

# District Profile Mustang



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## ACRONYMS

AMIS	:	Agriculture Management Information System
ASC	:	Agriculture Sub Centre
BRCH	:	Building Resilience to Climate Related Hazards
CBO	:	Community Based Organizations
DADO	:	District Agricultural Development Office
DLSO	:	District Livestock Service Office
EWS	:	Early Warning System
FFS	:	Farmers Field School
FGD	:	Focus Group Discussion
HH	:	HH
INGO	:	International Non-Government Organization
KII	:	Key Informants Interview
LSC	:	Livestock Service Centre
MoAD	:	Ministry of Agriculture Development
NARC	:	Nepal Agricultural Research Council
NGO	:	Non-Government Organization
PMU	:	Project Management Unit
PPCR	:	Pilot Program for Climate Resilience
VDC	:	Village Development Committee
WUG	:	Water User's Group

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## CHAPTER I: INTRODUCTION

### 1.1 General Information (Background)

Mustang is one of the mountain districts of 25 pilot districts of Building Resilience to Climate Related Hazards Project (BRCH), situated in Dhaulagiri zone of Western Development Region (WDR). The district is located in the latitude of 28° 20' to 29° 05'N and the longitude of 83° 30' to 84° 15' E (Figure 1). The district administrates 16 Village Development Committees (VDCs). It borders with Manang district at east, Dolpa district at west, Tibet of China at north, and Myagdi district at the south. Jomsom is the district headquarters.

