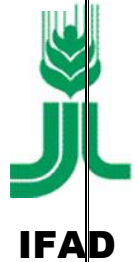




Government of Nepal
Ministry of Agriculture Development
**High Value Agriculture Project in Hill
and Mountain Areas (HVAP)**



Submitted to

High Value Agriculture Project in Hills and Mountain Areas (HVAP)
Project Management Unit (PMU)

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Table of Contents

ACKNOWLEDGEMENT	iv
1. BACKGROUND	1
2. RATIONALE OF THE STUDY	1
3. OBJECTIVES.....	2
4. SCOPE OF THE STUDY.....	2
5. METHODOLOGY.....	3
5.1 Sampling and Sample Size	3
5.2 Data Collection	6
5.3 Quality Control	6
5.4 Data Analysis	6
5.5 Report Presentation / Strength	7
5.6 Limitations.....	7
PART 1: APPLE VALUE CHAIN	8
6. BASELINE STUDY FINDINGS	8
6.1 Introduction	8
6.1.1 General introduction	8
6.1.2 <i>Background of the Respondents</i>	8
6.2 Baseline Status of Impact Indicators	10
6.2.1 <i>Current Household Asset Index</i>	11
6.2.2 <i>Landholding and Ownership</i>	11
6.2.3 <i>Livestock holding</i>	14
6.2.4 <i>Type of housing</i>	15
6.2.5 <i>Drinking water</i>	1
6.2.6 <i>Sanitation status</i>	1
6.2.7 <i>Height for age</i>	2
6.2.8 <i>Weight for age</i>	2
6.2.9 <i>Weight for height</i>	2
6.2.10 <i>Literacy rate</i>	3
6.2.11 <i>School enrolment rate</i>	3
6.2.12 <i>Food Security / Hungry Season</i>	5
6.3 Pro - Poor Value Chain Development.....	7
6.3.1 <i>Current sources of income</i>	7
6.3.2 <i>Current annual household income by cluster / road corridor</i>	8
6.3.3 <i>Current market surplus</i>	9
6.3.4 <i>Current farm gate price</i>	10
6.3.5 <i>Current payment timings and mode of payment</i>	11

6.3.6	<i>Current services provided by buyers</i>	12
6.3.7	<i>Current services per beneficiary type</i>	12
6.3.8	<i>Satisfaction index of the farmers</i>	13
6.3.9	<i>Access to technical services from Project / Line agencies / Inputs supplier</i>	14
6.3.10	<i>Sources of saplings</i>	14
6.3.11	<i>Type of service received from CCIs</i>	15
6.4	<i>Market Relationships / Arrangements</i>	15
6.4.1	<i>No of buyers/Traders</i>	15
6.4.2	<i>MarketRelationships</i>	16
6.4.3	<i>Coverage of agro-vets</i>	16
6.4.4	<i>Financial institutions</i>	16
6.5	<i>Institutional Strengthening</i>	17
6.6	<i>Inclusion and Support for Value Chain Initiatives</i>	17
6.6.1	<i>No. of producer group/cooperatives operating sustainably</i>	17
6.6.2	<i>Current production</i>	17
6.6.3	<i>Total HVC production/ HH</i>	18
6.6.4	<i>Total HVC production/cluster</i>	18
6.6.5	<i>Current net return to labor</i>	19
6.7	<i>Group Formation and Strengthening</i>	19
6.7.1	<i>No of groups/coops doing collective marketing, traded volume and number of buyers</i>	20
6.7.2	<i>No of buyers/groups, coops with increased market linkages</i>	20
6.7.3	<i>No of groups/coops having infrastructure, processing facilities etc</i>	22
6.8	<i>Social / Gender Empowerment</i>	22
6.8.1	<i>No. of women in leadership position in producer groups and cooperatives</i>	22
6.8.2	<i>No. of women in leadership position in user groups</i>	23
6.8.3	<i>No. of women in leadership position in marketing groups</i>	24
6.8.4	<i>No. of women in leadership position in marketing groups and coops</i>	24
6.9	<i>Post Harvest Practices</i>	24
6.9.1	<i>No. of producers accessing improved production technologies</i>	24
6.9.2	<i>No. of traders accessing improved processing technologies</i>	25
6.9.3	<i>Current post harvest loss at producers, groups/coops, and traders level</i>	26
6.9.4	<i>Current productive assets</i>	27
6.10	<i>Value Chain Infrastructure and Certification</i>	28
6.10.1	<i>No of producers having linkages with agribusiness</i>	28
6.10.2	<i>Value of products supplied to agribusiness</i>	29

List of Tables

Table 1: Clusters and sample size by value chain and by district	4
Table 2: Number of sample households by ethnicity	8
Table 3: Gender of Respondents	9
Table 4: Gender of household head.....	10
Table 5: Summary of current household asset index	11
Table 6: Average land ownership by cluster and economic strata of respondents (Ropanies)	12
Table 7: No. of household rented in land and average land on rent	12
Table 8: Ownership of land by gender / economic strata and ethnicity.....	13
Table 9: Ownership of house by gender.....	14
Table 10: Number and Percentage of households having different livestock and poultry birds	14
Table 11: Number and percentage of households by dwelling floor material	1
Table 12: Number and percentage of households, by source of drinking water.....	1
Table 13: Number and percentage of households, by type of sanitation	1
Table 14: Number and percentage of children having chronic malnutrition (Height for Age).....	2
Table 15: Number and percentage of children having under-weight (Weight for Age)	2
Table 16: Number and percentage of children having acute malnutrition (weight for height).....	3
Table 17: Education status of sample population by sex (>4 years of age)	4
Table 20: Number of households having income from different sources.....	7
Table 21: Average annual income from different sources	8
Table 22: Volume of Market surplus of apple per household	9
Table 23: Price fixing / governance.....	10
Table 24: Farm gate price of apple per kg.....	10
Table 25: Duration of payment after selling Apple.....	12
Table 26: Service obtained from purchaser/buyer	12
Table 27: Current services per beneficiary type	13
Table 28: Satisfaction on input quality.....	13
Table 29: Learning source of production technology and fertilizer use.....	14
Table 30: Source of apple sapling.....	15
Table 31: Selling places of apple	16
Table 32: Cooperatives operating sustainably	17
Table 33: Average production of apple	18
Table 34: HVC productions by cluster.....	18
Table 35: Cost, Production and Net Profit and Return to labour	19
Table 36: Trading of apple.....	20
Table 37: Sale of apple to different buyers	20
Table 38: Coop's infrastructure facilities, capital and source of income.....	22
Table 39: Cooperatives organization structure	22
Table 40: Decision making role on different activities	23
Table 41: Work division on different activities (Percentage of respondents)	24
Table 42: Percentage of Farmers reporting Crop production activities	25
Table 43: Post harvest loss per household	27
Table 44: Current productive assets.....	27
Table 45: Transport means for marketing	28
Table 46: Source of market demand and price information	29

Annexes

- Annex-1 HVAP M & E Matrix
- Annex-2 Data collection tools

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AEC	Agriculture Enterprise Center
ASC	Agriculture Service Center
CCI	Chamber of Commerce and Industries
COOPs	Cooperatives
DADO	District Agriculture Development Office
DCCI	District Chamber of Commerce and Industry
DOA	Department of Agriculture
DTO	District Technical Office
DVN	Development Vision Nepal
FGD	Focused Group Discussion
FNCCI	Federation of Nepal Chamber of Commerce and Industries
FYM	Farm Yard Manure
GIZ	German Technical Cooperation
Ha	Hectare
HH	Household
HVAP	High Value Agriculture Project in Hills and Mountain Areas
HVC	High Value Crop
IFAD	International Fund for Agricultural Development
KBO	Key Board Operator
KIS	Key Informant Survey
LRP	Local Resource Person
LSU	Livestock Standard Unit
M&E	Monitoring and Evaluation
MAPs	Medicinal and Aromatic Plants
NA	Not Available
NTFP	Non Timber Forest Product
PWR	Participatory Wealth Ranking
RIMS	Result and impact Monitoring System
SNV	Netherlands Development Organization
SRS	Sample Random Sampling
VC	Value Chain
VDC	Village Development Committee

1. BACKGROUND

The HVAP and the DVN Consultancy has entered to an agreement to carry out baseline study of the three HVCs (Apple, Ginger and Vegetable seeds) along HVAP project sites. The IFAD assisted High Value Agriculture Project in Hill and Mountain Areas (HVAP) has focused on pro-poor value chain development in ten districts in the Mid and Far Western Development Region. The regions are characterized by widespread poverty, low human development index and overall deprivation due to poor access to infrastructure and services, and therefore isolation from markets, exacerbated by the conflict and economic exclusion linked to gender, ethnicity, and caste. The improved access with the road linkages has opened up opportunities for market led development in these areas. Several studies have demonstrated the potential to develop specific pro-poor value chains including a comprehensive study by SNV Netherlands Development Organization & Department of Agriculture (DoA) which demonstrated some 18 high value agriculture crops and non-timber forest products/medicinal and aromatic plants (NTFPs/MAPs) that show considerable potential to address the region's widespread poverty.

HVAP covers ten districts: Achham, Dailekh, Jajarkot, Jumla, Kalikot, Salyan, Surkhet, Dolpa, Mugu and Humla in the Far Western and Mid-Western Development Regions and focuses on the development of pro-poor value chains. The opportunities for transition to commercial agriculture based on HVCs have immensely improved in the recent years due to improved infrastructures such as the road links to Surkhet, Dailekh, Jajarkot, Kalikot, Jumla and Achham districts. Dolpa, Mugu, and Humla still lack access these road links however. The road corridors specifically Chhinchu-Jajarkot, Surkhet-Dailekh, and Surkhet-Jumla offer huge potential for the promotion of value chains such as apples, vegetable seeds and ginger. HVAP supports value chain development, which includes the formation/strengthening of agribusinesses and producers groups, the promotion of gender and social inclusion, and support for high value commodity production and post-harvest activities.

2. RATIONALE OF THE STUDY

Despite the comparative advantages in the production of high value crops, several factors are restricting the full realization of the potential. The constraints such as poor technology and extension services, poor linkage with markets, lack of proper storage facilities, lack of processing and value addition and poor infrastructures have all contributed to low level of competitiveness of Nepal's HVCs sub-sector. The value chain approach helps to identify the critical constraints in technology, inputs supply, markets and access to finance. These constraints are addressed by appropriate market based solutions that are feasible and sustainable. Project interventions are facilitating both the solution providers and users, so that the constraints are effectively addressed.

HVAP has already selected potential value chains and developed intervention strategies for some of the selected value chains. The project needs therefore to establish a value chain based "rolling" base line data base for selected indicators for periodic reporting, monitoring and evaluation purposes. The proposed study aims to establish baselines for IFAD RIMS indicators integrated in additional value chain specific indicators. The baseline will mainly cover the socio-economic and demographic aspects, food security, nutrition, assets ownership, and value chain indicators such as production, sales, margins, value addition, (primary) processing, and marketing channels, arrangements and linkages among chain actors. A baseline of HVCs is necessary for planning value chain upgrading activities and actions. The value chain intervention actions and activities are formulated and implemented

for solving constraints, harnessing new opportunities and developing market driven sustainable solutions. Accordingly, this study is envisaged.

3. OBJECTIVES

The overall objective of this study is to support the project in establishing baselines for selected RIMS and VC specific indicators as reflected in the project log-frame and results chain(s).

The specific objectives are to:

- Establish HHs baselines for selected indicators at output, outcomes, and impact level covering (but not limiting to): demographic conditions, assets, food (in) security, nutrition and the general agriculture conditions,
- Establish baselines on relevant indicators at groups/cooperative level and at broader market level,
- Establish baselines on prevalent marketing practices, market infrastructures, and services at district level.

4. SCOPE OF THE STUDY

The scope of the study is defined as follows:

- Carryout baseline studies for apples, vegetable seeds, and ginger value chains in the project districts integrating the required baselines for IFAD RIMS indicators with other value chain specific indicators.
- Develop ready-to-use survey instruments capturing RIMS and VC specific indicators: The RIMS and VC specific indicators are defined and interview schedules have been prepared. As part of developing ready-to-use instruments, the consultant is expected to translate, field test, and finalize those instruments.
- Run a quick pre-test and make the necessary adjustments in the survey instruments (if required).
- Undertake a required number of Focus Group Discussions (FGD), Key Informant Survey (KIS), surveys and other tools to collect reliable information

The baseline study will cover socio-economic and demographic indicators along with food security, nutrition, assets ownership, and value chain indicators including production, margins, value addition, (primary) processing, and market arrangements as included in the project logical framework. The study will also include household information to generate the three mandatory indicators of IFAD's Results and Impact Management System (RIMS)¹:

- # of households with improvement in HH assets
- # Prevalence of child malnutrition
- # of Households that have improved food security (HVAP log frame)
- # of persons receiving project services

¹IFAD Implementation Workshop Bamako8-11 March 2005 (web accessed on 27 July 2012 at www.ifad.org)

5. METHODOLOGY

The study employed qualitative and quantitative methods of gathering primary data using value chain (VC) Household Surveys (HHS) and the Results and Impact Monitoring System (RIMS) approaches in preparing the baseline for the three high value chain commodities i.e. ginger, vegetable seeds and apple. Synchronization of the RIMS and HHS tools was done in designing the HHS tool, data collection, analysis and interpretation of the results. Household assets, income, food security, infrastructural networks, and anthropometric data of the children below the age of five years were collected using the RIMS tool, while the additional VC specific information on VC functions: production, post-harvest practices, processing, and marketing, and VC players were gathered using the HHS, focus group discussion (FGD) and Key Informant Survey (KIS) tools.

5.1 Sampling and Sample Size

Sample size:

In any survey, a statistically representative sample size is required to generate statistically valid information of the survey. To determine the required sample size, prior knowledge on statistical parameters (mean and variance) of the survey universe is necessary. For the purposed survey no information on statistical parameters was available. In such a situation, the required sample size for each value chain (apple, ginger and vegetable seeds) was determined using the following formula:

$$\text{Equation 1: } n_0 = \frac{Z^2 pq}{e^2}$$

Where,

N₀= required sample size

Z= value of normal curve

P= proportion of attribute present in the population

(1-p)= proportion of attribute not present in the population

e= error allowed

The sample size required for each value chain crop was computed to 119 at 95% confidence level and 9% error allowed. Hence, the sample size for the proposed survey was estimated to minimum of 120 in numbers.

Allocation of sample and selection of household

Altogether four clusters was selected for each of the value chain and the required sample size was allocated equally to each cluster equally (i.e 30 samples). To select the sample households within the cluster, the survey team gathered community households with knowledgeable persons/ key informants/ advance farmers and explained on economic strata (extreme poor, near poor, moderately poor and not poor) and facilitated them to categorise individual households of the clusters in four strata based on their economic status... The total sample size (30) for each cluster was allocated into four strata in proportion to their population size.

The sampling procedure and sample size is categorically presented in the following four stages:

Stage 1: Selection of Districts and Sites / Pockets:

Five districts were purposely selected based on specific value chain potential (apple, ginger, and vegetable seed) along three road corridors of the HVAP project districts following a consultative approach with the HVAP/SNV. Likewise, four pocket areas were identified for each HVC. A total of 12 clusters/pockets were purposively selected for the study: four for each of the three value chains apple, vegetable seeds and Ginger (Table-1).

Table 1: Clusters and sample size by value chain and by district

District	Cluster	HVC	Proposed household sample size	Sampled households
		Apple		
Jumla	Patmara		30	29
	Katikswami / Chandan Nath		30	30
	Kanaka sundari		30	30
Kalikot	Phoi Mahadev		30	30
	Sub-total		120	119
		Vegetable seeds		
Jumla	Dillichaur		30	30
	Dhap		30	30
Dailekh	Barah		30	30
Surkhet	Sahare/Thakleni		30	30
	Sub-total		120	120
		Ginger		
Dailekh	Dullu		30	30
Surkhet	Lekpharsa		30	32
Salyan	Ghajaripipal		30	30
	Majhkanda		30	31
	Sub-total		120	123
	Total Sample size		360	362

Minor deviation between the proposed sample size of 360 and the actual sampled households of 362 was based on the field conditions. However, the actual sampled households were more than the proposed sample by two samples. In fact, the little bit higher sample size did not affect the results.

Stage 2: Participatory Wealth Ranking (PWR) for Stratification:

Pre-survey stratification of the households were done to capture the variation on social, economic and agriculture activities of the target population. A list of household head with their land holding, permanent income and number of food sufficiency months to determine economic status of the households within the selected wards with the help of pre designed format using participatory well-being ranking.

The households were ranked based on land holdings, permanent income and food sufficiency months. Composite rank of individual household were prepared and added to stratify the households into four strata (extreme poor, marginal poor, near poor and better-off).

The operational definition of the extreme poor, moderately poor and near poor is adopted from the HVAP (Box-1).

Box 1: Operation definition of extreme poor, moderately poor, near poor and better off:

1. Extreme Poor The extreme poor are mostly illiterate, landless or near-landless households that have few assets. They survive by seasonal migration, bonded labour, the sex trade, gathering from open access resources, pawning or selling possessions and remittances. The project will assist this group by stimulating employment opportunities in cooperatives and value chain operations and improving access to common property resources.

2. Moderately Poor. These households have small landholdings and some livestock. However, they are often indebted, generally lack access to irrigation, but can generate small surpluses of agricultural products for sale. Remittances when available provide additional disposable income. Priorities for this group include measures to increase family income and reduce economic isolation by strengthening linkages to markets, technologies and input supplies, and, for some, access to financial services (both savings and credit) is important.

3. Near Poor. This group includes small farmers suffering from the impact of conflict, debt, and land degradation. While they currently are above the poverty line, they are at risk of slipping back into poverty. Although the project will focus resources on the moderately and extremely poor, it will not deny the opportunity for the near poor to participate in the project, recognizing that while not the poorest households, their position is often precarious and they need a reliable and sustainable source of income to get permanently out of poverty.

4. Not poor / better off: Those households which were above the poverty line and comparatively rich in the community and usually not vulnerable. They were socially and economically better off with adequate landholding and multiple / regular sources of income.

Source: - HVAP

Stage 3: Proportionate Allocation of Sample across Four Strata:

Upon stratification of the farmers by socio-economic status, a proportionate sampling method was applied to determine the sample size across four economic strata of the households in each pocket areas to ensure accuracy and the inclusion of each category of economic profile. The total sample size in each pocket area was 30 households.

Stage 4: Selection of the Household sample size

Upon ensuring the probability of each stratum to be represented in the sample, the households were randomly selected in proportion to their number in each stratum using the systematic random sampling (SRS) procedure. Sampling interval was computed by dividing the total number of beneficiaries by total sample proposed for survey in each stratum in each selected project pocket area. A random number was used to select the first sample household and adding the sample interval to first random number (integer) followed by second sample household beneficiary and so on. The sample selection procedure was repeated until the required number of total sample households is obtained.

