, plan, acts and regulation of Government with its due process initiated	Existing: Environmental Protection Act, 2053 (1997 AD); Nepal Environment and Policy Action Plan 1993; Rural Energy Policy 2063 (2007AD); Environmental Protection Regulations 2055 (1999); Subsidy Policy for Renewable (Rural) Energy 2066 (2010); Climate Change National Policy 2011; and National Adaptation Program of Action 2010. In Process: Low Carbon Emission Strategy	MoEnv 2012	
3.4.2 Number of civil society organizations advocacy campaigns supported	**Civil Society:** includes CBOs, CFUGs, other NRM groups and NGOs,	Not available		
3.4.3 Number of local level plans integrating climate change adaptation	**Local level plan denotes:** FOPs, LAPA, VDC annual development plans, watershed management plans	Total CAPs 1,031 (CHAL-639 & TAL-392), Total LAPAs 89 (CHAL-10 & TAL-79) and 54 FOPs incorporated CC adaptationn activities in CHAL.	LFP, 2011; ERI Survey, 2012	Partial information