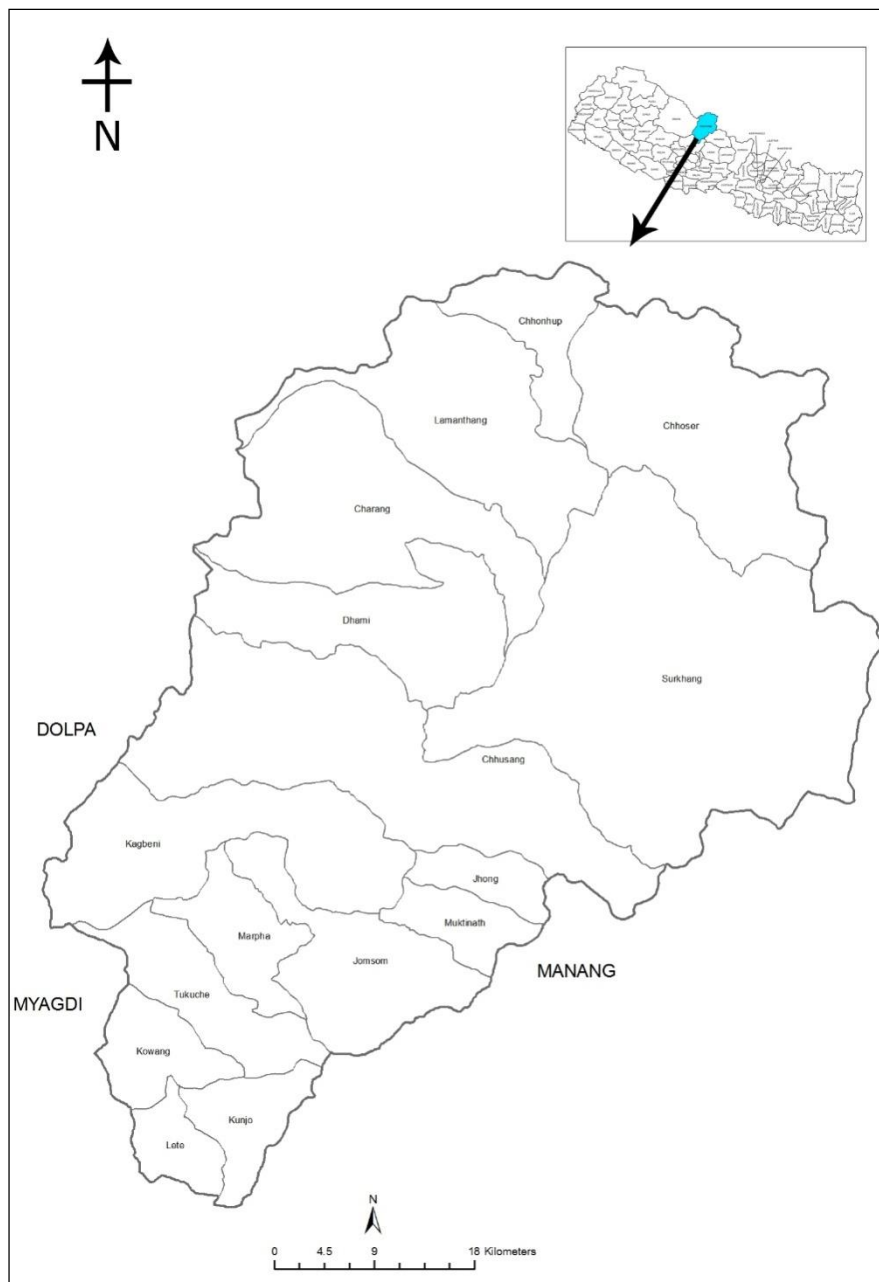


Figure 1: Location Map of Mustang District

The topography of the district is different than other mountain and hilly districts. It lies on the northern part of Annapurna range across the Himalayas. The elevation begins from Pairho Thaplo of Kunjo VDC at 2000 msl to the highest peak Dhaulagiri at 8167 msl.

### **1.2 Land Utilization**

The area of the district is (3573 km<sup>2</sup>) 3639.58km<sup>2</sup> (363958 ha). The total cultivable area of the district is 3661 ha out of which 2915 ha is cultivated. Irrigated area is 2599 ha. Khet land covers 2509 ha and 406 ha is upland (DADO, 2014). The district had 12324 ha forest area, 147679 ha pasture land, 150573 ha bushy rocky area, and 30591 ha snow covered area. Altogether, there are

### **1.3 Climate**

The average maximum temperature during the month of June is 23°C where as minimum temperature goes to -2.5°C in the month of January. The average maximum rainfall of 41.1 mm occurs whereas 35.2 mm occurs in August. The records have been presented in Annex 1.

**CHAPTER II: DEMOGRAPHIC AND SOCIO-ECONOMIC CHARECTERSTIC**

**Table 1.1: Summary statistics of demographic and other household characteristics**

Description	CBS, 2011	Base line survey, 2015
Sex ratio (number of males per 100 females)	111.5	102.26
Dependency ratio		51.51
Household (HH) size	4.01	4.71
Percent of female headed households	23.76	16.40
HH (%) who own their housing unit	68.92	96.19
HH (%) with piped drinking water	91.64	97.86
HH (%) with access to electricity	71.19	99.76
HH (%) with access to Telephone/Mobile	78.45	95.48
HH (%) with toilet	63.36	99.76
HH (%) using fire wood for cooking	54.0	45.0
Literacy rate	66.5	86.02

**2.1 Population by age group and sex**

The following table presents information on the distribution of population by age group and sex of the household members. The male population of 50.56 percent is higher than 49.44 percent of female population giving sex ratio of 102.26 in the district. About 19.83 percent of population were under 15 years and 14.17 percent were of 60 years or more old. Thus majority of population (66 %) were from age group 15-59 years (Table 1.2). The survey data revealed that the overall dependency ratio is 51.51 percent. The average household size of the district is found to be 4.71 compared to 4.01 as of 2011 census.