5.2 Data Collection

Field data were collected with the help of the 12 Enumerators and 3 Field Supervisors guided by the team of three Researchers. Enumerators were locally hired from the respective project districts. A three day's intensive orientation training was provided to the Enumerators and Field Supervisors in Surkhet before data collection. The purpose of the training was to familiarize the Enumerators on household survey questionnaire, key informants survey questionnaire, focus group discussions, RIMS tool, the use of anthropometric data collection equipment and the general methodology of the study.

Enumerators and the Field Supervisors were trained in the operation of the height and weight measuring equipment at the classroom as well as in the field (AapDali village of Birendranagar Municipality in Surkhet). During the training session, each and every item on the questionnaire was discussed including the questionnaires, sample frame, sampling procedure, survey administration technique as well as the duties and responsibilities of the Enumerators, Field Supervisors, and Research Team during the survey period. Likewise a mockery survey of the HHS and RIMS tools was practiced by the Enumerators among themselves in the classroom during the training session to practice data collection and therefore gain experience in administering the data collection tools beforehand. Necessary adjustments were made on the data collection tools based on the feedback of the pre-testing.

5.3 Quality Control

For quality control, a team of field supervisors was assigned to supervise and guide the Enumerators during data collection. In addition to that the field Supervisors also collected data from the FGDs and secondary information from the key informants. Furthermore, the following mechanisms were adopted to ensure the quality of the study:

- On-site coaching of enumerators by supervisors.
- Supervisor reviewed the data collected by the enumerators then and there at field and provided additional guidance.
- The team of the researchers also visited the field to monitor data collection and provide technical feedback to the Enumerators and Field supervisors.
- Cross-checking of the enumeration at field level in absence of the main researchers was also arranged through the HVAP field staffs as well as the site coordinators of the district agriculture development office in the respective districts.
- Quality check at the data entry level was censured by engaging experienced and qualified key board operators (KBOs) for data entry.
- Some of the survey questionnaires were also randomly checked by the Statistician against the computer-entered data to check the accuracy of data entry work.
- Some of the outliers were verified with the respondents by cell phone interview and corrected.

5.4 Data Analysis

Data was analyzed using appropriate analytical tools i.e. the IFAD software was used for RIMS and FoxPro software was used for analyzing the household survey data. However, data entry was done using the ACCESS software. Data were analyzed by value chain, road corridor and cluster disaggregated by caste/ethnicity, economic strata and gender.

5.5 Report Presentation / Strength

The presentation of the baseline report is made in accordance with the results matrix of the project as required. Data collected using the RIMS and VC survey tools were integrated to make the report a consolidated report in line with the HVAP results matrix, because both tools complement each other. The baseline data analysis and interpretation revealed that most of the impact level indicators were covered by using the RIMS tools while other required data for outcome and outputs were taken from the HVC survey tools (HHs, FGD and KIS).

For the ease of the monitoring and evaluation of the project, only the required baseline indicators are presented as specified in the results matrix logic i.e. impacts / goal level indicators; outcomes / objective level indicators and outputs / service delivery level indicators. Therefore, this report is entirely unique in term of the following specifications:

- Only the required indicators are presented as specified in the results matrix framework of HVAP.
- Presentation by indicators makes it easier for measuring the progress against each indicator in the course of the project implementation and evaluation later on.
- Information generated by administrating the RIMS, HHS, FGD and KIS tools is integrated to provide additional insights in the indicators.
- Collection of the RIMS data along with the VC survey has bolstered the explanation power of the core indicators of the HVAP M & E framework.
- The RIMS, HHs, FGD and KIS tools are complementing each other.
- Information drawn from RIMS, HHs, FGD and KIS is presented in one report adjusting which where fits instead of presenting the findings separately.
- Triangulation of data collected through RIMS, HHs and FGD as well as secondary sources is done to meet the requirements of the specific baseline indicators.

5.6 Limitations

There are mainly two limitations of the study:

- First, a larger sample size (about 900) is required for the RIMS tools, to administer, however, for the purpose of this VC, a limited sample size of 120 / VC was studied since the remaining samples is expected to be covered by other subsequent VC baselines studies. . It is projected the project will cover 900 HHs on rolling basis as it will undertake other value chain under study.
- Secondly, time and resources for conducting large scale surveys was also limiting factor.

PART 1: APPLE VALUE CHAIN

6. BASELINE STUDY FINDINGS

6.1 Introduction

6.1.1 General introduction

The base line study of the apple value chain was conducted in the HVAP project districts along Surkhet - Jumla road corridor.

Apple is one of the high value crops of Nepal which is produced throughout the Himalayan belt of the country, especially in the Mid-Western Developmental Region (MWDR). To prepare the baseline data, a total of 119 apple producing farmers were surveyed in the four selected clusters (Patmara, Kartikswami, Kanaka sundari and Phui mahadev) along Surkhet - Jumla road corridor

6.1.2 Background of the Respondents

Socio-economic background of the respondents is described below in terms of the ethnicity, gender, and economic stratum of the households.

Ethnicity - Ethnic composition of the households in the selected clusters of Patmara, Marginal, Kanaka sundari, and Phui mahadev revealed that the mixed ethnic groups reside along Surkhet - Jumla road corridors. Household survey revealed that a combination of various ethnic groups such as Dalits (5.9%), Janjatis (10.1%) and others (84%) co-exist along the clusters as displayed in the table below (Table-2).

Classification of ethnic bases by the economic strata disclosed that poverty was across all ethnic groups but the Dalits were much poorer i.e. amongst the extreme poor 20% were Dalits; 30% Janjatis and the another half (50%) were the other ethnicities. Disaggregation of data by gender is presented below.

Table 2: Number of sample households by ethnicity

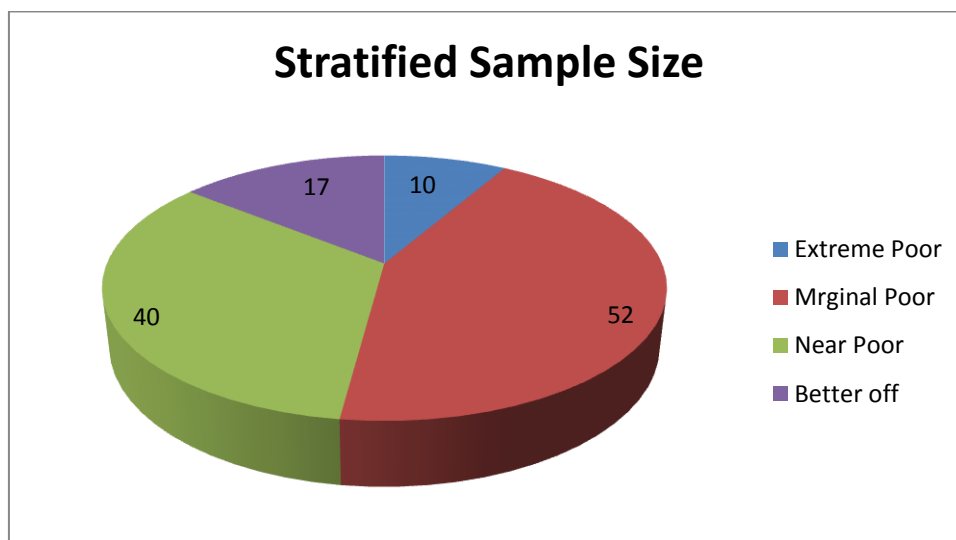
Disaggregation by	Others		Janjatis		Dalit		Sample
	No.	%	No.	%	No.	%	
By Clusters							
Patmara	28	96.6	0	0	1	3.5	29
Kartikswami	26	86.7	0	0	4	13.3	30
KanakaSundari	18	60.0	12	40	0	0.0	30
Phui mahadev	28	93.3	0	0	2	6.7	30
Overall	100	84.0	12	10.1	7	5.9	119
By Economic strata							
Extreme Poor	5	50.0	3	30.0	2	20.0	10
Marginal Poor	41	78.9	6	11.5	5	9.6	52
Near Poor	38	95.0	2	5.0	0	0.0	40
Better off	16	94.1	1	5.9	0	0.0	17
Overall	100	84.0	12	10.1	7	5.9	119
By Gender							

Note: Altogether seven households are female headed households (belonged to other ethnic group)

The pie diagram below displays that out of total 119 sample farmers, there were 10 extreme poor; 52 marginal poor; 40 near poor and 17 better off households (Fig-1).

This is imperative to note that the stratification of the farmers was based on their own perceptions reflected at the participatory wealth ranking (PWR) exercise conducted before random sampling from each stratum.

Fig-1 Representation of all strata of farmers



Gender Composition of the Respondents - The respondents were the household heads. In absence of the household head (out of country to seek seasonal jobs in India and abroad), the second person in-charge of taking responsibility of the household management was interviewed. Majority of the respondents were male (71%) followed by female (29%) as displayed in the following table (Table-3).

Economic breakdown shows that 20% of female respondents were extreme poor while 33% of the female respondents were marginal poor followed by 30% near poor and 18% better off.

Further classification of the respondents by ethnic groups revealed that female respondents of Dalit group were comprised of 8%; Janjatis 57% and others 29 per cent.

Table 3: Gender of Respondents

Disaggregation by	Male		Female		Sample
	No.	%	No.	%	
Cluster					
Patmara	16	55.2	13	44.8	29
Kartikswami	18	60.0	12	40.0	30
Kanaka sundari	24	80.0	6	20.0	30
Phui mahadev	27	90.0	3	10.0	30
Overall	85	71.4	34	28.6	119
Economic strata					
Extreme Poor	8	80.0	2	20.0	10
Marginal Poor	35	67.3	17	32.7	52
Near Poor	28	70.0	12	30.0	40
Better off	14	82.4	3	17.7	17
Overall	85	71.4	34	28.6	119
Ethnicity					
Janjatis	11	91.7	1	8.3	12
Dalit	3	42.9	4	57.1	7
Others	71	71.0	29	29.0	100
Overall	85	71.4	34	28.6	119

Gender of the Household Head- Baseline study revealed that an absolute majority of the apple producing households were headed by males (94%) as against female headed households (6%) (Table-4).

Gender of the household heads across economic strata revealed that amongst the extreme poor. None of the households was female headed. Likewise, under marginal poor and near poor 8% were female headed in each while none under better off category.

Ethnic composition of the household heads was zero per cent female, dalits and Janjatis and others (7%).

Table 4: Gender of household head

Disaggregation by	Male		Female		Sample
	No.	%	No.	%	
Clusters					
Patmara	28	96.6	1	3.5	29
Kartickswami	27	90.0	3	10.0	30
Kanaka sundari	28	93.3	2	6.7	30
Phui mahadev	29	96.7	1	3.3	30
Overall	112	94.1	7	5.9	119
Economic strata					
Extreme Poor	10	100.0	0	0.0	10
Marginal Poor	48	92.3	4	7.7	52
Near Poor	37	92.5	3	7.5	40
Better off	17	100.0	0	0.0	17
Overall	112	94.1	7	5.9	119
Ethnicity					
Janjatis	12	100.0	0	0.0	12
Dalit	7	100.0	0	0.0	7
Others	93	93.0	7	7.0	100
Overall	112	94.1	7	5.9	119

6.2 Baseline Status of Impact Indicators

To provide the basis of measurement of the overall goal of the HVAP to reduce poverty and vulnerability of women and men in hill and mountain areas of the Mid and Far-Western Developmental region. Therefore, the overall goal has to be seen from the following set of indicators as mentioned in the HVAP-M&E matrix. Almost all impact level indicators were measured using the RIMS tool.

Current status of the key impact level indicators such as the household assets, access to drinking water and education, type of housing, food security situation, literacy, sanitation, food security situation, and income are illustrated as they appear. The HVAP results framework has demanded the baseline status of the following high level indicators:

- Current HH asset index
- Literacy rate
- School enrolment rate
- Sanitation status

Anthropometry

- Height for age
- Weight for age
- Weight for height

Food Security Status

- No. of HHs experiencing one hungry season

- No. of months of the first hungry season
- No. of HHs experiencing two hungry seasons
- No. of months of the second hungry season

6.2.1 Current Household Asset Index

Household asset index is computed using three approaches i.e. Percentage for land under apple VC; ii. Livestock standard unit (LSU) for livestock; and iii. Logical scoring method for other assets. The scoring method for LSU and household asset.

Land under apple - This is computed based on the average land household land size under apple with reference to average total household land holding of the respondents. Currently, farmers grow apple in 0.45 proportion of their total land per household (Table-5).

Livestock standard unit (LSU) - The LSU is calculated based on the established theoretical value of livestock species. The LSU as per convention, via the use of specific coefficients established initially on the basis of the nutritional or feed requirement of each type of animal. The reference unit used for the calculation of livestock units (=1 LSU) is the grazing equivalent of one adult dairy cow, without additional concentrated food stuffs. Current LSU in the surveyed clusters is 4.9 meaning that the farmers have livestock assets equivalent to 4.9 cows.

Other household assets and facilities - This is estimated based on the logical approach applied separately for each household asset and facility. The current index for housing based on the housing floor is 0.22 as against the standard value of 1 as desired. Similarly, the index for toilet is 0.53; cooking fuel 0.21; drinking water 0.83; tools 0.44; other assets and facilities 1.65 and 0.36 for communication index.

Table 5: Summary of current household asset index

No.	Assets	Index
1	Livestock (LSU)	4.9
2	Floor of the house	0.22
3	Toilets	0.53
4	Cooking Fuel	0.21
5	Drinking water	0.83
6	Tools	0.44
7	Other asset i.e. TV, vehicles etc	1.65
8	Communication	0.36
	Total	9.59
	Land under apple (proportion)	0.45

6.2.2 Landholding and Ownership

Apple farmers along Surkhet - Jumla road corridors have an average household landholding of 12.91Ropanies of which 2.64 Khet (Low land) and Bari 10.27 Ropanies. One Ropani = 0.2 ha (Table-6).

Likewise, the land holding according to economic status of the surveyed households the extreme poor households have the smallest landholding of an average 4.6 Ropanies followed by marginal poor 6.77 Ropanies. In the same manner, near poor have an average land holding of 14.43 Ropanies and better off households have the largest average holding of 33 Ropanies.

Landholding by ethnic groups displays that Dalits have an average landholding of 6.71; Janjatis 7.42 and others have an average land holding of 14 Ropanies.

Table 6: Average land ownership by cluster and economic strata of respondents (Ropanies)

Disaggregation by	Khet			Bari			Pakho	Others	Total Khet	Total (Bari+ Pakho + Others)	Total
	Irrigated	Un-irrigated	Irrigable	Irrigated	Un-irrigated	Irrigable					
By Cluster											
Patmara	0.76	0.02	0	0.36	0	0.34	17.76	0	0.79	18.48	19.28
Kartikswami	5.47	0.05	0	0.87	0.15	0.1	7.84	0	5.53	8.97	14.5
Kanaka sundari	2.19	0	0	1.27	0.76	0.15	3.67	0	2.2	5.83	8.03
Phui mahadev	2.02	0	0	2.28	0.17	0.17	5	0.47	2.03	8.07	10.1
Overall	2.62	0.02	0	1.2	0.27	0.19	8.49	0.12	2.64	10.27	12.91
Farmer type by economic category											
Extreme Poor	0.63	0.15	0	0.2	0.2	0.9	2	0.5	0.8	3.8	4.6
Marginal Poor	1.45	0	0	1.32	0.16	0.09	3.6	0.17	1.44	5.33	6.77
Near Poor	3.13	0.01	0	1.24	0.28	0.15	9.61	0	3.15	11.28	14.43
Better off	6.21	0	0	1.35	0.65	0.18	24.63	0	6.24	26.82	33.06
Overall	2.62	0.02	0	1.2	0.27	0.19	8.49	0.12	2.64	10.27	12.91
By Ethnicity											
Janjatis	3.19	0	0	0.67	0.62	0.21	2.75	0	3.17	4.25	7.42
Dalit	0.86	0	0	1.57	0	0.29	4	0	0.86	5.86	6.71
Others	2.68	0.02	0	1.24	0.25	0.18	9.49	0.14	2.7	11.3	14
Overall	2.62	0.02	0	1.2	0.27	0.19	8.49	0.12	2.64	10.27	12.91

Apple farmers rented in land shows that a total of 112.6% farmers had rented-in land while 8% had rented-out their land to others (Table- 7).

Disaggregation by economic strata of the respondents revealed that 20% of the extreme poor; 17% of marginal poor; 10% of near poor and zero per cent of better off farmers had rented in lands.

Table 7: No. of household rented in land and average land on rent

Disaggregation by	Rented in household		Average land (Ropani)		
	No.	%	On rent	On share cropping	Both
Cluster					
Patmara	2	6.9	0	0	0
Kartikswami	6	20	0	0.2	0.2
Kanaka sundari	3	10	0	0.07	0.07
Phui mahadev	4	13.33	0.13	0	0.13
Overall	15	12.61	0.03	0.07	0.1
Economic strata					
Extreme Poor	2	20	0	0.2	0.2
Marginal Poor	9	17.31	0.06	0.08	0.13
Near Poor	4	10	0.03	0.05	0.08
Better off	0	0	0	0	0
Overall	15	12.61	0.03	0.07	0.1
Ethnicity					
Janjatis	2	16.67	0	0.17	0.17

Disaggregation by	Rented in household		Average land (Ropani)		
	No.	%	On rent	On share cropping	Both
Dalit	3	42.86	0.14	0.29	0.43
Others	10	10	0.03	0.04	0.07
Overall	15	12.61	0.03	0.07	0.1

The baseline study revealed that females and males both own land, however, female ownership to land is limited to 3.87% as compared to males 83.43 per cent on an average of four clusters (Table- 8).

Further analysis of land ownership by economic strata of the households disclosed that females have no ownership to land as against their male counterparts amongst the extreme poor. Likewise, among the marginal poor about 3.9% of females own land compared to 83.12 % of their male counterparts while 6.98% females have their ownership to land under near poor category of the farmer types. Contrary to that, zero per cent of the better off households have joint ownership to land

Gender disaggregated land ownership by ethnicity groups indicates that Dalit and Janjatis had no land ownership while the others had 4.83 per cent. However, Dalits and Janjatis had joint ownership of male and female of 33% and 25% respectively.

Table 8: Ownership of land by gender / economic strata and ethnicity

Disaggregation by	Female	Male	Both
Cluster			
Patmara	4.65	90.7	4.65
Kartikswami	8.16	65.31	26.53
Kanaka sundari	2.22	80	17.78
Phui mahadev	0	100	0
Overall	3.87	83.43	12.71
Socio-economic Strata			
Extreme Poor	0	88.89	11.11
Marginal Poor	3.9	83.12	12.99
Near Poor	6.45	85.48	8.06
Better off	0	75	25
Overall	3.87	83.43	12.71
Ethnicity			
Janjatis	0	75	25
Dalit	0	66.67	33.33
Others	4.83	86.21	8.97
Overall	3.87	83.43	12.71

The study disclosed that an absolute majority of males (92%) own houses compared to 7% females (Table-9).