**Table 1.2: Distribution of population by age and sex**

Age Group	Gender				Total	
	Male		Female		No.	%
	No.	%	No.	%		
1-4 Years	370	2.34	418	2.65	788	4.99
5-9 Years	433	2.74	511	3.23	944	5.98
10-14 Years	692	4.38	708	4.48	1400	8.86
15-19 Years	764	4.84	669	4.23	1433	9.07
20-24 Years	716	4.53	676	4.28	1392	8.81
25-29 Years	826	5.23	952	6.03	1778	11.25
30-34 Years	716	4.53	669	4.23	1385	8.77
35-39 Years	788	4.99	605	3.83	1393	8.82
40-44 Years	417	2.64	472	2.99	889	5.63
45-49 Years	487	3.08	385	2.44	872	5.52
50-54 Years	337	2.13	337	2.13	674	4.27
55-59 Years	267	1.69	346	2.19	613	3.88
60-64 Years	371	2.35	355	2.25	726	4.60
65+ Years	804	5.09	708	4.48	1512	9.57
<b>Total</b>	<b>7988</b>	<b>50.56</b>	<b>7811</b>	<b>49.44</b>	<b>15799</b>	<b>100</b>

Source: Annex Table 1

## 2.2 Household head and members

Son/daughter constituted largest percentage (40.84%) of household members followed by household heads which constituted 20.91 percent of the population (Table 1.3).

**Table 1.3: Percentage of population by relation to HH head and gender**

Relation to HH Head	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Head	2762	17.48	542	3.43	3304	20.91
Husband/wife	143	0.90	2424	15.34	2567	16.24
Son/daughter	3903	24.70	2550	16.14	6453	40.84
Grand children	519	3.28	645	4.08	1164	7.37
Son/daughter in law	344	2.18	1218	7.71	1562	9.88
Daughter/son in law	8	0.05	0	0.00	8	0.05
Parent	95	0.60	259	1.64	354	2.24
Father/mother in law	16	0.10	16	0.10	32	0.20
Brother/sister in law	104	0.66	71	0.45	175	1.11
Household widow		0.00		0.00		0.00
Others	95	0.60	88	0.56	183	1.16
<b>Total</b>	<b>7989</b>	<b>50.56</b>	<b>7813</b>	<b>49.44</b>	<b>15802</b>	<b>100</b>

Source: Annex Table2

From the Table 1.3, it is seen that out of 20.91 percent household heads, female formed 3.43 percent of heads in comparison to 17.48 percent of male members who were household heads thus giving overall female household head percentage as 16.40 percent.

## 2.3 Marital Status of head of households

A total of 57.66 percent of HH members were married. Widow members of the household constituted 6.76 percent of the population. A total of 28.58 percent of population were married male whereas married female population accounted for 29.08 percent of total population.

**Table 1.4: Population by marital status and gender in pilot districts**

Marital Status	Gender				Total	
	Male		Female			
	Number	%	Number	%	Number	%
Married	4022	28.58	4092	29.08	8114	57.66
Divorced	32	0.23	16	0.11	48	0.34
Separate	16	0.11	32	0.23	48	0.34
Widow/widower	361	2.57	591	4.20	952	6.76
Unmarried	2755	19.58	2156	15.32	4911	34.90
<b>Total</b>	<b>7186</b>	<b>51.06</b>	<b>6887</b>	<b>48.94</b>	<b>14073</b>	<b>100</b>

Source: Annex Table 3



Female gender had higher percentage of widow (4.20%) than male gender (2.57%). Unmarried male constituted more (19.58%) of total population than unmarried female (15.32%).

### 2.4 Educational status, distance and time spent for schooling

According to 1991 census, literacy was defined as the “ability to read and write in any language with understanding and the ability to do simple arithmetic calculations”. The same definition was used in the censuses of 2001 and 2011.

The literacy rate of the district of age 5 and above is found to be 86.02 percent compared to 66.50percent in 2011 census showing that the literacy rate has been increased over the period of time. As regards to the educational status, the share of those who can read and write is high at 25.00 percent followed by primary level (18.24%), lower secondary (12.99%), inter/equivalent (10.27%). People having graduated and above graduate level are still found to have quite low at 3.72 percent.