The percentage of females having ownership to house was very small across all economic categories while joint ownership was 11 per cent amongst the extreme poor; 3.85% amongst the marginal poor; 11.29% amongst the near poor and zero per cent amongst the better off households.

Disaggregation by ethnic groups reflected that about 0% of Dalit females, 8.33% of Janjati females and 6.85% other females had ownership to house. Nevertheless, 16.67% of Dalits have joint ownership of male and female both.

Table 9: Ownership of house by gender

Disaggregation by		Female	Male	Both
Cluster				
Patmara		6.98	93.02	0
Kartikswami		12.24	81.63	6.12
Kanaka sundari		6.67	93.33	0
Phui mahadev		0	100	0
Overall		6.59	91.76	1.65
Economic strata				
Extreme Poor		11.11	88.89	0
Marginal Poor		3.85	93.59	2.56
Near Poor		11.29	87.1	1.61
Better off		0	100	0
Overall		6.59	91.76	1.65
Ethnicity				
Janjatis		8.33	91.67	0
Dalit		0	83.33	16.67
Others		6.85	92.47	0.68
Overall		6.59	91.76	1.65

6.2.3 Livestock holding

As Nepalese farming is characterized by a mixed-farming system that grows a variety of crops and simultaneously raises livestock too. In the same manner the apple farmers also raise diverse livestock such as 22.7% households have raised buffaloes; an absolute per cent of 77.3 percent have bullocks; 75.6% have milch cows; 31.1% have goats; 16.8% have sheep; 1.7% have pigs; and 26.1% farmers have poultry too. (Table-10)

Livestock holding by economic strata disclosed that extreme poor had lesser holdings of livestock assets as compared to marginal poor, near poor and better off farmers especially in case of large animals like buffaloes and bullocks, cows only 0% of the extreme poor had buffaloes; 40% had bullocks and 70% had cows.

By ethnic groups livestock holding was mixed. About 0% of Dalits had buffaloes; 71% had bullocks compared to 0% buffaloes and 58% bullocks of Janjatis.

Table 10: Number and Percentage of households having different livestock and poultry birds

Disaggregation by	Buffalo		Bullock		Cow		Goat		Sheep		Pig		Poultry		Others	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Cluster																
Patmara	9	31.0	22	75.9	23	79.3	13	44.8	8	27.6	2	6.9	7	24.1	10	34.5
Kartikswami	8	26.7	23	76.7	22	73.3	5	16.7	1	3.3	0	0.0	2	6.7	7	23.3
Kanaka sundari	0	0.0	22	73.3	24	80.0	9	30.0	6	20.0	0	0.0	6	20.0	14	46.7
Phui mahadev	10	33.3	25	83.3	21	70.0	10	33.3	5	16.7	0	0.0	16	53.3	10	33.3
Overall	27	22.7	92	77.3	90	75.6	37	31.1	20	16.8	2	1.7	31	26.1	41	34.5
Economic strata																
Extreme Poor	1	10.0	4	40.0	7	70.0	1	10.0	0	0.0	0	0.0	0	0.0	2	20.0
Marginal Poor	6	11.5	42	80.8	42	80.8	16	30.8	10	19.2	0	0.0	20	38.5	17	32.7
Near Poor	12	30.0	31	77.5	29	72.5	16	40.0	7	17.5	1	2.5	7	17.5	15	37.5
Better off	8	47.1	15	88.2	12	70.6	4	23.5	3	17.7	1	5.9	4	23.5	7	41.2
Overall	27	22.7	92	77.3	90	75.6	37	31.1	20	16.8	2	1.7	31	26.1	41	34.5
Ethnicity																
Janjatis	0	0.0	7	58.3	8	66.7	2	16.7	0	0.0	0	0.0	0	0.0	3	25.0
Dalit	0	0.0	5	71.4	6	85.7	3	42.9	0	0.0	0	0.0	3	42.9	1	14.3
Others	27	27.0	80	80.0	76	76.0	32	32.0	20	20.0	2	2.0	28	28.0	37	37.0
Overall	27	22.7	92	77.3	90	75.6	37	31.1	20	16.8	2	1.7	31	26.1	41	34.5

6.2.4 Type of housing

Pooled analysis of the HHS and RIMS data revealed that, a majority of the households (58%) had the earthen-sand house floor; about 23% of the households had dung lapidated floor, and about 15% had their dwelling floor made of wooden planks. Only 4% of the households had carpet (Table-11).

Analysis of data by four economic stratum disclosed that 80% of extreme poor, 75% of marginal poor; 38% of near poor, and 41% of the better off households had a earth-sand made dwelling floor; while 10%, 15%, 13% and 24% respectively had wooden plan type of dwelling floor.

Ethnicity wise analysis of the type of housing by the made of dwelling floor showed that a large majority of the households across ethnicities had earth - sand made dwelling floor i.e. 71% Dalits ,67% Janjatis and 56% of other ethnicities had earth-san made dwelling floor of their houses.

Table 11: Number and percentage of households by dwelling floor material

Disaggregation by	Earth-Sand		Dung		Wood planks		Palm-Bamboo		Polished wood		Vinyl or asphalt strips		Ceramics tiles		Cement		Carpets		Others			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Cluster																						
Patmara	12	41	12	41	3	10	0	0	0	0	0	0	0	0	0	0	0	0	2	7	0	0
Kartickswami	12	40	14	47	1	3	0	0	0	0	0	0	0	0	0	0	0	0	3	10	0	0
Kanak Sundari	24	80	0	0	6	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phui mahadev	21	70	1	3	8	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	69	58	27	23	18	15	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	0
Economic strata																						
Extreme Poor	8	80	1	10	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Poor	39	75	5	10	8	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Near Poor	15	38	15	38	5	13	0	0	0	0	0	0	0	0	0	0	0	0	5	13	0	0
Better off	7	41	6	35	4	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	69	58	27	23	18	15	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	0
Ethnicity																						
Janjatis	8	67	0	0	4	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dalit	5	71	2	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	56	56	25	25	14	14	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0
Overall	69	58	27	23	18	15	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	0

6.2.5 Drinking water

Combined analysis of the HHS and the RIMS data by cluster showed that 29% of the households had drinking water facility piped to their house, but the rest were deprived of this facility. A large majority of 69% households had their source of drinking water from the public tap (natural spring / water supply system); 24% households had water tap piped into yard (Table- 12).

Economic classification disclosed that an overwhelming majority of 90% of the extreme poor households had their source of water from the public tap. Similarly, 81% marginal poor, 55% near poor and 53% better off households had access to drinking water from public tap. Ethnically, 100% of Dalits and Janjatis and 63% other ethnicities said that the source of water to them was the public tap.

Table 12: Number and percentage of households, by source of drinking water

Strata	Piped into house		Piped into yard or plot		Public Tap		Tube-well bore hole with pump		Protected dug well		Protected spring		Rainwater collection		Bottled water		Unprotected dug well		Unprotected spring		Pond, river, stream		Tanker, truck, vendor		Other		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Patmara	1	3	13	45	14	48	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kartickswami	0	0	13	43	17	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kanak Sundari	4	13	3	10	23	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phui mahadev	1	3	0	0	28	93	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0
Overall	6	5	29	24	82	69	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Extreme Poor	0	0	0	0	9	90	0	0	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Poor	4	8	6	12	42	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Near Poor	2	5	15	38	22	55	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0
Better off	0	0	8	47	9	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	6	5	29	24	82	69	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Janjatis	0	0	0	0	12	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dalit	0	0	0	0	7	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	6	6	29	29	63	63	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Overall	6	5	29	24	82	69	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0

6.2.6 Sanitation status

Pooled analysis of the HHS and the RIMS data disclosed that 7% of the households had no sanitation facility as they used practiced open defecation while 21% had tradition open pits, and 28% households had improved latrine pits. However, 43% of the surveyed households had pour flush latrine facility; 2% had flush latrines (Table-13)

Disaggregation by economic strata reflected that 10% of the extreme poor, 4 % marginal poor, and 13% near poor households had no sanitation facility at all and practiced open field defecation. About 10% extreme poor; 21% marginal poor; 68% near poor; and 71% better off households had poor flush latrine facility.

Looking from the ethnic perspectives, the analysis showed that 29% Dalits; 50% Janjatis and 17% others had open pit latrine while 14% Dalits, 50% Janjatis and 26% others had improved pit latrine facility.

Table 13: Number and percentage of households, by type of sanitation

Disaggregation by	No facility- Bush -Field		Open Pit, traditional pit latrine		Improved Pit latrine (VIP)		Pour flush latrine		Flush toilet		Others	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cluster												
Patmara	1	3	0	0	0	0	28	97	0	0	0	0
Kartickswami	6	20	2	7	0	0	21	70	1	3	0	0
Kanak Sundari	1	3	17	57	10	33	1	3	1	3	0	0
Phui mahadev	0	0	6	20	23	77	1	3	0	0	0	0
Overall	8	7	25	21	33	28	51	43	2	2	0	0
Economic strata												
Extreme Poor	1	10	5	50	3	30	1	10	0	0	0	0
Marginal Poor	2	4	16	31	23	44	11	21	0	0	0	0
Near Poor	5	13	4	10	4	10	27	68	0	0	0	0
Better off	0	0	0	0	3	18	12	71	2	12	0	0
Overall	8	7	25	21	33	28	51	43	2	2	0	0
Ethnicity												
Janjatis	0	0	6	50	6	50	0	0	0	0	0	0
Dalit	0	0	2	29	1	14	4	57	0	0	0	0
Others	8	8	17	17	26	26	47	47	2	2	0	0
Overall	8	7	25	21	33	28	51	43	2	2	0	0

Anthropometry

The RIMS tool has also inbuilt scope of gathering anthropometric data for the children below the age of 5 years. The RIMS tool was administered in all four selected clusters of the HVAP project sites. The results generated through the RIMS software displayed three key anthropometric parameters: height for age, weight for age, and weight for height of which the Z-score was computed by the in-built RIMS software. Where, Z-score is a common statistical way of standardizing data on one scale so a comparison can take place using the z-score. The z-score is like a common yard stick for all types of data. Each z-score corresponds to a point in a normal distribution and as such is sometimes called a normal

deviate since a z-score will describe how much a point deviates from a mean or specification point. The key anthropometric parameters are described below:

6.2.7 Height for age

Data generated through the RIMS indicated that about 56% of boys and 44% of the girl children had faced chronic malnutrition that had caused stunted growth showing the relationship of height for age. About 54% of boys and 31% of girl children were above the Z-score while 46% boys and 69% girl children were below the Z-score (Table-14).

Table 14: Number and percentage of children having chronic malnutrition (Height for Age)

Chronic malnutrition children (height for age)	No of respondents in sample and percentage of the total sample		No of children and percent above -2 Z-Score		No of children and percent Below -2 Z-Score	
	Total	73		41	46%	32
Boys	41	56%	19	46%	22	54%
Girls	32	44%	22	69%	10	31%
95 % Confidence interval:			44.83			42.84

6.2.8 Weight for age

RIMS also generated data on weight for age. Weight for age relationship showed that 85% of boys and 91% of girl children were underweight (Table- 15)

Table 15: Number and percentage of children having under-weight (Weight for Age)

Underweight children (weight for age)	No of respondents in sample and percentage of the total sample		No of children and percent above -2 Z-Score		No of children and percent Below -2 Z-Score	
	Total	73		64	88%	9
Boys	41	56%	35	85%	6	15%
Girls	32	44%	29	91%	3	9%
95 % Confidence interval:			12.99		11.67	

6.2.9 Weight for height

Anthropometric data of the RIMS produced children's weight for height shows that 100% of boys and 97% of girls were above Z-score while 0% boys and 1% girls were below Z-score (Table-16).

Table 16: Number and percentage of children having acute malnutrition (weight for height)

Acute malnutrition children (weight for height)	No of respondents in sample and percentage of the total sample		No of children and percent above -2 Z-Score		No of children and percent Below -2 Z-Score	
	No	Percentage	No	Percentage	No	Percentage
Total	73		72	99%	1	1%
Boys	41	56%	41	100%	0	0%
Girls	32	44%	31	97%	1	3%
95 % Confidence interval:			1.6		1.14	

6.2.10 Literacy rate

The table below on educational status showed in totality of the four clusters female literacy rate was 56% as against males 79 per cent.

Economically, the extreme poor women had a literacy rate for 47% and their male counterparts had 48% literacy rate.

Ethnically, 61% Dalit women were literate compared to 70% of their male counterparts.

6.2.11 School enrolment rate

The household survey in four clusters revealed that 19% of the females and 16% of the males had attained primary education followed by 17% females and 27% males who had obtained secondary education. While about 4% females and 13% males had obtained graduate level education (Table-17).

According to economic classification, 29% of the extreme poor females, 7% marginal poor females, and 12% near poor females and another 14% better off females were enrolled in primary education. Similarly, 23% marginal poor had primary education; 10% had secondary; and 2% had obtained bachelors level education. Amongst the near poor households about 13% females had primary education; 26% had secondary education and 6% had achieved bachelor level graduation. Likewise, better off households had access to higher education i.e. 17% females under this economic strata had secured primary education, 17% females had secondary education and 4% females had obtained bachelor level higher education.

In totality of the ethnic groups about 11% Dalits females have primary education; 17% secondary and 6% had graduate level education.

Table 17: Education status of sample population by sex (>4 years of age)

Disaggregation by	Illiterate				Literate Only				Primary				Secondary				Graduate				Literate				Total Population
	Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		Male		Female		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Cluster																									
Patmara	8	11	30	48	12	16	6	10	20	27	11	17	26	36	14	22	7	10	2	3	65	89	33	52	136
Kartik swami	7	9	27	36	5	6	9	12	11	14	12	16	40	51	23	30	16	20	5	7	72	91	49	64	155
Kanaka sundari	29	34	40	50	28	33	15	19	8	9	16	20	8	9	5	6	12	14	4	5	56	66	40	50	165
Phui mahadev	22	29	39	44	26	34	21	24	12	16	18	20	12	16	10	11	5	6	1	1	55	71	50	56	166
Overall	66	21	136	44	71	23	51	17	51	16	57	19	86	27	52	17	40	13	12	4	248	79	172	56	622
Economic strata																									
Extreme Poor	15	52	9	53	7	24	1	6	2	7	5	29	4	14	2	12	1	3	0	0	14	48	8	47	46
Marginal Poor	34	25	62	47	38	28	25	19	21	16	30	23	30	22	13	10	12	9	3	2	101	75	71	53	268
Near Poor	12	13	43	38	16	17	19	17	18	19	14	13	36	38	29	26	12	13	7	6	82	87	69	62	206
Better off	5	9	22	48	10	18	6	13	10	18	8	17	16	29	8	17	15	27	2	4	51	91	24	52	102
Overall	66	21	136	44	71	23	51	17	51	16	57	19	86	27	52	17	40	13	12	4	248	79	172	56	622
	Note: 16 member of households out-migrated to different places for employment																								
Ethnicity																									
Janjatis	12	33	12	35	14	39	7	21	6	17	12	35	3	8	2	6	1	3	1	3	24	67	22	65	70
Dalit	8	30	7	39	5	19	5	28	3	11	2	11	9	33	3	17	2	7	1	6	19	70	11	61	45
Others	46	18	117	46	52	21	39	15	42	17	43	17	74	29	47	18	37	15	10	4	205	82	139	54	507
Overall	66	21	136	44	71	23	51	17	51	16	57	19	86	27	52	17	40	13	12	4	248	79	172	56	622

6.2.12 Food Security / Hungry Season

First hungry season

Administration of RIMS along with HHs generated food security data revealed the number of households experiencing one hungry season, number of months of the first hungry season. The cluster analysis showed that the number of households experiencing first hungry seasons and number of months of the hungry season as follows. About 6% of households faced first hungry season for about two (2) months while 21% of the households faced it for three (3) months, a large majority of 66% for four (4) month ; six per cent for five month and two (2%) for five months (Table-18).

Economic strata wise analysis of the same set of data disclosed that 10% of extreme poor, 5% of marginal poor, 6% of near poor and zero per cent of the better off households face first hungry season for two (2) months. Similarly, 40% of the extreme poor, 24% of the marginal poor, 6% of near poor and zero per cent of the better off households face first hungry season for three months while 40% of the extreme poor; 61% of the marginal poor; and 89% of near poor households faced first hungry season for four months.

Data analysis by ethnicity indicated that 20% of Dalits faced first hungry season for three months; 40% for four months and another 40% for five months.

Table 18: Number and percentage of household's response first hungry season

Disaggregation by	2 months		3 months		4 months		5 months		6 months		7 months		8 months		9 months		10 months		11 months		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Cluster																					
Patmara	0	0	3	17.7	14	82.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kartickswami	1	10	1	10	8	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kanak Sundari	2	10.5	5	26.3	11	57.9	0	0	1	5.26	0	0	0	0	0	0	0	0	0	0	0
Phui mahadev	1	4.55	5	22.7	12	54.6	4	18.2	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	4	5.88	14	20.6	45	66.2	4	5.88	1	1.47	0	0	0	0	0	0	0	0	0	0	0
Economic strata																					
Extreme Poor	1	10	4	40	4	40	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0
Marginal Poor	2	5.26	9	23.7	23	60.5	4	10.5	0	0	0	0	0	0	0	0	0	0	0	0	0
Near Poor	1	5.56	1	5.56	16	88.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Better off	0	0	0	0	2	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	4	5.88	14	20.6	45	66.2	4	5.88	1	1.47	0	0	0	0	0	0	0	0	0	0	0
Ethnicity																					
Janjatis	1	12.5	3	37.5	3	37.5	0	0	1	12.5	0	0	0	0	0	0	0	0	0	0	0
Dalit	0	0	1	20	2	40	2	40	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	3	5.45	10	18.2	40	72.7	2	3.64	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	4	5.88	14	20.6	45	66.2	4	5.88	1	1.47	0	0	0	0	0	0	0	0	0	0	0

Second hungry season

Cluster wise data analysis revealed that 33% of the households faced second hungry season for two months; 65% for three months; and two per cent for four months. Disaggregated data by economic strata indicated that a majority of 86% of the extreme poor; 65% of marginal poor; 40% of near poor and none of the better off households faced second hungry season.

Ethnicity wise analysis displayed that 20% of Dalits, 43% of Janjatis and 32% of other ethnicities also faced second hungry season for two months. While 60% of the Dalits faced second hungry season for three months and another 20% Dalits faced it for four months (Table-19).

Table 19: Number and percentage of household's response second hungry seasons

Disaggregation by	2 months		3 months		4 months		5 months		6 months		7 months		8 months		9 months		10 months		11 months			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Cluster																						
Patmara	2	67	1	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kartickswami	2	33	4	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kanak Sundari	6	38	10	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phui mahadev	4	22	13	72	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	14	33	28	65	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Economic strata																						
Extreme Poor	1	14	6	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marginal Poor	10	32	20	65	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Near Poor	3	60	2	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Better off	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	14	33	28	65	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ethnicity																						
Janjatis	3	43	4	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dalit	1	20	3	60	1	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	10	32	21	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overall	14	33	28	65	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6.3 Pro - Poor Value Chain Development

The baseline provides current status to measure the pro-poor value chain development in the course of the project period. The HVAP project has expected that the rural poor, especially women and marginal groups are integrated in high value agriculture and NTFP/MAP value chains, markets and have improved income, employment opportunities and ability to respond to market demand and opportunities based on marketing agreements with private agribusiness. For this purpose the HVAP results matrix required baseline on the following key indicators:

- Current income
- Market surplus
- Current farm gate price
- Current payment timings and mode
- Current services provided by buyers
- Current services per beneficiary type
- Agribusinesses Satisfaction Index (Likert 3 pt scale)
- Access to technical services from Project / Line agencies
- Type of service received from CCIs

6.3.1 Current sources of income

In totality of the four clusters of two road corridors, agriculture was the main source of income to 99% followed by livestock to 19%, wages to 55%, and foreign employment to 7%, NTFPs to 7% and salaried job to 29% of the households. Similarly trade and industry was counted as a source of income to 14% of the households while about 3% households reported pension as an additional source of income (Table-20).

Disaggregated data by economic strata showed that agriculture was the main source of income to 100% of extreme poor, followed by 80% wages. Similarly, 98% marginal poor had agriculture as a main source of income followed by 69% wages. Hundred per cent of near poor and better off farmers had agriculture as a main source of income

Ethnicity-wise analysis of the sources of household income showed that agriculture was the main source of income to 100% Dalits; 100% Janjatis and 99% others. Likewise, livestock was the source of income to 29% Dalits; 17% Janjatis and 19% to others.

Table 20: Number of households having income from different sources

Disaggregation by	Agriculture Production		Livestock production		Non timber forest products		Trade/ Industry		Wages		Permanent Services		Foreign employment		Pension	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cluster																
Patmara	29	100	6	21	7	24	2	7	14	48	8	28	3	10	0	0
Kartikswami	30	100	9	30	0	0	5	17	6	20	15	50	0	0	2	7
Kayak Sungari	30	100	3	10	1	3	5	17	20	67	7	23	4	13	1	3
Phui mahadev	29	97	5	17	0	0	5	17	25	83	4	13	1	3	0	0
Overall	118	99	23	19	8	7	17	14	65	55	34	29	8	7	3	3
Economic strata																
Extreme Poor	10	100	1	10	0	0	1	10	8	80	1	10	1	10	0	0
Marginal Poor	51	98	7	13	1	2	5	10	36	69	12	23	6	12	1	2
Near Poor	40	100	8	20	4	10	7	18	17	43	13	33	1	3	2	5
Better off	17	100	7	41	3	18	4	24	4	24	8	47	0	0	0	0
Overall	118	99	23	19	8	7	17	14	65	55	34	29	8	7	3	3
Ethnicity																
Janjatis	12	100	2	17	1	8	2	17	8	67	1	8	2	17	1	8
Dalit	7	100	2	29	0	0	0	0	4	57	2	29	0	0	0	0
Others	99	99	19	19	7	7	15	15	53	53	31	31	6	6	2	2
Overall	118	99	23	19	8	7	17	14	65	55	34	29	8	7	3	3

6.3.2 Current annual household income by cluster / road corridor

Average annual household income of the respondents in four clusters was NRs. 171482 to which foreign employment counted the largest share of NRs. 5,025 followed by agriculture NRs. 62,161 (Table-21).

Disaggregation by economic strata revealed that the extreme poor share the lowest Income from agricultural production (NRs10,200) followed by the marginal poor (NRs30,963), near poor (NRs74,225) and the better off farmers (NRs. 15,9765). On the contrary, the income from foreign employment was the highest for the near poor, extreme poor NRs. 80,000.

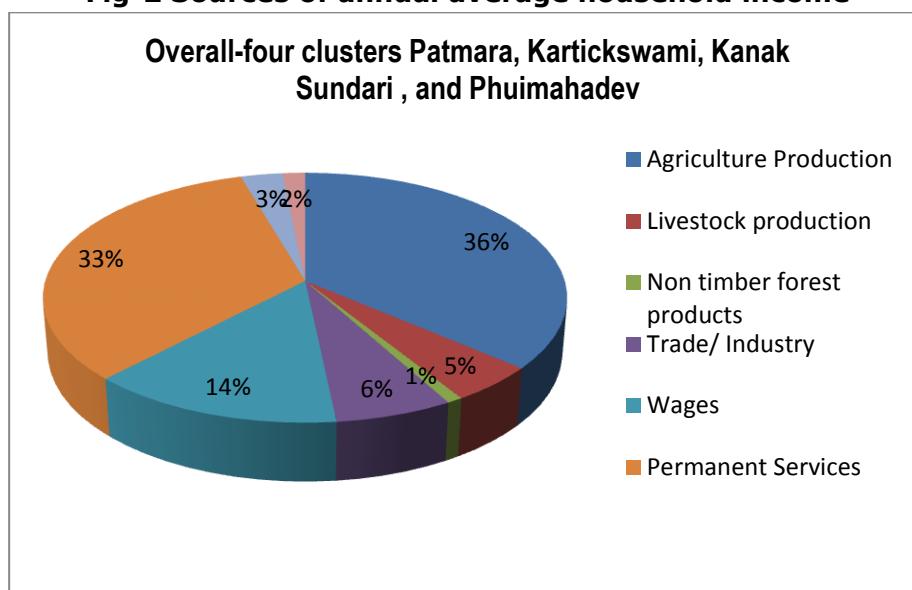
Gross annual income by ethnicity showed that the Dalits had the lowest income (NRs16,429) from agriculture compared to their contemporary ethnic groups Janjatis (NRs24, 000) and others (NRs69, 82144, 561) fellow from agriculture

Table 21: Average annual income from different sources

Disaggregation by	Agriculture Production	Livestock production	Non timber forest products	Trade/ Industry	Wages	Permanent Services	Foreign employment	Pension	Total	Total income without foreign employment
Cluster										
Patmara	71931	10345	5672	2931	23379	33172	10966	0	158397	147431
Kartikswami	128600	19600	0	26033	13667	128867	0	10667	327433	327433
Kanaka sundari	22833	967	333	7667	25567	39600	8667	207	105840	97173
Phui mahadev	25603	2200	0	7100	32400	25850	667	0	93820	93153
Overall	62161	8261	1466	11000	23756	57071	5025	2741	171482	166456
Economic strata										
Extreme Poor	10200	1000	0	5000	44000	5000	3000	0	68200	65200
Marginal Poor	30963	1519	192	2750	25404	44144	7077	119	112169	105092
Near Poor	74225	10175	2325	11025	23275	62500	5000	8000	196525	191525
Better off	159765	28647	4206	39706	7941	114471	0	0	354735	354735
Overall	62161	8261	1466	11000	23756	57071	5025	2741	171482	166456
Ethnicity										
Janjatis	25000	1583	833	8333	25583	4167	17500	517	83517	66017
Dalit	16429	3429	0	0	33714	54286	0	0	107857	107857
Others	69821	9400	1645	12090	22840	63615	3880	3200	186491	182611
Overall	62161	8261	1466	11000	23756	57071	5025	2741	171482	166456

Average annual household income of the households revealed that the agriculture counted the highest share of 35% followed by salaried jobs 33 % and 14%, livestock (Fig-2).

Fig-2 Sources of annual average household income



6.3.3 Current market surplus

The baseline survey disclosed that the farmers in the selected clusters had market surplus of 176844Kg as reported by sampled households. (Table-22).

According to economic stratum, extreme poor HHs had market surplus of 239 Kg followed by marginal HHs 577 Kg; near poor 988 Kg and better off 6185 Kg. Similarly by ethnicity, Dalits HHs have the lowest surplus of 380 Kg followed by Janjatis as 950 Kg.

Table 22: Volume of Market surplus of apple per household

Disaggregation by	Market surplus per household (kg)	Total Market Surplus of sample household (Kg)
Cluster		
Patmara	1533	44447
Kartik swami	2061	59762
Kanaka sundari	1012	30365
Phui mahadev	1409	42270
Overall	1499	176844
Economic strata		
Extreme Poor	239	2150
Marginal Poor	577	30015
Near Poor	988	39529
Better off	6185	105150
Overall	1499	176844
Ethnicity		
Janjatis	950	11400
Dalit	380	2280
Others	1632	163164
Overall	1499	176844

Market governance - Market price of apple along Surkhet - Jumla road corridor was mainly (75.8%) fixed by both producer and the buyer. (Table-23).

For an extreme poor 33% farmers fixed the price by themselves followed by marginal poor (36%); near poor (18%); and better off farmers (6%).

Market governance ethnicity shows that the producer governs the market/fixes price for an absolute majority of 40% Dalits; for 0%Janjatis and also for 25% other ethnicities.

Table 23: Price fixing / governance

Disaggregation by	Producer		Buyer / Purchaser		Both	
	No.	%	No.	%	No.	%
Cluster						
Patmara	2	8.0	0	0	23	92.0
Kartikswami	0	0.0	0	0	23	100.0
Kanaka sundari	8	34.8	0	0	15	65.2
Phui mahadev	14	50.0	0	0	14	50.0
Overall	24	24.2	0	0	75	75.8
Economic strata						
Extreme Poor	1	33.3	0	0	2	66.7
Marginal Poor	16	35.6	0	0	29	64.4
Near Poor	6	17.7	0	0	28	82.4
Better off	1	5.9	0	0	16	94.1
Overall	24	24.2	0	0	75	75.8
Ethnicity						
Janjatis	0	0.0	0	0	7	100.0
Dalit	2	40.0	0	0	3	60.0
Others	22	25.3	0	0	65	74.7
Overall	24	24.2	0	0	75	75.8

6.3.4 Current farm gate price

Farm gate price of apples was depended on the grade (quality) of apple ranging from NRs 18-34. Certified apples fetched higher market price compared to un-certified apples (Table 24).

According to economic strata, the farm gate price of apple was NRs 25 for marginal poor; near poor (NRs 30). Amongst the ethnic groups, Dalits got the farm gate price of NRs 35 for organic certified apples.

Table 24: Farm gate price of apple per kg

Cluster/ Farmer Types	Grade-A		Grade-B		Grade-C	
	Organic certified	Uncertified	Organic certified	Uncertified	Organic certified	Uncertified
Cluster						
Patmara	35	30	30	25	25	20
Kartikswami	29	0	23	0	20	0
Kayak Sungari	0	25	0	20	0	15
Phui mahadev	0	25	0	20	0	15
Overall	34	28	29	23	24	18
Economic Strata						
Extreme Poor	0	0	0	0	0	0
Marginal Poor	35	25	30	20	23	15
Near Poor	35	30	29	25	26	20
Better off	33	28	28	23	23	18
Overall	34	28	29	23	24	18
Ethnicity						

Cluster/ Farmer Types	Grade-A		Grade-B		Grade-C	
	Organic certified	Uncertified	Organic certified	Uncertified	Organic certified	Uncertified
Janjatis	0	0	0	0	0	0
Dalit	35	0	30	0	20	0
Others	34	28	29	23	25	18
Overall	34	28	29	23	24	18

Note: Only 17 farmers have production agreement

6.3.5 Current payment timings and mode of payment

An absolute majority of 71% of the farmers disclosed that they received payment for their marketed quantity immediately, while 12.5% received the payment within 15 days. About 13.8% farmers received advance payment and another 2.5% received payment between 1-3 months after selling their product (Table - 25).

About the extreme poor, 50% of them were paid on advance and the rest within 15 days. For an overwhelming majority of marginal poor (79%) got payment immediately; 15% were paid on advance; 3% each were paid within 15 days. Similarly, 80 of Dalits were paid immediately and rest 20% was paid in advance.

Table 25: Duration of payment after selling Apple

Disaggregation by	On Advance		Immediately		Within 15 days		Within 1-3 months		3-6 months		After 6 months	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cluster												
Patmara	2	8.33	18	75	4	16.67	0	0	0	0	0	0
Kartikswami	5	27.78	11	61.11	2	11.11	0	0	0	0	0	0
Kanaka sundari	3	18.75	11	68.75	1	6.25	1	6.25	0	0	0	0
Phui mahadev	1	4.55	17	77.27	3	13.64	1	4.55	0	0	0	0
Overall	11	13.75	57	71.25	10	12.5	2	2.5	0	0	0	0
Economic strata												
Extreme Poor	1	50	0	0	1	50	0	0	0	0	0	0
Marginal Poor	5	14.71	27	79.41	1	2.94	1	2.94	0	0	0	0
Near Poor	3	10.71	19	67.86	6	21.43	0	0	0	0	0	0
Better off	2	12.5	11	68.75	2	12.5	1	6.25	0	0	0	0
Overall	11	13.75	57	71.25	10	12.5	2	2.5	0	0	0	0
Ethnicity												
Janjatis	2	40	2	40	1	20	0	0	0	0	0	0
Dalit	1	20	4	80	0	0	0	0	0	0	0	0
Others	8	11.43	51	72.86	9	12.86	2	2.86	0	0	0	0
Overall	11	13.75	57	71.25	10	12.5	2	2.5	0	0	0	0

6.3.6 Current services provided by buyers

More than 97% of the farmers reported that they did not receive any services from the buyers across the four selected clusters. According to economic strata - extreme poor and near poor did not get such services. Likewise Dalits and Janjatis also did not receive such services while only 3% of the other ethnicities got the service (Table 26).

Table 26: Service obtained from purchaser/buyer

Disaggregation by	Yes		No		Sample No.
	No.	%	No.	%	
Cluster					
Patmara	1	3.5	28	96.6	29
Kartikswami	1	3.3	29	96.7	30
Kanaka sundari	0	0.0	30	100.0	30
Phui mahadev	1	3.3	29	96.7	30
Overall	3	2.5	116	97.5	119
Economic strata					
Extreme Poor	0	0.0	10	100.0	10
Marginal Poor	1	1.9	51	98.1	52
Near Poor	0	0.0	40	100.0	40
Better off	2	11.8	15	88.2	17
Overall	3	2.5	116	97.5	119
Ethnicity					
Janjatis	0	0.0	12	100.0	12
Dalit	0	0.0	7	100.0	7
Others	3	3.0	97	97.0	100
Overall	3	2.5	116	97.5	119

6.3.7 Current services per beneficiary type

Technical and informational support services received by beneficiary type's are analyzed by economic status of the respondents. However, gender and ethnicity wise proxy indicators could be seen from the percentage of gender composition of the surveyed households and

the percentage representation of the ethnic groups as discussed above. Participation of extreme poor in group activities is (50%). Similarly participation of the extreme poor in cooperatives is 10% as against the other extreme, 10% marginal; near poor 22.5% and the better off households (29%). Likewise source of seed was 50% to extreme poor, marginal poor 60%, near poor 48% and better off 47 per cent. Source of market information was zero for extreme poor and the rest stratum of farmers got market information from coops and media. (Table-27).

Table27: Current services per beneficiary type

Current Services	Gender		Farmer type			
	Male	Female	Extreme poor	Marginal poor	Near poor	Better off
Participation in Groups			50	38.46	47.5	41.18
Participation in Cooperatives			10	19.23	22.5	29.41
DADO (Source of Seed)			50	59.62	47.5	47.06
Fertilizer (Agri-trader)			0	0	0	0
Pesticide (Agri-trader)			0	0	0	0
Information on input using method			0.0	41.7	52.5	52.9
Satisfaction on using method			50.0	58.7	85.0	88.2
Service from purchaser			0.0	1.9	0.0	11.8
Market Information			0	15.38	35	47.06
Source of Market demand and price						
Cooperative			0	62.5	29.41	42.86
Chamber of commerce			0	0	0	0
Communication Media			0	25	70.59	42.86
Others			0	12.5	0	14.29
Subsidy on Sapling			50	53.85	42.5	47.06

6.3.8 Satisfaction index of the farmers

Satisfaction of the farmers on input application methods and the quality of the inputs showed that only 8.3% were fully satisfied while 91.7% were partially satisfied. Similarly, none of the extreme poor received information on using inputs. Likewise, none of the Dalits and Janjatis was fully satisfied (Table- 28).

Table 28: Satisfaction on input quality

Disaggregation by	Information obtained on using method of inputs		Satisfaction on using method		Fully Satisfied		Partially satisfied	
	Cluster							
Patmara	12	41.4	12	41.4	3	25.0	9	75.0
Kartikswami	16	53.3	15	50.0	0	0.0	15	100.0
Kanaka sundari	10	33.3	9	30.0	1	10.0	8	90.0
Phui mahadev	12	40.0	10	33.3	0	0.0	10	100.0
Overall	50	42.0	46	38.7	4	8.3	42	91.7
Economic strata								
Extreme Poor	0	0.0	0	0.0	0	0.0	0	0.0
Marginal Poor	20	38.5	17	32.7	1	5.6	16	94.4
Near Poor	21	52.5	21	52.5	1	4.8	20	95.2
Better off	9	52.9	8	47.1	2	22.2	6	77.8

Disaggregation by	Information obtained on using method of inputs		Satisfaction on using method		Fully Satisfied		Partially satisfied	
Overall	50	42.0	46	38.7	4	8.3	42	91.7
Ethnicity								
Janjatis	4	33.3	3	25.0	0	0.0	3	100.0
Dalit	3	42.9	3	42.9	0	0.0	3	100.0
Others	43	43.0	40	40.0	4	9.8	36	90.2

6.3.9 Access to technical services from Project / Line agencies / Inputs supplier

Concerning the access to technical services from Project / Line agencies, 50.9% of the farmers disclosed that they learned production technology and fertiliser from DADO followed by lead farmers (39.8); NGOs 24.6% and traders 1.7% (Table-29).

In terms of economic stratum, 66.7% of the extreme poor farmers learned new technology from lead farmers and about 11.1% of extreme poor farmers learned from DADO. Extreme poor and marginal poor had less access to agro-vets while large majority 75.5% and 76.5% of near poor and better off farmers had access with production technology through agro-vets respectively.

By ethnicity, access of technology through DADO was availed only to 33.3% of Dalits and same percentage of Janjatis while 54% other ethnicities had access to DADO.