**Table 1.5 Percentage of population by education level and gender**

Education Level	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Cannot read and write	1202	8.01	897	5.98	2099	13.98
Can read and write	1589	10.59	2163	14.41	3752	25.00
Beginners	104	0.69	103	0.69	207	1.38
Primary (1-5)	1424	9.49	1314	8.75	2738	18.24
L. Secondary (6-8)	990	6.60	960	6.40	1950	12.99
Secondary (9-10)	599	3.99	541	3.60	1140	7.59
SLC/Equivalent	535	3.56	489	3.26	1024	6.82
Inter/Equivalent	834	5.56	708	4.72	1542	10.27
Grad/Equivalent	237	1.58	164	1.09	401	2.67
PG/Equi/above	102	0.68	55	0.37	157	1.05
<b>Total</b>	<b>7616</b>	<b>50.74</b>	<b>7394</b>	<b>49.26</b>	<b>15010</b>	<b>100</b>

Source: Annex Table 4

### 2.5 Accessibility to Educational Institutions in terms of Distance and Time Spent

Currently 24.13 percent of the family members of age 5 and above are going to educational institutions. Survey data showed that proportion of them is higher in case of male than female, which constituted 12.44 percent and 11.70 percent of their population respectively.

**Table 1.6: Population by going to school (>5 years)**

Going to School	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Yes	1865	12.44	1754	11.70	3619	24.13
No	5743	38.30	5634	37.57	11377	75.87
<b>Total</b>	<b>7608</b>	<b>50.73</b>	<b>7388</b>	<b>49.27</b>	<b>14996</b>	<b>100</b>

As regards to the accessibility to educational institutions in terms of time, 98.01 percent of the respondents have reported that distance to reach is less than 1 km, whereas 0.88 percent reported distance of 1-5 km and distance of 5-10 km (Table 1.7).

**Table 1.7 Population by distance to education institution (>5 years)**

Distance	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Less than 1km	1835	50.68	1714	47.33	3549	98.01
1-5 km	8	0.22	24	0.66	32	0.88
5-10 km	16	0.44	16	0.44	32	0.88
Greater than 10 km	8	0.22	0	0.00	8	0.22
<b>Total</b>	<b>1867</b>	<b>51.56</b>	<b>1754</b>	<b>48.44</b>	<b>3621</b>	<b>100</b>

Source: Annex Table 6

Accessibility to educational institution by gender shows that that 97.60 percent of the households have reported that institutions can be reached within less than 1 hour (Table 1.8).

**Table 1.8 Population by time taken to education institution (>5 years)**

Time taken	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Less than 1 hour	1828	50.48	1706	47.11	3534	97.60
1-2 hours	40	1.10	47	1.30	87	2.40
More than 2 hours	-	-	-	-	-	-
<b>Total</b>	<b>1868</b>	<b>51.59</b>	<b>1753</b>	<b>48.41</b>	<b>3621</b>	<b>100</b>

Source: Annex Table 7

Regarding mode of transport, 90.86 percent of the educational institution going population reported travelling on foot and only 8.92 percent reported using some type of vehicles (Table 1.9)

**Table 1.9: Population by mode of transportation to education institution (>5 years)**

Mode of transport	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
On foot	1717	91.97	1574	43.46	3291	90.86
Bus	142	7.61	181	5.00	323	8.92
Bicycle	-	-	-	-	-	-
Foot and bus	-	-	-	-	-	-
Other	8	0.43	0	0.00	8	0.22
<b>Total</b>	<b>1867</b>	<b>100.00</b>	<b>1755</b>	<b>48.45</b>	<b>3622</b>	<b>100</b>

Source: Annex Table 8

## 2.6 Occupation

A total of 36.79 percent of the population has adopted their main occupation as agriculture in their own land, and few segment of the population have adopted agriculture in the basis of salary/wage worker,

which accounted for only 4.31 percent of the population. Student as their occupation accounted for 20.01 percent is followed by non-agricultural salaried work accounting for 14.87 percent of the population. About 5.65 percent of the population was engaged in external jobs abroad. Occupational pattern is more or less same in case of male and female except in case of salaried non agriculture occupation and abroad external job where female participation is quite low i.e. only 4.24 and 1.07 percent in comparison to 10.63 and 4.58 percent reported by male.