Table 29: Learning source of production technology and fertilizer use

Cluster/ Farmer Types	Agro vet	DADO	NGO	Co- operatives	Traders	Advance farmers	Local resource person	Satisfaction on technical service	
								No.	%
Cluster									
Patmara	0	93.1	75.9	0.0	0.0	3.5	0.0	29	100
Kartikswami	0	72.4	6.9	0.0	0.0	10.3	6.9	25	93
Kanaka sundari	0	26.7	10.0	0.0	0.0	60.0	3.3	13	57
Phui mahadev	0	13.3	6.7	3.3	6.7	83.3	0.0	12	40
Overall	0	50.9	24.6	0.9	1.7	39.8	2.5	79	72
Economic Strata									
Extreme Poor	0	11.1	0.0	0.0	0.0	66.7	0.0	3	50
Marginal Poor	0	28.9	13.5	0.0	3.9	55.8	1.9	27	59
Near Poor	0	77.5	35.0	0.0	0.0	22.5	0.0	34	85
Better off	0	76.5	47.1	5.9	0.0	17.7	11.8	15	88
Overall	0	50.9	24.6	0.9	1.7	39.8	2.5	79	72
Ethnicity									
Janjatis	0	33.3	16.7	0.0	0.0	50.0	0.0	5	56
Dalit	0	33.3	16.7	0.0	0.0	33.3	0.0	4	80
Others	0	54.0	26.0	1.0	2.0	39.0	3.0	70	74
Overall	0	50.9	24.6	0.9	1.7	39.8	2.5	79	72

6.3.10 Sources of saplings

The majority (52.9%) of the farmers had access to DADO for apple saplings followed by private nursery to 45.4 per cent of the respondents (Table-30).

According to economic status of the respondent farmers about 50% of the extreme poor households reported that they received saplings from DADO; 40% received through private

nursery. Majority of farmers in all four economic strata had access to DADO for apple saplings followed by private nurseries.

Likewise, 57.1% of Dalits; 8.35% of Janjatis and 58% of others had access to DADO for apple / saplings followed by private nursery.

Table 30: Source of apple sapling

Disaggregation by	Own Production		Group/ cooperatives		Private Nursery		NARC		Agro vet		DADO		Others	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cluster														
Patmara	6	20.7	1	3.5	21	72.4	0	0	1	3.5	6	20.7	0	0
Kartickswami	3	10.0	1	3.3	10	33.3	0	0	0	0.0	23	76.7	0	0
Kanaka sundari	5	16.7	2	6.7	20	66.7	0	0	0	0.0	6	20.0	0	0
Phui mahadev	0	0.0	0	0.0	3	10.0	0	0	0	0.0	28	93.3	0	0
Overall	14	11.8	4	3.4	54	45.4	0	0	1	0.8	63	52.9	0	0
Economic strata														
Extreme Poor	0	0.0	0	0.0	4	40.0	0	0	0	0.0	5	50.0	0	0
Marginal Poor	3	5.8	2	3.9	20	38.5	0	0	0	0.0	31	59.6	0	0
Near Poor	5	12.5	1	2.5	22	55.0	0	0	1	2.5	19	47.5	0	0
Better off	6	35.3	1	5.9	8	47.1	0	0	0	0.0	8	47.1	0	0
Overall	14	11.8	4	3.4	54	45.4	0	0	1	0.8	63	52.9	0	0
Ethnicity														
Janjatis	2	16.7	0	0.0	10	83.3	0	0	0	0.0	1	8.3	0	0
Dalit	1	14.3	0	0.0	2	28.6	0	0	0	0.0	4	57.1	0	0
Others	11	11.0	4	4.0	42	42.0	0	0	1	1.0	58	58.0	0	0
Overall	14	11.8	4	3.4	54	45.4	0	0	1	0.8	63	52.9	0	0

6.3.11 Type of service received from CCIs

Apple farmers along Surkhet - Jumla road corridors reported that they did not receive any services from CCI.

6.4 Market Relationships / Arrangements

This is imperative to understand market arrangements between producers groups and agribusinesses so that they function effectively, sustainably and benefit VC players. This is related to output 1.1 of the project which has demanded the following three indicators for baseline:

- No of buyers/groups
- No of buyers/coops
- Coverage of agro-vets; Financial institutions

6.4.1 No of buyers/Traders

The focus group discussion disclosed that there are 21 buyers/local traders in Jumla as reported in Patmara and Kanaka sundari clusters in Jumla district. Similarly 8 traders are operating in Phoi mahadev cluster of Kalikot.

6.4.2 Market Relationships

The study found feeble relationship established with backward and forward market forces i.e. backward relationship with the technical service providers, input suppliers, agro-vets, desired line of credit, infrastructures, and farmers' capacity building. Likewise, the forward relationships with the collectors, trader, processors, upfront buyers, market assurance, market price, value addition skills, were the constraints. Nevertheless, farmers make use of the following market structures and market channels at their own efforts.

Market structure - Apple farmers in four selected clusters of Patmara, Kanaka sundari, and karti kaswami clusters in Jumla district; and Phoimahadev cluster of Kalikot used multiple market structures. Large majority of farmers across four economic classes and three ethnic bases sold their produce at local market. In totality, a large majority of the farmers (52.8%) used local markets to sell the products while about 25.3% at sold at farm gate; 17.6% farmers sold at collection centers. (Table-31).

According to economic strata, 100% of extreme poor farmers sold their product at farm; while marginal poor, near poor and better off farmers used several market structures as displayed in the table below.

By ethnicity, 40% of Dalits sold at frame gate and another 40% local market and 20% of the Dalit households sold at collection centers while 100% of Janjatis sold at farm.

Table 31: Selling places of apple

Disaggregation by	At farm		Collection center		Local market		Other market	
	No.	%	No.	%	No.	%	No.	%
Cluster								
Patmara	4	14.8	11	40.7	9	33.3	3	11.1
Kartikswami	4	17.4	1	4.4	17	73.9	1	4.4
Kanaka sundari	6	37.5	2	12.5	8	50.0	0	0.0
Phui mahadev	9	36.0	2	8.0	14	56.0	0	0.0
Overall	23	25.3	16	17.6	48	52.8	4	4.4
Economic strata								
Extreme Poor	2	100.0	0	0.0	0	0.0	0	0.0
Marginal Poor	10	27.0	5	13.5	22	59.5	0	0.0
Near Poor	4	11.4	10	28.6	18	51.4	3	8.6
Better off	7	41.2	1	5.9	8	47.1	1	5.9
Overall	23	25.3	16	17.6	48	52.8	4	4.4
Ethnicity								
Janjatis	5	100.0	0	0.0	0	0.0	0	0.0
Dalit	2	40.0	1	20.0	2	40.0	0	0.0
Others	16	19.8	15	18.5	46	56.8	4	4.9
Overall	23	25.3	16	17.6	48	52.8	4	4.4

6.4.3 Coverage of agro-vets

FGD and secondary data sources revealed that there were 8 agro-vets in Jumla and four in Kalikot district.

6.4.4 Financial institutions

The secondary data from the district profile showed that 49 Saving and Credit organizations (SCO) and four banks in Jumla. 1 commercial bank and 9 SCOs are providing financial services. (District Profile, 2012).

6.5 Institutional Strengthening

This is with regard to output 1.2 of the HVAP results matrix that the project foresees strengthened institutional capacity for delivery and facilitation of market opportunities, information and support services. However, no indicator was demanded for baseline as reflected NA in the results matrix.

Similarly, the output 1.3 of the project expects that the women, Dalits, Janjatis and other poor and vulnerable groups are well represented, actively involved and benefiting from participation. However, no indicator was required to provide baseline in this regard.

6.6 Inclusion and Support for Value Chain Initiatives

The another objective of the project was that small poor farmers and other rural producers benefit from sustainable increases in volume and value of production as a result of improved production/collection, value addition and sales of high value niche market products and strengthened local capacity for market driven initiatives. The baseline indicators required for this purpose were as follows:

- No. of producer group/cooperatives operating sustainably
- Current production
- Total HVC production/cluster
- Total HVC production/ HHs
- Current net return to labor

6.6.1 No. of producer group/cooperatives operating sustainably

Altogether, two cooperatives were studied who were dealing with apple business. The studied coops represented one in each of the clusters of Jumla and Kalikot districts. The two coops have been in operation since last 3 years, therefore could be regarded as sustainable coops (Table-32).

Table 32: Cooperatives operating sustainably

Cooperatives	Location	Affiliation	Registration date
Kalika fruits Cooperative	Patmara, Jumla	Division Cooperative Office	2062
Pugeli Agriculture Cooperative	Phui mahadev, Kalikow	DADO, Kalikot	2068

6.6.2 Current production

Average production of apple in four clusters varies significantly. Current production of apple was recorded 6574 Kg per hectare in four clusters. Variation of production could be attributed to differing age groups of apple trees, varying land productivity, different management practices of the farmers (Table 33).

According to economic strata extreme poor had the lowest production of 300 kg followed by marginal poor (1100 kg); near poor (1122 Kg); and better off farmers had an average production of 7227 Kg.

By ethnic category, the Dalits had the lowest production of 2769 Kg per hectare followed by Janjatis and others.

Table 33: Average production of apple

Disaggregation by	Area	Production (Kg)	Yield/Ha (Kg)
Cluster			
Patmara	11.02	1587	2879
Kartikswami	7.49	2312	6175
Kanaka sundari	2.02	1879	18604
Phui mahadev	3.17	1941	12247
Overall	5.87	1929	6574
Economic strata			
Extreme Poor	1.39	300	4317
Marginal Poor	2.31	1100	9528
Near Poor	6.36	1122	3529
Better off	17.95	7227	8052
Overall	5.87	1929	6574
Ethnicity			
Janjatis	1.5	1283	17111
Dalit	3.07	425	2769
Others	6.56	2097	6394
Overall	5.87	1929	6574

6.6.3 Total HVC production/ HH

Average household production of apple in Patmara, Kartikswami, Kanaka sundari and Phoi mahadev clusters along Surkhet - Jumla road corridors is presented in the table above and discussed under bullet 6.6.2 above.

6.6.4 Total HVC production/cluster

Current production of apple is estimated to be 2,27,675 Kg in four clusters of which Patmara shared 46010 Kg; Kanaka sundari 67060 Kg; Kartik swami 56370 Kg and 58235 Kg in Phui mahadev (Table-34).

Disaggregated data by economic strata shows that the extreme poor farmers shared a total production 2700 Kg of apple in the cluster followed by marginal poor 57225 Kg; near poor 44890 Kg; and better off farmers contributed a production of 122860 Kg of apple.

By ethnicity, Dalits had the lowest production of apple by 2550 Kg followed by 15400 Kg by Janjatis and others produced at total of 209725 Kg of apple.

Table34: HVC productions by cluster

Disaggregation	Apple (kg)
Cluster	
Patmara	46010
Kanaka sundari	67060
Kartikswami	56370
Phui mahadev	58235
Overall	227675
Economic strata	
Extreme Poor	2700
Marginal Poor	57225
Near Poor	44890
Better off	122860
Overall	227675
Ethnicity	

Disaggregation	Apple (kg)
Janjatis	15400
Dalit	2550
Others	209725
Overall	227675

6.6.5 Current net return to labor

With the current level of production per Ropani and the farm gate price of apple, gross return of NRs. 23,884 was recorded. Total production cost was NRs 7,100 and a net benefit NRs16,784. The benefit cost ratio is 3.36 and return to labor is 10. (Table- 35)

This estimation of net return is based only on the fruit bearing trees on an annual basis of production and farm management cost only.

Table 35: Cost, Production and Net Profit and Return to labour

SN	Description	Unit	Quantity	Total Production (Kg)	Rate (Rs)	Revenue (Rs)
A	Production /Romani	Ropani	1	853	28	23,884
B	Cost Items					
	Sub - total					
2	Inputs					
2.2	Manure	doka (Baskets)	50		30	1500
2.3.1	Application of Bordeaux mixture/ Bio-pesticide	Kg	15		20	300
	Sub - total					1800
3	Labour					
3.1	Labour for FYM application	Man-days	2		400	800
3.2	Weeding &intercultural	Man-days	2		400	800
3.3	Pruning	Man-days	2		400	800
3.4	Harvesting	Man-days	2		400	800
3.5	Grading	Man-days	2		400	800
3.6	Packaging	Man-days	2		400	800
	Sub - total					4,800
4	Tools and Equipments					500
	Sub - total					500
5	Grand total Cost					7,100
C	Net profit					16,784
D	Productivity	Ropani	1	853	28	23,884
E	BCR					3.36
	Return to Labor					10.0

6.7 Group Formation and Strengthening

The results framework's output 2.1 aims to scale up small producers organized in groups, with a high proportion of women and vulnerable groups, to make them able to respond to market demand and opportunities . For this purpose the baseline for the following indicators was required.

- No of groups/coops doing collective marketing+volume +number of buyers

- No of buyers/groups, coops with increased market linkages
- No of groups/coops having infrastructure, processing facilities etc

6.7.1 No of groups/coops doing collective marketing, traded volume and number of buyers

Both cooperatives are involved in apple trading. There is significant loss of 10 quintals (20%) as reported by Phui mahadev agriculture cooperative. The reasons for losses are lack of storage facilities, lack of grading and packaging materials, unavailability of standard cartoons, inefficient facilities. The number of buyers is already illustrated above. The volume of trade was 29 quintals in Jumla and 40 quintals in Kalikot (Table-35).

Table 36: Trading of apple

Cooperatives	Cluster/ Location	Volume collected (quintal)	Volume sold (Quintal)	Buyer of the product	Farmers involved	Mode of payment
Kalika Fruits Cooperative	Patmara, Jumla	30	29	Intermediaries	27	Immediately
Pugeli Agriculture Cooperative	Phui mahadev, Kalikot	50	40	Local traders	35	1-3 months

6.7.2 No of buyers/groups, coops with increased market linkages

Kalika fruit coop and Pugeti coop had market linkage with producers and buyers. There are several buyers of apple as the middleman, cooperatives, local trader, and local consumers. From the producers' side they have a linkage with coops, middleman, and local traders (Table-37).

Economic strata wise figures show that majority of apple farmers sold their product to local traders followed by middleman and coops.

Likewise, 100% of Dalits and large majority of Janjatis and other ethnic groups also sold their product to local traders.

Table 37: Sale of apple to different buyers

Disaggregation by	Middle man		Co-operatives		Local trader/agri-business enterprise		Company / Outer trader		Consumer	
	No.	%	No.	%	No.	%	No.	%	No.	%
Cluster										
Patmara	8	22.2	10	27.8	12	33.3	0	0	6	16.7
Kartikswami	3	12.5	3	12.5	13	54.2	0	0	5	20.8
Kanaka sundari	3	17.7	0	0.0	13	76.5	0	0	1	5.9
Phui mahadev	0	0	0	0.0	25	96.2	0	0	1	3.9
Overall	14	13.6	13	12.6	63	61.2	0	0	13	12.6
Economic strata										
Extreme Poor	0	0	0	0.0	2	100.0	0	0	0	0.0
Marginal Poor	5	12.2	1	2.4	30	73.2	0	0	5	12.2

Disaggregation by	Middle man		Co-operatives		Local trader/agri-business enterprise		Company / Outer trader		Consumer	
	No.	%	No.	%	No.	%	No.	%	No.	%
Near Poor	4	9.76	11	26.8	20	48.8	0	0	6	14.6
Better off	5	26.3	1	5.3	11	57.9	0	0	2	10.5
Overall	14	13.6	13	12.6	63	61.2	0	0	13	12.6
Ethnicity										
Janjatis	0	0	0	0.0	5	100.0	0	0	0	0.0
Dalit	1	20	0	0.0	4	80.0	0	0	0	0.0
Others	13	14	13	14.0	54	58.1	0	0	13	14.0
Overall	14	13.6	13	12.6	63	61.2	0	0	13	12.6

6.7.3 No of groups/coops having infrastructure, processing facilities etc

Infrastructural facilities of the coops displays that Kalika fruit cooperative is equipped with facilities like office building, collection center, cold storage and grading and packaging. In addition, it has generated capital amounting NRs 600.000 (Table- 38).

Table 38: Coop's infrastructure facilities, capital and source of income

Groups/Cooperatives	Cluster/Location	Infrastructure	Capital (Rs)	Source of income
Kalika Fruits Cooperative	Patmara, Jumla	Office building, collection center, cold Storage, grading and packaging	600,000	Saving and Credit, apple sale, potato maize sale
Pugeli Agriculture Cooperative	Phui mahadev, Kalikot	-	70,000	Share, saving and credit

6.8 Social / Gender Empowerment

For achieving output 2.2 of social and gender empowerment, there is a need of high portion of risk adverse persons/households and landless in project communities to participate in the project, which required to be measured using specific indicators. The results framework seeks following indicators to have the baseline for future comparisons and evaluation of the change effects:

- No. of women in leadership position in producer groups and cooperatives
- No. of women in leadership position in user groups
- No. of women in leadership position in marketing groups
- No. of women in leadership position in marketing groups and coops

6.8.1 No. of women in leadership position in producer groups and cooperatives

Women's leadership in two studied coops was significant. The membership in cooperatives ranged from 27-35 members in two coops. Out of two coops, Kalika fruit cooperative is a women's cooperative with 100% women members. Female participation in Pugeli cooperative and in its executive committee is more than 25 percent. There is no Janjati representation in both of the cooperatives (Table-39).

Table 39: Cooperatives organization structure

Cooperatives	Location	General members					Executive members				
		T	F	M	J	D	T	F	M	J	D
Kalika fruits Cooperative	Patmara, Jumla	27	27	-	-	-	7	7	-	-	-
Pugeli Agriculture Cooperative	Phui mahadev, Kalikot	35	9	26	-	1	7	2	5	-	2
Total			36					9			

T= Total, M= Male, F= Female, J= Janjati, D= Dalit

6.8.2 No. of women in leadership position in user groups

Women's leadership role in groups/coops is already described above. User's group and coops are collectively reported; therefore, separate groups were not reported. However, women's leadership role in household level farming activities is presented below. Understanding the gender perspectives in farmers' decision making in value chain (VC) will enable farm households in making better decisions. Both males and females make decisions on inputs such as the selection of seeds, purchasing of farm inputs and the mobilization of labour. In the four selected clusters, orchard management / land management was done by males (66%) and females 34 per cent. Likewise, training pruning is mainly done by males (89%) as against 11% females who did training and pruning of apple trees (Table-40).

Table 40: Decision making role on different activities

Disaggregation by	Land preparation		Sowing		Weeding & fertilization		Garden management	
	Female	Male	Female	Male	Female	Male	Female	Male
Cluster								
Patmara	26	74	72	28	94	6	45	55
Kartikswami	54	46	52	48	89	11	33	67
Kanaka sundari	40	60	55	45	61	39	31	69
Phui mahadev	51	49	49	51	64	36	26	74
Overall	44	56	56	44	75	25	34	66
Economic strata								
Extreme Poor	40	60	57	43	75	25	27	73
Marginal Poor	48	52	54	46	71	29	28	72
Near Poor	41	59	57	43	81	19	43	57
Better off	39	61	58	42	74	26	35	65
Overall	44	56	56	44	75	25	34	66
Ethnicity								
Janjatis	33	67	61	39	63	38	35	65
Dalit	50	50	58	42	78	22	25	75
Others	45	55	55	45	76	24	35	65
Overall	44	56	56	44	75	25	34	66

Table 40 Continue-----

Disaggregation by	Pesticide using		Purchase of inputs		Irrigation		Pruning	
	Female	Male	Female	Male	Female	Male	Female	Male
Cluster								
Patmara	0	100	7	93	48	52	9	91
Kartikswami	14	86	19	81	53	47	6	94
Kanaka sundari	5	95	6	94	34	66	13	88
Phui mahadev	11	89	10	90	35	65	19	81
Overall	7	93	11	89	44	56	11	89
Economic strata								
Extreme Poor	0	100	11	89	36	64	11	89
Marginal Poor	12	88	16	84	43	57	14	86
Near Poor	3	97	7	93	47	53	11	89
Better off	0	100	6	94	43	57	6	94
Overall	7	93	11	89	44	56	11	89
Ethnicity								
Janjatis	0	100	15	85	35	65	23	77
Dalit	14	86	0	100	50	50	0	100
Others	7	93	11	89	45	55	11	89
Overall	7	93	11	89	44	56	11	89

6.8.3 No. of women in leadership position in marketing groups

Leadership of women in marketing could be judged from their decision making role in marketing household product. The surveyed respondents reported that 41% of females decide their household level product marketing as against 59% that of males (Table-41)

According to economic classification of the respondents, males decide 100% of their marketing function amongst the extreme poor followed by marginal poor (64%); near poor (52%); and better off 55 per cent. Ethnically, 57% of Dalit women did the marketing as against 91% of Janjati women.

Table 41: Work division on different activities (Percentage of respondents)

Disaggregation by	Harvesting		Grading/Packaging		Storing		Marketing	
	Female	Male	Female	Male	Female	Male	Female	Male
Cluster								
Patmara	77	23	48	52	54	46	50	50
Kartikswami	58	42	47	53	59	41	55	45
Kanaka sundari	44	56	6	94	21	79	19	81
Phui mahadev	42	58	6	94	30	70	35	65
Overall	53	47	36	64	45	55	41	59
Economic strata								
Extreme Poor	42	58	0	100	0	100	0	100
Marginal Poor	49	51	21	79	39	61	36	64
Near Poor	59	41	45	55	51	49	48	52
Better off	59	41	42	58	48	52	45	55
Overall	53	47	36	64	45	55	41	59
Ethnicity								
Janjatis	45	55	0	100	0	100	9	91
Dalit	63	38	43	57	50	50	43	57
Others	54	46	37	63	46	54	44	56
Overall	53	47	36	64	45	55	41	59

6.8.4 No. of women in leadership position in marketing groups and coops

Number of in leadership positions in marketing groups (Coops) is illustrated above.

6.9 Post Harvest Practices

With regard to output 2.3 of the results log-frame on post-harvest support only the following indicators were required for baseline:

- No. of producers accessing improved production technologies
- No. of traders accessing improved processing technologies
- Current post harvest loss at producers, groups/coops, and traders level
- Current productive assets

6.9.1 No. of producers accessing improved production technologies

The household survey revealed that the percentage of apple producers practicing modern farm technologies varied from cluster to cluster. Collectively, 73% of farmers do training and pruning of apple trees; 68% applied Bordeaux mixture; 11.9% do spraying and only 17% of the farmers were able to identify appropriate timing of harvesting (Table- 42).

By the economic status of the farmers, 11% of the extreme poor households reported that they do training and pruning. Similarly, 59.6% of marginal poor; 95% of near poor; and

94% better off farmers practiced training and pruning of apple trees. Likewise, 9-23% of farmers across economic stratum did spraying of bio pesticides.

As a way forward to improved technology, training and pruning was done by only 33.3% of Dalits; 66.7% Janjatis; and 78.0% others groups did pruning. Similarly, 16.7% Dalits and Janjatis and 11% others applied bio pesticides.

Table 42: Percentage of Farmers reporting Crop production activities

Disaggregation by	Training/ Pruning	Fruit Thinning	Brood pasting	Mulching	Bio pesticide Spraying	Crop protection	Identify fruit harvesting time	Harvesting technology
Cluster								
Patmara	96.6	27.6	89.7	69.0	6.9	17.2	79.3	79.3
Kartikswami	93.1	10.3	86.2	69.0	6.9	3.5	79.3	79.3
Kanaka sundari	53.3	33.3	50.0	80.0	13.3	10.0	33.3	30.0
Phui mahadev	50.0	33.3	46.7	46.7	20.0	36.7	40.0	40.0
Overall	72.9	26.3	67.8	66.1	11.9	17.0	57.6	56.8
Economic strata								
Extreme Poor	11.1	0.0	0.0	33.3	0.0	0.0	11.1	11.1
Marginal Poor	59.6	19.2	51.9	53.9	9.6	19.2	38.5	36.5
Near Poor	95.0	35.0	92.5	87.5	7.5	15.0	85.0	85.0
Better off	94.1	41.2	94.1	70.6	35.3	23.5	76.5	76.5
Overall	72.9	26.3	67.8	66.1	11.9	17.0	57.6	56.8
Ethnicity								
Janjatis	33.3	33.3	25.0	66.7	16.7	0.0	16.7	16.7
Dalit	66.7	33.3	50.0	66.7	16.7	16.7	66.7	66.7
Others	78.0	25.0	74.0	66.0	11.0	19.0	62.0	61.0
Overall	72.9	26.3	67.8	66.1	11.9	17.0	57.6	56.8

6.9.2 No. of traders accessing improved processing technologies

Two traders were interviewed in Surkhet-Jumla road corridor that were involved in processing apple. Findings of the traders survey is shown below (Box-2)

Trader-Processor 1- Processor's Interview in MahatVDC-1, Bijaya nagar Jumla

Traders: R.K apple processing industry (Ram Krishna Chaulagain)

R.K. apple processing industry (Ram Krishna Chaulagain) is one of the main apple processor in Jumla District. The industry was established in 1996 as a small and cottage industry and got registered in income tax office in 2003. Basically, industry is involved in processing of apple as a chana (dried apple), juice and brandy. During last year the industry processed 200 tons of apples as a brandy, chana and juice. The industry products are organic. Instead of using chemicals, herbs are used in production of brandy.

Industry has significantly contributed in job creation hiring 6 workers permanently and 30 as seasonal workers. Apple processing trend is increasing every year. The industry has not received any support from Government, I/NGOS instead he has to face lots of problems during export to outside than Jumla. He has to pay some illegal money or his product to all check posts on the way during transportation. He expects sincere help from development agencies to scale up his business.

Due to lack of enough space, he cannot purchase the quantity of apple he wishes. During main season, he pays NRs 5-10 per kg and in off season he buys damaged apple paying NRs 5-7 per kg for making brandy. One litter of brandy requires five kg which costs NRs 570 as wholesale price. He is getting only NRs 10 as profit margin per 750 ml packed in bottle.

Major constraints

- ❖ Weak government policy and support(unnecessary disturbance in the way)
- ❖ Inefficient transportation facilities (Road quality)
- ❖ Unavailability of new technology/ processing equipment
- ❖ Poor market structure in Jumla
- ❖ Inadequate storage facilities in Jumla
- ❖ Lack of financial support
- ❖ Lack of information on Market
- ❖ Lack of Quality product differentiation

Trader-Processor 2- Processor and Farmer interview in MahatVDC-6, Jumla

Trader's: Nabin Mahat (one of the biggest farmer and upcoming processor in Jumla)

Nabin Bahadur Mahat, son of Padam Bahadur Mahat a pioneer farmer of Jumla nominated as a 2nd largest farmer of Asia, is involved in production and processing business. Nabin has 6 hectare of farm with 35 hundred apple plants. He has 16 varieties of apples in his farm producing more than 70 tons of apples per year. He sells 35 tons in market and processes 25 tons as a brandy, chana and juice. The industry is registered in small and cottage industry in Kathmandu and also has got license of producing brandy. He is a secretary of Organic multiple cooperatives which is an organization of more than 700 farmers. This cooperative is facilitating in organic production at Jumla. Besides, the cooperative is involved in the processing as a dried apple (Chana), juice and brandy. His all products are organic. He doesn't have enough space or cold store to store his own production to be used in off season. Till now, he couldn't get any help from INGOS, NGOs and Government agencies. He intends to scale up his business provided support from development agencies.

Constraints

- ❖ Weak government policy and support
- ❖ Insufficient transportation facilities (Road)
- ❖ Lack of Irrigation facilities
- ❖ In access to financial support
- ❖ Lack of information on Market
- ❖ Lack of improved processing plants
- ❖ Lack of treatment facilities
- ❖ New technology processing equipment

6.9.3 Current post harvest loss at producers, groups/coops, and traders level

The study in four selected clusters revealed that there was a loss of 15.7% during harvesting; 15.76% during storing (Table-43).

According to economic stratum, harvesting loss to extreme poor was 20.4%; marginal poor 30.3%; near poor 8.4% and better off farmers 11.4 per cent.

By ethnicity, Dalits incurred a total harvesting loss of 6.7% and storage loss of apple followed by Janjatis 12.7% and others 16 per cent.

Table 43: Post harvest loss per household

Disaggregation Cluster	Percentage of Harvest loss	Percentage of storage loss
Patmara	2.3	4.9
Kartikswami	6.7	16.5
Kanaka sundari	31.4	30.4
Phui mahadev	21.4	9.5
Overall	15.7	15.7
Economic strata		
Extreme Poor	20.4	0.0
Marginal Poor	30.3	31.7
Near Poor	8.4	22.1
Better off	11.4	6.9
Overall	15.7	15.7
Ethnicity		
Janjatis	12.7	21.4
Dalit	6.7	18.2
Others	16.0	15.5
Overall	15.7	15.7

6.9.4 Current productive assets

Current productive assets include, land, labour, capital and livestock analyzed by gender and economic strata of the respondents. Dalit has 6.71 Ropanis of land while Janjatis have 7.42 Ropanis; and the others have 14 Ropanis. In terms of manpower, males contribute 55.76% of household members and 57.49% constitute females (Table-44).

Similarly, Dalits have an average annual income of NRs 107857; Janjatis have NRs 83517; and Others NRs 186491. Besides, land, labour, capital assets, farmers have a productive assets of livestock (buffaloes, bullocks, cows, goats, sheep, pig and poultry).

Table44: Current productive assets

Productive resources / assets	Gender		Ethnicity		
	Male	Female	Janjatis	Dalit	Others
Land (Ropani)			7.42	6.71	14
Capital					
Income (NRs)			83517	107857	186491
Manpower (16-60 Yrs)	55.76%	57.49%	55.1	61.2	56.5
Livestock (Average)					
Buffalo			0	0	0.47
Bullock			1.33	1.14	1.76
Cow			2.67	1.57	2.72
Goat			1.17	2.57	1.84
Sheep			0	0	2.18
Pig			0	0	0.02
Poultry			0	2.14	1.05
Others			0.33	1.71	1.41
Others (Specify)			0	0	0

6.10 Value Chain Infrastructure and Certification

The output 2.4 of the HVAP result framework looks for value chain infrastructure and certification to be done during the project period. For this purpose the results matrix has asked baseline on two indicators as follows:

- No of producers having linkages with agribusiness
- Value of products supplied to agribusiness

Infrastructure / accessibility-An absolute majority of farmers (88.16%) carry apple for selling by themselves; for marketing, while less than 9.21% use porters and 2.63% of farmers used vehicles. Infrastructural availability in terms of walking by the number of hours is already explained above (Table-45).

Economic strata of the farmers also shows that 100% of extreme poor transported apple by themselves followed by 93.55% marginal poor; 96% near poor; and 64% of better off farmers transported apple by themselves.

Likewise, 100% of Dalits and 0 per cent of Janjatis and 87.5% of others also transported apples by themselves.

Table 45: Transport means for marketing

Disaggregation by	Self		Porter		Vehicle	
	No.	%	No.	%	No.	%
Cluster						
Patmara	20	83.33	4	16.67	0	0
Kartikswami	16	84.21	1	5.26	2	10.53
Kanaka sundari	9	90	1	10	0	0
Phui mahadev	22	95.65	1	4.35	0	0
Overall	67	88.16	7	9.21	2	2.63
Economic strata						
Extreme Poor	1	100	0	0	0	0
Marginal Poor	29	93.55	1	3.23	1	3.23
Near Poor	26	96.3	1	3.7	0	0
Better off	11	64.71	5	29.41	1	5.88
Overall	67	88.16	7	9.21	2	2.63
Ethnicity						
Janjatis	0	0	0	0	0	0
Dalit	4	100	0	0	0	0
Others	63	87.5	7	9.72	2	2.78
Overall	67	88.16	7	9.21	2	2.63

6.10.1 No of producers having linkages with agribusiness

Apple producing farmers having linkage with market demand to coops; 47.5% farmers received market demand from media; and rest from others (Table-46)

Overwhelming majority of farmers across four economic spheres and three ethnic bases revealed that market information from coops was from coops.

Table 46: Source of market demand and price information

Disaggregation by	Group/co-operatives		Communication media		Chamber of commerce		Others (friends, relatives etc)	
	No.	%	No.	%	No.	%	No.	%
Cluster								
Patmara	5	41.67	7	58.33	0	0	0	0
Kartikswami	5	29.41	11	64.71	0	0	1	5.88
Kanaka sundari	3	100	0	0	0	0	0	0
Phui mahadev	5	62.5	1	12.5	0	0	2	25
Overall	18	45	19	47.5	0	0	3	7.5
Economic strata								
Extreme Poor	0	0	0	0	0	0	0	0
Marginal Poor	10	62.5	4	25	0	0	2	12.5
Near Poor	5	29.41	12	70.59	0	0	0	0
Better off	3	42.86	3	42.86	0	0	1	14.29
Overall	18	45	19	47.5	0	0	3	7.5
Ethnicity								
Janjatis	0	0	0	0	0	0	0	0
Dalit	2	66.67	1	33.33	0	0	0	0
Others	16	43.24	18	48.65	0	0	3	8.11
Overall	18	45	19	47.5	0	0	3	7.5

6.10.2 Value of products supplied to agribusiness

The total volume of apple production recorded was 13328 Kg for the total in four clusters. The value of the production is computed by multiplying the total production with the farm gate price of NRs 27 which appeared to be NRs 359,856.

ANNEXES

Annex –1: The Results Matrix, HVAP
Ministry of Agriculture Development (MoAD)
High Value Agriculture Project in Hill and Mountain Ares (HVAP)
Data Collected for the baseline studies

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark
				Gender		Economic Status		Caste/ Ethnicity		Value Chain		
				Yes	No	Yes	No	Yes	No	Yes	No	
Project Goal												
The overall goal is the reduction of poverty and vulnerability of women and men in hill and mountain areas of the Mid-Western Development Region	1. No. of HHs with improvement in assets ownership index	No. of HHs with improvement in HH assets ownership index	Current HH asset index							x		
	1. % of reduction chronic malnourished children- height for age	No. of malnourished children-height for age	Height to age ratio							x		
	2. % of reduction of acute malnourished children-weight for height	No. of malnourished children-weight for height	Weight to height ratio							x		
	3. % of reduction of underweight children-weight for age	No. of children under weight-weight for age	Weight to age ratio							x		
	1. % increased in adult literacy rate	No. of adults who can read	Literacy rate	x		x		x		x		
		No. of adults who cannot read		x		x		x				
	2. % increased in children enrolment in primary school	No. of children enrolled in primary school	School enrolment rate	x		x		x		x		
	3. % increased in hygiene sanitation status	No. of HHs having and using toilets	Sanitation status	x		x		x		x		
		No. of HHs having access to a safe drinking water source		x		x		x		x		

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark	
				Gender		Economic Status		Caste/Ethnicity		Value Chain			
				Yes	No	Yes	No	Yes	No	Yes	No		
	4. Ratio of women to men between 15 and 24 that can read	No. of men between 15 and 24 that can read		x		x		x		x			
		No. of women between 15 and 24 that can read		x		x		x		x			
	1. Number of HHs reporting improved food security [RIMS indicator]	No. of HHs experiencing one hungry season	Food Security Status		x		x		x		x		
		No. of months of the first hungry season			x		x		x		x		
		No. of HHs experiencing two hungry seasons			x		x		x		x		
		No. of months of the second hungry season			x		x		x		x		
1. 60% women receiving project services 2. 25% dalit/jajati/other minorities receiving project support	No. of women receiving project services	NA											
Project Purpose													
Rural poor, especially women and marginal groups are integrated in high value agriculture and NTFP/MAP value	1. No. of producers reporting annual income increment	1.1. No. of producers reporting annual income increment	Current income	x		x		x		x			
		1.2. % change in annual income increment											

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark
				Gender		Economic Status		Caste/Ethnicity		Value Chain		
				Yes	No	Yes	No	Yes	No	Yes	No	
chains and markets and have improved income, employment opportunities and ability to respond to market demand and opportunities based on marketing agreements with private agribusiness	2.1. Change in volume of surplus agricultural production and NTFP/MAPs marketed profitably by participating producers	Volume of surplus of agricultural production and NTFP/MAPs marketed profitably by participating producers	Current marketed surplus	x		x		x		x		
		% change in marketed surplus annually										
Component 1. Pro-Poor Value Chain Development												

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark
				Gender		Economic Status		Caste/ Ethnicity		Value Chain		
				Yes	No	Yes	No	Yes	No	Yes	No	
Objective: To facilitate mutually beneficial and profitable production and marketing arrangements between poor and marginal producers of high value commodities and agribusinesses	1.1. At least X% of project beneficiaries report increased price at farm gate	No of project beneficiaries reporting increased farm gate price	Current farm gate price	x		x		x		x		
		% change in farm gate price										
	1.2. At least X% of project beneficiaries report improved mode of payment	No of project beneficiaries reporting shorter payment periods and mode	Current payment timings	x		x		x		x		
	1.3. At least X% of project beneficiaries report increased service provision from buyers	No of project beneficiaries reporting increased service provision from buyers	Current services providers by buyers	x		x		x		x		
	1. 75% of involved agribusiness indicate expectation of continuation of market arrangement after project	No. of agribusiness indicating expectation of continuation of market arrangement after project	Satisfaction index (Likert 3 pt scale)	x		x		x		x		