**Table 1.10 : Distribution of population by types of occupation**

Main Occupation	Gender				Total	
	Male		Female		No.	%
	No.	%	No.	%		
Own agriculture	1890	13.43	3288	23.36	5178	36.79
Salaried/wage agriculture	346	2.46	260	1.85	606	4.31
Non agriculture salary	1496	10.63	597	4.24	2093	14.87
Own enterprises	944	6.71	600	4.26	1544	10.97
Abroad external job	645	4.58	150	1.07	795	5.65
Household work	166	1.18	536	3.81	702	4.99
Student	1487	10.56	1329	9.44	2816	20.01
No work	127	0.90	79	0.56	206	1.46
Other	88	0.63	48	0.34	136	0.97
<b>Total</b>	<b>7189</b>	<b>51.07</b>	<b>6887</b>	<b>48.93</b>	<b>14076</b>	<b>100</b>

Source: Annex Table 9

## 2.7 Migration

Among the migrated population, looking for work is the main reason for migration as has been reported by 17.79 per cent of the households, followed by 7.71 per cent for education/training purpose.

**Table 1.11 : Reasons of migration of the HH's members**

Reason for Migration	HH	
	No	%
Family reason	16	0.40
Education/training	307	7.71
Natural disaster	47	1.19
Looking for work	708	17.79
Easier lifestyle	102	2.57
No migration	2802	70.36
Other reason	-	-
<b>Total</b>	<b>3982</b>	<b>100.00</b>

Source: Annex Table 12

## 2.8 Alignment of HH Members with Institutions

Only 17.28 percent of household members were not associated with different institutions. Association with agriculture coop group cooperative was reported by 2.91 percent of the population.. Association with the institutions such as, vegetable group, water user group, agriculture marketing group is almost negligible. However, other than the above mentioned institutions, their associations in category 'others' are found to be very high at 78.29 percent.

**Table 1.12 Members of the households (>=10 years) associated with different institutions**

Types of organizations	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Farmers Field School	16	0.11	55	0.39	71	0.50
Vegetable	8	0.06	-	-	8	0.06
Water Users Group	8	0.06	8	0.06	16	0.11
Commercial Crop Production	24	0.17	8	0.06	32	0.23
Saving credit co-operative	40	0.28	40	0.28	80	0.57
Agricultural co-op group	189	1.34	220	1.56	409	2.91
Agriculture marketing		-	-	-	-	-
Seed production	-	-	8	0.06	8	0.06
Other	5808	41.27	5210	37.02	11018	78.29
Not in Group	1095	7.78	1337	9.50	2432	17.28
<b>Total</b>	<b>7188</b>	<b>51.07</b>	<b>6886</b>	<b>48.93</b>	<b>14074</b>	<b>100</b>

Source: Annex Table 10

## 2.9 Ethnicity

The distribution of population by ethnicity revealed that majority of the population residing in the district constituted Adibasi/Janajati which accounted for 67.18 percent of the total population, followed by Dalit (22.37 %) and Brahmin/Chhetri (10.46%).

**Table 1.13: Distribution of population by ethnicity**

Ethnicity	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Adibasi/Janajati	5343	33.81	5272	33.36	10615	67.18
Brahman/Chhetri	818	5.18	834	5.28	1652	10.46
Dalit	1826	11.56	1708	10.81	3534	22.37
Madhesi	-	-	-	-	-	-
Others	-	-	-	-	-	-
<b>Total</b>	<b>7987</b>	<b>50.55</b>	<b>7814</b>	<b>49.45</b>	<b>15801</b>	<b>100</b>

Source: Annex Table 11

## 2.10 Housing Ownership

Pakki house is defined as a house built with both walls and roof made from permanent materials like cement, concrete and bricks. Semi-Pakki is house with either wall or roof constructed by temporary materials like tin/tile/slate roofing and bamboo. Kachchi house is a house with both walls and roof made from temporary material such as mud, straw, bamboo and other durable materials such as straw, plastics etc.