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark
				Gender		Economic Status		Caste/ Ethnicity		Value Chain		
				Yes	No	Yes	No	Yes	No	Yes	No	
	1. Value of traded goods (sales) have increased equivalent to 25% over a 3 years period on farm gate price	Annual increment (In NPR) of traded goods at farm gate	Current farm gate price	x		x		x		x		
		% increment in farm gate price of traded goods										
	1. No. of functioning input suppliers and service providers (LRPs, Agro-vets, cooperatives) in each road corridor and/or district (coverage and volume)	No. of functioning LRPs, agro vets, cooperatives, and other service providers in each district (coverage and volume)	No. of SPs, VDCs covered, volume of inputs supplied (Individual)									
	1. No. of producers reporting increased use of quality inputs and services	No. of producers reporting increased use of quality inputs and services	No of producers reporting quality inputs and service use	x		x		x		x		
	1. Over 500 groups/coops accessing technical advisory services facilitated by the project [RIMS indicator]	No. of groups/coops accessing technical advisory services facilitated by the project										
	1. No. of traders reporting improved service delivery by CCIs and AEC	No. of traders reporting improved service delivery by CCIs and AEC										
	2. No. of cooperatives reporting improved service delivery by CCIs	No. of cooperatives reporting improved service delivery by CCIs and AEC										

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark	
				Gender		Economic Status		Caste/ Ethnicity		Value Chain			
				Yes	No	Yes	No	Yes	No	Yes	No		
	3. No. of businesses house reporting improved service delivery by CCIs and AEC	No. of businesses house reporting improved service delivery by CCIs and AEC											
Output 1.1 Market arrangements between producers groups and agribusinesses functioning effectively, sustainably and benefiting both parties in about 18 value chains	1. No. of groups having established market arrangement (incorporating COSOP indicator) (level of competition, choice).	No. of groups having established market arrangement (with no. of traders/location/volume)	No of buyers/groups								x		
	2. No. of cooperatives having established market arrangement (incorporating COSOP indicator) (level of competition, choice).	No. of cooperatives having established market arrangement (with no. of traders/location/volume)	No of buyers/coops								x		
	1. No. of commercial linkages and partnerships between farmers/inputs suppliers and downstream market. (cosop indicator).	No. of commercial linkage and partnership between farmers and inputs suppliers with location and outreach (no. of HHs/no. of traders and volume of inputs supply).	Coverage of agro-vets;									x	
Output 1.2 Strengthened institutional capacity for delivery and facilitation of market opportunities, information and support services	1. Number of AEC staff assuming value chain facilitation responsibilities	No. of AEC staff assuming value chain facilitation responsibilities	NA										
	1. Quality of the services delivered by AEC regarding value chain facilitation (feedback from DCCI on AEC services)	Quality of the services delivered by AEC regarding value chain facilitation (feedback from DCCI on AEC services)	NA										
	1. No. of approved business proposals facilitated by DCCIs	No. of business proposals submitted/evaluated/ approved by DCCIs	NA										
	1. Institutional capacity enhancement of 10 DCCIs.	Institutional capacity of DCCI (self-evaluation tool 'spider web' will be use to measure the institutional capacity)	To be plugged in from CCI assessment report- AEC & Pad am										

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark	
				Gender		Economic Status		Caste/ Ethnicity		Value Chain			
				Yes	No	Yes	No	Yes	No	Yes	No		
	1. No. of approved business proposals facilitated by AEC	No. of business proposals received/evaluated/approved by AEC	NA										
Output 1.3 Women, dalits Janjatiss and other poor and vulnerable groups well represented, actively involved and benefiting from participation in project value chains	1. 60% women participate and benefit from the project (new groups)	No. of women participated and benefited from the project	NA										
	1. At least 25% Dalits, Janjatiss and other minorities participate and benefit from the project	No. of Dalits/Janjatis/Other minorities participated and benefited from the project	NA										
Component 2. Inclusion and Support for Value Chain Initiatives													
Objective: Small poor farmers and other rural producers benefit from sustainable increases in volume and value of production as a result of improved production/collection, value addition and sales of high value niche market products and strengthened local capacity for market driven initiatives	1. 75% of Producer organizations supported operating sustainably at the end of the project	No. of producer group/cooperatives operating sustainably at the end of the project	NA										
	1. No. of HHs reporting increase in production of high value agricultural products by at least 10%	No of HHs reporting increased production of HVCs	Current production	x		x		x		x			
	1. Total increase in production of selected high value agricultural products of at least X%	Change in production and volume of HVCs	Total HVC production/cluster	x		x		x		x			
	1. Average HHs increase in production of selected high value agricultural products by at least X%	Change of volume of HVCs/ HHs	Total HVC production/ HH	x		x		x		x			
	1. No. of HHs realizing increase in net return to HHs labor from high value agricultural products by at least 10%	Increase in net return to HHs labor from high value agricultural products per HH	Current net return to labor								x		

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark		
				Gender		Economic Status		Caste/ Ethnicity		Value Chain				
				Yes	No	Yes	No	Yes	No	Yes	No			
	1. 80% of the infrastructure and equipment financed by the Value Chain Fund is functioning and appropriately maintained at the end of the project.	No. of infrastructures and equipments financed by the value chain fund which are functioning and appropriately maintained at the end of the project.	NA											
	1. Two-thirds of producers who has received training adopt at least half of the technology component they received training on [RIMS indicator].	No of trained producers adopting technology they receive training on												
Output 2.1 Sub-component 2A Group Formation and Strengthening:	1. No. of cooperatives practicing collective marketing including volume and product mix	No. of cooperatives practicing collective marketing including volume and product mix	No of grps/coops doing collective marketing+vol+n o of buyers								x			
	2. No. of groups practicing collective marketing including volume and product mix	No. of groups practicing collective marketing including volume and product mix										x		
Small scale producers organized in groups, with a high proportion of women and vulnerable groups, are better able to respond to market demand and opportunities	1. No. of cooperatives reporting increase market linkage (no. of buyers)	No. of cooperatives reporting increase market linkage (no. of buyers)	No of buyers/grps, coops								x			
	2. No. of groups reporting increase market linkage (no. of buyers)	No. of groups reporting increase market linkage (no. of buyers)										x		
	1. No. of cooperatives having /managing production and post harvest facilities and equipments (including installation capacity)	No. of cooperatives having/managing production and post harvest facilities and equipments	No of grps/coops having infrastructure, processing facilities etc									x		
	2. No. of groups having /managing production and post harvest facilities and equipments (including installation capacity)	No. of groups having/managing production and post harvest facilities and equipments												

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark	
				Gender		Economic Status		Caste/Ethnicity		Value Chain			
				Yes	No	Yes	No	Yes	No	Yes	No		
	1. No. of people trained in post production, processing and marketing [RIMS indicator].	No. of trainings provided in post production, processing and marketing	NA										
		No. of participants in post production, processing and marketing trainings											
	1. Institutional capacity enhancement of groups	Institutional capacity enhancement of groups (self-evaluation tool 'spider web' will be used to measure the institutional capacity)	NA										
	2. Institutional capacity enhancement of cooperatives	Institutional capacity enhancement of cooperatives (self-evaluation tool 'spider web' will be used to measure the institutional capacity)	NA										
Output 2.2 Sub-Component 2B Social and Gender Inclusion:	1. No. of poor HHs participating in the project (proportionally to their presence in the project region)	No. of poor HHs participated in the project	NA										
High portion of risk adverse persons/households and landless in project communities participate in the project	1. People attending functional literacy and numeracy classes (target of at least 700 participants by project end) [RIMS indicator].	No. of people attended and gained knowledge in functional literacy and numeracy classes	NA										
	1. No. of women in leadership position in producer groups and cooperatives	No. of women in leadership position in producer groups and cooperatives	Yes	x		x		x		x			
	2. No. of women in leadership position in user groups	No. of women in leadership position in user groups	No										
	3. No. of women in leadership position in marketing groups	No. of women in leadership position in marketing groups	Yes	x		x		x		x			

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark
				Gender		Economic Status		Caste/ Ethnicity		Value Chain		
				Yes	No	Yes	No	Yes	No	Yes	No	
	4. No. of women in leadership position in marketing groups and coops	No. of women in leadership position in marketing groups and coops	Yes	x		x		x		x		
Output 2.3 Sub-component 2C Production/ Post Harvest Support:	1. No. of producers accessing improved production technologies	No. of producers accessing improved production technologies	Yes	x		x		x		x		
Incremental volumes of agricultural commodities and NTFPs/MAPs are being produced in the quantities and qualities required by market.	2. No. of traders accessing improved processing technologies	No. of traders accessing improved processing technologies	Yes							x		
	1. X% reduction in post-harvest loss	Volume of post-harvest loss	Current post harvest loss at producers, groups/coops, and traders level	x		x		x		x		
	1. 60% of 13,500 HHs have increased access to productive assets (inputs, processing equipment, tools, technical assistance)	No. of HHs who have increased access to productive assets	Current productive assets	x		x				x		
Output 2.4 Sub-Component 2D Value Chain Fund:	1. No. of business plan successfully implemented through window 1 (50:50) and 2 (85:15)	No. of business plan successfully implemented through window-1	No									
Infrastructure, equipment and certification financed by the Value Chain Fund is contributing to the profitable production and marketing of the project's high value commodities		No. of business plan successfully implemented through window-2	No									
	2.1. No of producers having linkages with agribusiness	No of producers having linkages with agribusiness	Yes	x		x		x		x		
	2.2. Value of products supplied to agribusiness	Value of products supplied to agribusiness	Yes	x		x		x		x		
	1. No. of producers accessing infrastructure and equipments facilities through value chain fund	No. of producers accessing infrastructure and equipments facilities through value chain fund	No									

Narrative Summary	Operational Indicators	Data and Information Needs	Baselines to be Established	Baseline availability of Disaggregation Data								Remark	
				Gender		Economic Status		Caste/ Ethnicity		Value Chain			
				Yes	No	Yes	No	Yes	No	Yes	No		
	2. No. of traders accessing infrastructure and equipments facilities through value chain fund	No. of traders accessing infrastructure and equipments facilities through value chain fund	No										
	1. Installed capacity of infrastructure and equipments	Installed capacity of infrastructure and equipments	No										
	2. Utilization of infrastructure and equipments (No of people served, volume of commodity utilized)	Utilization of infrastructure and equipments (No of people served, volume of commodity utilized)	No										
Output 2.5 Sub-Component 2E District Participation and Spatial Inclusion	1. No. of infrastructure/facilities (culvert, gravity rope way, foot bridge, etc) constructed/ rehabilitated (targeted 50 numbers) <i>[RIMS indicator]</i>	No. of infrastructure/facilities (culvert, gravity rope way, foot bridge etc) constructed/ rehabilitated	No										
Infrastructure projects that improve accessibility of remote communities completed and facilitate marketing of high value commodities	1. No. of producers accessing spatial inclusion infrastructures	No. of producers accessing spatial inclusion infrastructures	No										
	3. Value of commodity flowing through infrastructures constructed (target: increase of 10%)	Value of commodity flowing through infrastructures constructed	No										

Annex-2 Data Collection Tools

Baseline Survey Questionnaire for Apple Producer Farmers

Questionnaire No: -----

1. Interviewer's Information

1.1 Name of Interviewer -----Surname-----1.2 Interview Date: Day---Month---
Year---

Generic Questions

2. Respondent's Information:

2.1 District-----2.2 VDC-----2.3: Ward No.:-----Settlement/Pocket Area---

2.4 Name of Respondent:-----Surname:-----Ethnicity:-----

2.5 Contact No. Mobile -----Telephone No.-----

2.6 Sex: Male----- Female:-----

2.7 Name of nearest market center-----

2.8 How do you travel to market center? Walk-----Vehicle-----Others (Specify-----
----)

2.9 Travel time to reach market (Hours) ? Walk----- Vehicle -----

2.10 Is the market road connected? Yes----- No-----

3. Household description (Starting from your family head give details of your family members including children and out migrated)

S. No.	Name	Relation with household head	Sex 1-Male 2- Female	Age	Education					Out migrate for work	Place of migration	Purpose
					Illiterate	Literate	Primary	Secondary	Graduate			
1												
2												
3												
4												
5												
6												
7												
8												

4. Productive Asset

4.1 How much own land do you have ? (Ropni) Khet----- Irrigated-----Un-irrigated-----
Irrigable ----

Bari: ----- Irrigated----- Un-irrigated-----Irrigable -----Pakho-----Other-----
Total-----

4.2 Ownership of Asset

S. No	Name of Asset	Code	Ownership and quantity		
			Female	Male	Both
1	Land (Ropani)	1			
2	House (No)	2			
3	Livestock/poultry (No)	3			
4	Cash (NRs)	4			
5	Horse/Mule (No)	5			
6	Ornaments (NRs)	6			
7	Bi-cycle/Motor cycle)	7			
8	Machinery/ Vehicle (No)	8			
9	Others-----(-Specify)	9			

4.3 Do you have rented-in land ? Yes ---- No----, If Yes how much land did you rented in (Ropani) ? On rent ----- Share cropping-----

4.4 Do you have rented -out land ? Yes ----- No-----, If Yes how much land did you rented out (Ropani) ? On rent ----- Share cropping-----

4.5 How many animals do you have? Buffalo-----Bullock----- Cow----- Goat-----Sheep----- Pig----- Poultry----- Others-----

4.6 Are you involved in the following business ?

Agriculture: Processing-----Trade----- Supply----- Transportation-----Middle man-----Service----- Others---

Herbs: Processing----- Trade--- Supply----- Transportation-----Middle man----- Service--- Others---

Livestock: Processing----- Trade----- Supply----- Transportation-----Middle man----- Service----- Others--

4.7 Family members involved in the following institutions ? Group-----Co-operatives-----

Mahasangh----- Sangh-----Chamber of commerce-----Others----

4.8 What is the name of your group/co-operative-----

5. Family Income

What was the main sources of your family income ?

Sources	Code	No	Yes	Annual Income	Remarks
Agriculture Production Sale	1				
Livestock product sale	2				
Non timber forest product	3				
Industry /trade	4				
Wages	5				
Permanent Service	6				
Foreign employment	7				
Pension	8				
Others -----(Specify)	9				

5 a. Expenditure on apple production during last year(per Ropani)

S. No	Items	Unit				Quantity	Rate	Total Amount	Remarks
A. Input Expenditure									
1	Sapling	Kg							
2	Fertilizer								
	Chemical	Kg							
	Organic	Kg							
	Compost	Kg/ltr							
	Others	Kg/ltr							
3	Pesticide	Kg/ltr							
4	Micro-nutrients	No							
5	Bodo-paste Mixture								
6	Spray/tools								
B. Labor Expenditure			Family	Wage	Exchange				
1	Land preparation & planting								
2	Manure & pesticide use								
3	Irrigation								
4	Branch Pruning								
5	Thinning								
6	Weeding								
7	Harvesting								
8	Grading/Packaging								
9	Transportation								
C	Miscellaneous								
	Total								

Note: Include the food expenditure to wage and exchange labor

5 C. Decision Making Role

S. No	Activities	Code	Decision Role	
			Female	Male
1	Selection of seed/seedling	1		
2	Input purchase	2		
3	Labor mobilization	3		
4	Sale of agriculture/livestock	4		
5	Sale/purchase land and house	5		
6	Borrow/lending loan	6		
7	Education	7		
8	Health Services	8		
9	Family Planning	9		
10	Ornament sale/purchase	10		
11	Foreign employment	11		
12	Religious works	12		
13	Social works	13		
14	Group/co-operative meetings	14		
15	Participation on Training/workshop	15		
16	Others -----(Specify)	16		

6. Apple production value chain

A. Supply of production inputs

1. Where did you get apple sapling during last year?

Own production----- Group/ Co-operative----- Private nursery----- NARC-----Agrovet-----
DADO-----Others-----

2 Please write the name if source is Group/ Co-operatives, Nursery and Agrovet-----

Price of apple sapling-----NRs

Subsidy on apple sapling -----NRs

3 Do you know the variety of apple you planted Yes () No
()

If yes, mention the name of apple variety-----

4. How easily did you get the apple sapling ? Very easy () Easy
()

Difficult () Very Difficult ()

5. Did you get information on using method and other services while purchasing inputs (Sapling, fertilizer, Harmon, Bordo paste etc.) Yes () No ()

6. If yes, are you satisfied with the using method ? Yes () No ()

7. Are you satisfied with the quality of service and inputs ?

Fully satisfied () Partially satisfied () not satisfied (), condition of satisfaction-----

B. Production

1. When did you established your apple orchard ? -----B.S

2. Hw much is the area of apple orchard ? -----Ropani

3. If yes, are you satisfied with the method ? Yes----- No-----

7. Are you satisfied with the quality of inputs ? Fully Satisfied ----- Partially Satisfied-----
Not Satisfied-----Condition for satisfaction-----

B. Production:

1 Area under apple during last year ? -----Ropani

2. How much was irrigated ? Year round----- Seasonal ----- Un-irrigated-----

3. How many apple trees are there in your orchard ?

- Fruit bearing trees----- Fruit non-bearing trees----- Total
- trees-----
4. What is the irrigation condition of orchard (Ropani)?
Year round Irrigation-----Seasonal irrigation-----No-irrigation-----
 5. What are the problems on apple production ?
Input supply-----Production-----Grading/ Packaging-----Storage-----
Market-----Transportation-----Financial services-----Others-----
 6. How much apple produce during last year (Kg)-----
 7. How much loss occurred during harvesting (Kg)-----
 8. What activities did you performed during last year ?

Activities	Activities performed		Reason for not
	Yes	No	
Training and pruning			
Fruit thinning			
Bordo pasting			
Mulching			
Spraying			
Pesticide spray			
Identify fruit harvesting time			
Fruit harvesting technique			

9. Where did you learn the production technology(plant protection, manure and intercropping) ?
Agrovet () DADO () NGO () Co-operatives ()
Traders () Local Resource person () Others ()
10. Are you satisfied with the learned technology ?
Yes () No () Don't Know () , If no in which aspect-----

11. Is your orchard organic certified ? Yes () No ()

C. Storage

1. Did you stored or sold the apple after harvesting during last year ?
Stored () Sold immediately () Both ()
2. How much apple did you stored during last year ?
Stored volume (kg)-----, Stored duration----- Months----- Days-----
3. If you stored the apple mention the type of storage ? -----
4. If you did not stored the apple mention the reason for it ? -----
5. How much loss occurred while storing the apple (Kg)-----
6. Reason for apple loss while storing-----

A. Market

- 1 Did you sold apple during last year ? Yes () No () , If yes how much (Kg)----

If no give reasons-----
2. Did you grade apple during last year ? Yes () No () , If yes how much (Kg)
Grade A----- Grade B----- Grade C-----
3. Packaging Materials used ? Bamboo Basket () Plastic Crate () Sacks ()
Plastic Bag () Simple cartoon () Hard cartoon () Other Specify()
4. Source of packaging materials ? Local market () Nearest market ()
Purchaser ()
5. Where do you sell your product ? At farm() Collection center () Local market()
Other market ()
6. If you sold apple other than form orchard, how did you transport it?
Self () Porter () Animal () Vehicle ()
7. Transport loss quantity (Kg)-----
8. To whom do you sell (kg)? Middle man-----Co-operatives-----Local traders-----
Company/outside traders-----Consumers-----

9. When do you get payment ? On advance () Immediately () Within 15 days()
 1-3 months () 3-6 months () After 6 months()

10. Did you get any service from purchasers ? Yes () No
 ()

11. If yes,

Technical skill-----Type of skill-----

Financial Support-----

Tools/machinery----- Type of tools/machinery-----

12..What was the price of apple per kg ?