Regarding the ownership of the houses, most of the HH (96.16%) reported that they have their own houses. Very insignificant number of HH is found to have rented or lived in relative's house or lived in land owner's house. Among those, who have owned house, majority (81.18%) of the HH were found to have lived in Semi-pakki houses, 14.52 percent in Kachchi houses and only 4.30 percent of the respondents are found to have lived in concrete roof pakki/cemented house.

**Table 1.141: Distribution of ownership of houses by types of houses**

Types of house ownership	HH	
	No.	%
Own house	3180	96.16
Rented house	87	2.63
Relative's house	16	0.48
Land owner's house (included in rented land)	24	0.73
Institutional house	0	0.00
<b>Total</b>	<b>3307</b>	<b>100.00</b>

Source: Annex Table 13

**Table 1.152: Distribution of houses by types of houses**

Type of residential house	HH	
	No.	%
Concrete roof/pakki/cemented	142	4.30
Semi-pakki (tin/tile/slate roof)	2683	81.18
Kacchi- thatched roof	480	14.52
Others	-	-
<b>Total</b>	<b>3305</b>	<b>100.00</b>

Source: Annex Table 14

## 2.11 Households Asset

The most common assets owned by the people are found to be telephones/mobile phones reportedly constituting 46.63per cent of household assets items followed by assets including jewellery and TV constituting 21.48 and 15.95per cent of the asset items. An attempt has been made to calculate the salvage value of the assets owned by the HH in the current market value. Expensive assets like jewellery formed largest (38.15%) portion of the net value of the all the assets owned by the households followed by bus/truck 35.77per cent portion of the net value of the assets.

**Table 1.16: Distribution of different type of assets and their value**

Types of assets	Items		Approximate current value	
	No.	%	(Rs)	%
Radio/ cd player	1283	6.79	1107584	0.15
Cycles	79	0.42	226656	0.03
Motorcycle/scooter	693	3.66	52091530	7.11
Car/jeep	47	0.25	41459160	5.66
Bus/truck	142	0.75	261874250	35.77
Telephone/mobile	8814	46.63	49436979	6.75
Washing machine	55	0.29	802740	0.11
Refrigerator	464	2.46	4875465	0.67
Sewing machine	118	0.62	960140	0.13
Fan/heater	47	0.25	141660	0.02
TV	3014	15.95	26839061	3.67
Assets including Jewelries	4061	21.48	279340141	38.15
Tractor/power tiller	39	0.21	9444000	1.29
Thresher/pump set/sprayers	0	0.00	0	0.00
Mill/Ghatta/turbine	16	0.08	2046200	0.28
Others	31	0.17	1495300	0.20
<b>Total</b>	<b>18904</b>	<b>100.00</b>	<b>732140866</b>	<b>100</b>

Source: Annex Table 15

## 2.12 Food Security Status

Sufficiency of food and its security to the farmers from their farm is an important indicator of economic status of the farmers. In this regards, only small segments of the households (14.04 %) have reported that they have food sufficiency for 12 or more months. Only 8.35 percent of the households have reported that food is sufficient for 9 to 12 months, indicating that majority of the households have food deficiency, i.e. they have to support their family from other sources of income.

**Table 1.173: Food sufficiency of the HH by duration**

Food sufficiency level	HH	
	No.	%
Less than 3 months	323	9.77
3 to less than 6 months	1267	38.34
6 to less than 9 months	975	29.50
9 to less than 12 months	276	8.35
12 months or surplus	464	14.04
<b>Total</b>	<b>3305</b>	<b>100</b>

Source: Annex Table 16

## 2.13 Source of Energy

As regards to the source of energy for lighting, almost all the households (99.76%) have electricity, only very few households have used kerosene for lighting.

Among various sources of energy for cooking, cylinder gas was surprisingly main fuel for cooking, accounting for 54.52 per cent of the total households followed by 45.0 per cent households who reported using firewood as source of fuel for cooking. Though, most of the households have access to electricity, they could not use electricity for cooking due to high cost and low capacity of electric distribution system.

**Table 1.18: Distribution of HH by sources of fuel for lighting and cooking**

Purpose	Main source of energy	HH	
		No.	%
<b>Light</b>	Electricity	3299	99.76
	Biogas	-	-
	Solar	-	-
	Kerosene	8	0.24
	Other	-	-
	<b>Total</b>	<b>3307</b>	<b>100</b>
<b>Cooking fuel</b>	Timber/ firewood	1488	45.00
	Cow dung cake	-	-
	Straw/ dry grass/ eaves/rubbish	8	0.24
	Cylinder gas	1803	54.52
	Biogas	8	0.24
	Kerosene	-	-
	Other	-	-
	<b>Total</b>	<b>3307</b>	<b>100</b>

Source: Annex Table 17 and 18

### 2.14 Source of Drinking water

Source of drinking water refers to the place from where households draw water for drinking and cooking foods for household members. Piped water as a source of drinking water was reported by 97.82 percent of the households followed by 0.97 percent from open well.

**Table 1.19: Distribution of HH reporting different sources of drinking water**

Source	HH	
	No	%
Piped water	3235	97.82
Covered well	16	0.48
Hand pump/tube-well	24	0.73
Open well	32	0.97
Spring water	-	-
River	-	-
Other	-	-
<b>Total</b>	<b>3307</b>	<b>100</b>

Source : Annex Table 19

### 2.15 Toilet Facility

Almost all HH (99.76%) have access to toilet in their HH indicating wide spread effect of recent campaigns on making districts open defecation free. Majority (90.44%) of the HH have reported that they have toilet without flush followed by toilet with flush connected to safety tank. Very insignificant percentage (1.21%) of people have toilet with flush connected to sewer.

**Table 1.20: Distribution of HH using different type of toilets**

Types of toilet used	HH	
	No.	%
Toilet with flush (connected to sewer)	40	1.21
Toilet with flush (connected to safety tank)	268	8.11
Toilet without flush	2990	90.44
Public toilet	-	-
No toilet	8	0.24
<b>Total</b>	<b>3306</b>	<b>100</b>

Source: Annex Table 20

### 2.16 Households Consulting Health Institutions

There are various kinds of health institutions prevailing in the district. Among all, government health post/PHC cater majority of households (81.16%), which is followed by private hospital (10.71%), government district hospital (7.17 %). Ayurveda and other government institution were cited by none of the households.

**Table 1.21: Distribution of HH consulting different health institutions**

Health service provider	HH	
	No.	%

Government health post/PHC	2683	81.16
Government district hospital	237	7.17
Government mobile clinic	8	0.24
Government Ayurveda center	-	-
Government other institution	-	-
Private hospital	354	10.71
Private pharmacy/clinic	8	0.24
Private health worker's home	8	0.24
Private others	8	0.24
<b>Total</b>	<b>3306</b>	<b>100.00</b>

Source: Annex Table 21

## 2.17 Households Income and Expenditure

Income and expenditure measure the status of the living of any HH. Excess in income than expenditure brings the lively whereas excess in expenditure drives one to debt making life hard. Thus HH's income and expenditure are two major indicators to measure how and where he stands.

Expenditure can be considered as the ability to expend to some extent for better livelihood in accordance to one's income. The survey result showed that food constituted highest part of expenditure with 36.74 percent followed by 20.66 percent expenses on education, 11.84 percent on apparel and personal items and 8.69 percent on health. Average annual expenditure per households comes to be Rs. 1, 25,936.