Grade-A Grade-B Grade-C Grade-D
 Organic certified -----
 Not certified -----

13. Did you contract to sell apple on advance ? Yes() No(), If yes to whom-----
 --

14. Who fix the price of apple ? Yourself () Purchaser () Both ()

15. Did you got the information on market demand and price ? Yes () No ()

16. If yes from where ? Group/cooperatives () Communication media ()
 Chamber of commerce () Others-----

C. Work Division

Ask this question to female head member of the family if not ask to next female member :

S. No.	Activities	Code	Role	
			Female	Male
Agriculture				
1	Land preparation	1		
2	Seed/seedling sowing	2		
3	weeding/manuring	3		
4	Orchard management	4		
5	Pesticide use	5		
6	Purchase of agri inputs	6		
7	Irrigation	7		
8	Thinning/pruning	8		
9	Harvesting and collection	9		
10	Grading	10		
11	Storage	11		
12	Crop sale	12		
13	Others	13		

What are the major problems on apple production and market management other than above mentioned ?

1.-----2-----3-----

What are youe suggestion to solve the above problems ?

1.-----2-----3-----

Apple producer's Group/co-operatives base line Survey Questionnaire

Questionnaire Number-----

1. Interviewer's Information

1.1 Name of Interviewer -----Surname-----1.2 Interview Date: Day---Month--
- Year---

Generic Questions

2. Respondent's Information:

2.1 District-----2.2 VDC-----2.3: Ward No.:-----
2.4 Name of attended persons

Name	Ethnicity	Position	Contact No

3. Member's description

Please mention the following information

3.1 Name of group/ co-operatives-----

3.2 Registered date-----3.3 Registered institution-----

3.3 Members

Sex	3.4 General Members			3.5 Executive Members		
	Total	Janjatis	Dalit	Total	Janjatis	Dalit
Male						
Female						
Total						

3.6 Is your group/ co-operative affiliated with other farmers organizations ? Yes () No ()

If yes, where ?

Cooperatives () District Cooperative Association ()

Central cooperative Association () National Cooperative Federation ()

Others ()

3.7 Manpower of group/cooperative

Position	Female	Male	Total	Dalit	Janjatis

3.8 How many farmers have apple orchard-----? Farmers no-----Total Area of orchard-----

3.9 Infrastructure of group/ cooperatives

Physical Infrastructure	Yes	No	Capacity
Office Building			
Collection center			
Local storage building			
Seed Storage			
Processing center			
Grading/ packaging			
Transport means			
Cleaning facilities			
Others			

3.9a Capital of group/ cooperatives-----Sources of income-----
 --

3.10 Availability of facilities to group/ cooperatives ?

Facilities	Yes	No
Sapling supply		
Other material supply (Fertilizer, seed)		
Technology hand over		
Observation Tour		
Training		
Collection and storage		
Processing		
Transport		
Market information supply		
Market management		
Loan		
Others-----		

3.10 How much quantity did you sold apple during last year (Quintle)?-----

3.11 Was the apple collected from other farmers (quintal)?

Members -----Non-members-----Total -----

3.12 Did your group/cooperatives graded apple before sell ?

Yes () No ()

3.13 To whom did you sold apple of different grade ?

To whom	Grade-A		Grade-B		Grade-C		Grade-D	
	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
Locally sell by group/co-operatives								
Sell outside								
Local wholesaler								
Middleman								
Outer wholesalers								
Agri. business company								
Co-operatives								
Co-operative Association								

3.14 Loss of apple from collection to sale (Kg) -----Reason for loss-----

3.15 Did you get any service from purchaser/Traders Yes () No ()

3.16 If yes type of service ? 1----- 2-----3-----

3.17 What is the duration of getting payment ?

On Advance () Immediately () Within one month ()

1- 3 months () 3 -6 months () After 6 months ()

3.18 Packaging materials ?

Packaging materials	Write on ranking basis (highest-1, 2,3,----7)	
Standard cartoon		
Simple cartoon		
Net sacks		
Simple sacks		
Plastic crate		
Wooden box		
Others-----		

- 3.19 Have you done prior agreement on selling apple during last year?
 Yes () No ()
 If yes, How much quantity (Quintal)-----
- 3.20 Do you handle production and business of high value products of apple like slices and brandy etc.) ?
 Yes () No ()
 If Yes mention in details-----
- 3.20 Does the group/cooperatives handle business on other agriculture products ?
 Yes () No (), If yes mention them 1.-----2-----
 -----3-----
- 3.21 Does the group/cooperatives handle non-agriculture products ?
 Yes () No (),
 if yes mention them 1.-----2-----3-----
- 3.22 Type of training obtained by group/ co-operatives during last year ?

Code	NGO		DADO		NARC		Co-operative		Agribusiness		Agribusiness		Cooperative		Organized by group/cooperative	Others	Benefited Farmers				
	1	2	1	2	1	2	1	2	1	2	1	2	1	2			Female	Male	Total	Dalit	Janjatis
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					

1. Nursery Management 2. Apple production technology 3. Improve quality production
 4. Diseases and insect control 5. Organic apple production 6. Organic certification
 7. Production diverse (Bibidhwaran) 8. Post harvest management 9. Market management
 10. Group/o-operative management 11. Account System
 12. Others (specify----)

3.23 From where do you get market information ?
 Group/ co-operatives () Communication media () Chamber of commerce () Others Specify-----

3.24 From where do you get the service for institutional development of group/cooperatives, technology and market ?

Subject	Supporting institution
Institutional development	
Technology extension	
Market management	
Others-----	

- 3.25 Type of problems encountered on apple production and marketing ?
 1----- 2-----
 3----- 4-----
- 3.24 Suggestions to solve the above problems
 1----- 2-----
 3----- 4-----

Checklist for FGD/Consultative Meeting with Key Stakeholders

1. Current status of value chain products production, processing and marketing.
2. Trend of value chain products production, processing and marketing.
3. Contribution of value chain products in changing household income.
4. Contribution of value chain products intervention to overall social development activities.
5. Status of local institutional development and their roles.
6. Quality of service agencies and other related networks.
7. Market developed by enterprises upgrading.
8. Employment generated by processing and marketing activities.
9. Sustainability of local institutions: haat bazaar, collection center, local markets trading systems etc.
10. Recommendations for future directions

Name of respondents	Sex	Address	Position	Institution

Trader's Survey Questionnaire

Questionnaire Number-----

4. Interviewer's Information

4.1 Name of Interviewer -----Surname-----1.2 Interview Date: Day---Month---
Year---

Generic Questions

5. Respondent's Information:

5.1 District-----2.2 VDC-----2.3: Ward No.:-----

2.4 Name of Respondent:-----Surname:-----Ethnicity:-----

2.5 Contact No. Mobile -----Telephone No.-----

2.6 Sex: Male----- Female:-----2.7 Location of trade or office-----

2.8 VDC-----2.9 District-----

2.10 Do you have following physical facilities? Truck: Yes () No () Warehouse: Yes ()

No ()

Trailers: Yes () No () Processing facility: Yes () No () Cart :Yes () No ()

2.11 Is your business firm registered ? Yes () No () If Yes Where-----
--

Which item do you purchase and sale ?

Items	District	Pocket Area	From whom	From where	Quantity	Mode of payment
			1. Farmer 2. Collector 3. Group / co-operatives 4. Local traders	1. Farm gate 2. Road side 3. Collection center 4. Collect at warehouse 5. Local market 6. Others (specify--)		1. Advance 2. At item loaded place 3. After 15 days 4. After one month 5. After 6 months 6. After one year 7. Commission Basis

2.12 How many traders are engaged in above mentioned districts except you ?

2.13 Did you purchase graded items ? Yes () No ()

2.14 If yes, how and how much quantity ?

Items	Quantity Grade A	Quantity Grade -B	Quantity Grade -C
Apple			
Ginger			
Vegetable seed			

2.15 Please mention the price of item you purchased

Items	Grade	Minimum Price	Maximum Price	Current price

2.16 During last year how much did you sold ?-----

To whom and how much did you sold ?

To whom 1. Collector 2. Consumer 3. Wholesaler 4. Retailer 5. Self processing 6. Other processor	From where was the purchaser		From where did you sold 1. Own Shop 2. Carrying to purchaser 3. Given to road side traders 4. Others	Quantity	Mode of payment 1. On Advance 2. Immediately 3. After one month 4. On commission basis (%) 5. Others
	District	VDC/ Municipality			

If you are involved on processing mention the name of item and quantity?

Name of Item	Quantity (Kg)
1.	
2.	
3.	

2.17 How much loss occurred while transporting, storing and keeping at selling stall ?

Storing----- Transporting----- During Sell-----

2.18 Please mention the price information of items sold during last year ?

Items	Grade	Minimum Price	Maximum Price	Current price

2.19 How much difference occurred between purchase and sold quantity ? -----Ton

2.20 What were the problems did you face on market and trade ?

S. No	Problems	Priority 1. Highly important 2. Important 3. Less important
1		
2.		
3.		

2.21 Are you getting any support from Chamber of Commerce ? Yes () No ()

2.22 Are you thinking to do business of HVC in Mid-western region ? Yes () No ()

2.3 If yes, what are your conditions (Mention on priority basis) ?

S. No	Support to do business of HVC in Mid-western region	Priority 1. Highly important 2. Important 3. Less important
1		
2.		
3.		

QUESTIONNAIRE NUMBER

--	--	--	--

IMPACT SURVEY QUESTIONNAIRE

CONSENT. Hello. My name is _____. We are conducting a survey with IFAD and the Ministry of Local Development. This survey will help us in planning and monitoring the impact of project activities. Your participation is voluntary. You can choose not to answer any questions, and you can stop the interview at any time. All of your responses will be confidential. Would you like to ask me anything else about the survey? Do you agree to participate in this survey?

Respondent **agrees**
to interview

↓

Respondent **does not agree**
to interview

 → **END**

NEXT PAGE

[insert local language
translation]

[insert local language translation]

↓

[insert local language
translation]

 → **END**

[insert local language translation]

QUESTIONNAIRE IDENTIFICATION

INTERVIEWER:

CLUSTER

--	--	--	--

INTERVIEWER:

HOUSEHOLD

--	--	--	--

SUPERVISOR:

--	--

--	--

--	--	--	--

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SECTION 1: HOUSEHOLD DEMOGRAPHICS

Please tell me the first name of each person who usually lives here, starting with the Head of the Household.
List adult members of the household first, then list children.

[insert local language translation]

No	FIRST NAME: [insert local language translation]	SEX: Male = 1 Female = 2 [insert local language translation]		AGE How old was (name) on his/her last birthday? [insert local language translation]		LITERACY Can he/she read a newspaper or letter? EASILY (1); WITH DIFFICULTY (2); NOT AT ALL (3); OR DON'T KNOW (9) [insert local language translation]			
	NAME	M	F	AGE		EASY	DIFF	CAN'T READ	DK
01	_____ (Head of Household)	1	2			1	2	3	9
02	_____	1	2			1	2	3	9
03	_____	1	2			1	2	3	9
04	_____	1	2			1	2	3	9
05	_____	1	2			1	2	3	9
06	_____	1	2			1	2	3	9
07	_____	1	2			1	2	3	9
08	_____	1	2			1	2	3	9
09	_____	1	2			1	2	3	9
10	_____	1	2			1	2	3	9
11	_____	1	2			1	2	3	9
12	_____	1	2			1	2	3	9

SECTION 2: SURVEY QUESTIONS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO		
1.a.	<u>Type of Housing</u> What is the main material of the dwelling floor? [insert local language translation]	<u>NATURAL FLOOR</u> EARTH/SAND..... 1 DUNG 2 <u>RUDIMENTARY FLOOR</u> WOOD PLANKS 3 PALM/BAMBOO..... 4 <u>FINISHED FLOOR</u> POLISHED WOOD..... 5 VINYL OR ASPHALT STRIPS..... 6 CERAMIC TILES..... 7 CEMENT..... 8 CARPET..... 9 OTHER _____ 96 (SPECIFY)			
1.b.	What is the <u>number of sleeping rooms</u> in the dwelling? [insert local language translation]	NUMBER OF SLEEPING ROOMS <table border="1" data-bbox="1281 792 1386 842" style="float: right;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>			
2.	<u>Drinking Water Supply.</u> What is the main source of <u>drinking water</u> for members of your household? [insert local language translation]	PIPED INTO HOUSE..... PIPED INTO YARD OR PLOT..... 1 PUBLIC TAP..... 2 TUBEWELL/BOREHOLE WITH PUMP... 3 PROTECTED DUG WELL..... 4 PROTECTED SPRING..... 5 RAINWATER COLLECTION..... 6 BOTTLED WATER..... 7 UNPROTECTED DUG WELL 8 UNPROTECTED SPRING 9 POND, RIVER OR STREAM..... 10 TANKER-TRUCK, VENDOR 11 OTHER _____ 12 (SPECIFY) 96			
3.a.	<u>Sanitation.</u> What kind of <u>toilet facility</u> does your household use? [insert local language translation]	NO FACILITY/ BUSH/ FIELD..... 1 OPEN PIT/TRADITIONAL PIT LATRINE 2 IMPROVED PIT LATRINE (VIP)..... 3 POUR FLUSH LATRINE..... 4 FLUSH TOILET 5 OTHER _____ 96 (SPECIFY)	→ Q.4.a		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO																		
3.b.	Is this toilet facility located within your dwelling, or yard or compound? [insert local language translation]	YES 1 NO 2																			
4.a.	Food Security. In the past 12 months, did your household experience a hungry season? [insert local language translation] <i>[The hungry season means the number of months a household does not have enough food because their own stores are depleted and they do not have money to buy food.]</i> [insert local language translation]	YES 1 NO 2	→ Q.5.																		
4.b.	During what month did the hungry season begin? [insert local language translation]	<u>MONTH THAT HUNGRY SEASON BEGAN</u> <input type="text"/> <input type="text"/>																			
4.c.	During what month did the hungry season end? [insert local language translation]	<u>MONTH THAT HUNGRY SEASON ENDED</u> <input type="text"/> <input type="text"/>																			
4.d.	In the past 12 months, did your household experience a second hungry season? [insert local language translation]	YES 1 NO 2	→ Q.5.																		
4.e.	During what month did the second hungry season begin? [insert local language translation]	<u>MONTH THAT SECOND HUNGRY SEASON BEGAN</u> <input type="text"/> <input type="text"/>																			
4.f.	During what month did the second hungry season end? [insert local language translation]	<u>MONTH THAT SECOND HUNGRY SEASON ENDED</u> <input type="text"/> <input type="text"/>																			
5.	Other Asset-Related Questions. Does your household have...? [insert local language translation] Read each item aloud and record the response before proceeding to the next item. [insert local language translation]	<table border="1"> <thead> <tr> <th></th> <th>YES</th> <th>NO</th> </tr> </thead> <tbody> <tr> <td>ELECTRICITY..... [insert local language translation]</td> <td>1</td> <td>2</td> </tr> <tr> <td>RADIO..... [insert local language translation]</td> <td>1</td> <td>2</td> </tr> <tr> <td>TELEVISION..... [insert local language translation]</td> <td>1</td> <td>2</td> </tr> <tr> <td>REFRIGERATOR..... [insert local language translation]</td> <td>1</td> <td>2</td> </tr> <tr> <td>Solar.....</td> <td>1</td> <td>2</td> </tr> </tbody> </table>		YES	NO	ELECTRICITY..... [insert local language translation]	1	2	RADIO..... [insert local language translation]	1	2	TELEVISION..... [insert local language translation]	1	2	REFRIGERATOR..... [insert local language translation]	1	2	Solar	1	2	
	YES	NO																			
ELECTRICITY..... [insert local language translation]	1	2																			
RADIO..... [insert local language translation]	1	2																			
TELEVISION..... [insert local language translation]	1	2																			
REFRIGERATOR..... [insert local language translation]	1	2																			
Solar	1	2																			

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES		SKIP TO	
		YES	NO		
6.	Does any member of your household own...? [insert local language translation] Read each item aloud and record response before proceeding to the next item. [insert local language translation]	BICYCLE..... [insert local language translation] MOTORCYCLE OR SCOOTER..... [insert local language translation] CAR OR TRUCK..... [insert local language translation] Horse/Mule	1 1 1 1 1	2 2 2 2	
7.	What type of fuel does your household mainly use for cooking? [insert local language translation]	ELECTRICITY LPG/NATURAL GAS BIOGAS KEROSENE COAL/LIGNITE..... CHARCOAL FIREWOOD/STRAW DUNG OTHER _____ (SPECIFY)		1 2 3 4 5 6 7 8 96	
8.a.	Are you or any members of your household involved in cultivating any farmland? [insert local language translation]	YES NO		1 2	→ Q.9
8.b.	What does your household use to cultivate most of your farmland? [insert local language translation]	HAND TOOL (HOE/SPADE)..... ANIMAL-DRAWN PLOW..... TRACTOR-DRAWN PLOW..... POWER TILLER..... [LOCAL ADAPTATION IF NEEDED]..... OTHER _____ (SPECIFY)		1 2 3 4 5 96	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES		SKIP TO	
		YES	NO		
9.	Does any member of your household own any livestock? [insert local language translation] Read each item aloud and record response before proceeding to the next item. [insert local language translation]	CHICKENS OR OTHER POULTRY			
		[insert local language translation]	1	2	<input type="checkbox"/> <input type="checkbox"/>
		SHEEP.....			
		[insert local language translation]	1	2	<input type="checkbox"/> <input type="checkbox"/>
		GOATS			
		[insert local language translation]	1	2	<input type="checkbox"/> <input type="checkbox"/>
CATTLE.....					
[insert local language translation]	1	2	<input type="checkbox"/> <input type="checkbox"/>		
BUFFALOES					
[insert local language translation]	1	2	<input type="checkbox"/> <input type="checkbox"/>		
OTHER.....					
[insert local language translation]	1	2	<input type="checkbox"/> <input type="checkbox"/>		

SECTION 3 – ANTHROPOMETRY

ID	First Name of Child:	Sex:		Date of Birth: Day/Month/Year	Age in Months: (0-59)	Height: (Centimetres)	Weight: (Kilograms)
		M	F				
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□
		1	2	____/____/____	□□	□□□.□	□□.□

NOTES OR COMMENTS:

**THIS IS THE END OF THE SURVEY.
THANK YOU VERY MUCH FOR YOUR CO-OPERATION.**