**Table 1.22: Expenditure distribution of HH by different items**

Items of expenditure	HH (No).	Total expenditure		Average expenditure/ HH (Rs)
		Rs	%	
Food	3305	152992800	36.74	46291
Fuel	2330	24746428	5.94	10621
Apparel and personal items	3274	49297877	11.84	15057
Social and religious activities/donation/charity	952	5144619	1.24	5404
Insurances and taxes	3022	625972	0.15	207
Repair and maintenance of house, vehicles,	401	7280262	1.75	18155
Transportation	3242	33707997	8.09	10397
Newspaper/communication	3148	18819531.00	4.52	5978
Disaster related expenses	63	487940	0.12	7745
Input cost for agriculture/livestock/other	173	455280	0.11	2632
Health	3148	36209862	8.69	11502
Education	2015	86032479	20.66	42696
Cash losses	39	668950	0.16	17153
Other	-	-	-	-
<b>Total</b>	<b>3307</b>	<b>416469996</b>	<b>100</b>	<b>125936</b>

Source: Annex Table 22

As regards to the income of the HH in the district, sale of agriculture products was found to be major contributor to total annual income, which accounted for 38.06 percent followed by non-agricultural wage and salary (24.34 %), and own enterprise (16.57 %). Remittances come to be fourth position with



contribution of only 7.43 percent of the income. Combining the income from different heading as given in the following table the average income is found to be Rs. 3, 83, 771.

**Table 1.234: Income distribution of HH by different sources**

Major source of household income	HH (No.)	Total income		Average income/HH (Rs)
		%	Rs	
Agricultural wages/labor	252	3.66	13670190	54281
Nonagricultural wages/salary	1676	24.34	283095705	168880
Sale of agricultural products	2621	38.06	282940139	107963
Livestock/fisheries sale	323	4.69	26799711	83056
Milk and milk product sale	118	1.71	13218452	111973
Remittances	512	7.43	175009125	342115
Occupational work (tailoring, black	8	0.11	1101800	140000
Forestry related products sale	16	0.23	1180500	75000
Pension	157	2.29	12505430	79450
Own enterprise	1141	16.57	457325700	400759
Others	63	0.91	2282324	36250
<b>Total</b>	<b>3307</b>	<b>100</b>	<b>1269129075</b>	<b>383771</b>

Source: Annex Table 23

From the analysis of income (Rs. 3, 83, 771) and expenditure (Rs. 1,25, 936) ,on an average there is a per annum surplus of income by Rs 2,57.835per household showing that the livelihood is not hard.

### 2.18 Credit Situation

Credit is one of the important economic indicators, which is taken either to sustain the present status of life or to invest on something else in order to take benefit from the investment. In this regards, a total of 14.01percent of households have taken loan during the last 12 months.

**Table 1.24: Frequency and percentage of HH taking loan**

Loan taken	HH	
	No.	%
Yes	463	14.01
No	2842	85.99
<b>Total</b>	<b>3305</b>	<b>100</b>

Source: Annex Table 24

### 2.19 Agricultural Insurance for Protecting Risks on Crops and Livestock

It is evident that climate change is becoming alarming to the survival and there is a growing threat of climate and weather related risks on crop and livestock. A total of 97.37per cent of the households have reported that there is presence of climate and weather related risks on crops and livestock production.

**Table 1.25: Distribution of HH reporting presence of climatic and weather related risks in agriculture**

Possibility of risks on crop/livestock	HH
--	----

	No.	%
Yes	3219	97.37
No	87	2.63
<b>Total</b>	<b>3306</b>	<b>100</b>

Source: Annex Table 25

Among the households reporting presence of climate and weather related risks, 89.26, 57.14, and 33.34 percent of households reported risks of diseases and pests in potato, maize, and vegetables respectively. Similarly drought was reported by 61.65 percent to 39.29 percent households as risk on potato and maize respectively. Risk of flood on potato and maize was reported by 5.96 and 1.42 percent of households while risks due to hailstone on potato and maize, was reported by 13.34 and 10.22 percent of households respectively.

**Table 1.26: Distribution of HH reporting high risks in various crops/livestock due to climatic hazards**

Crop/livestock	HH (%)					
	Disease pest	Drought	Flood	Hail stone	All	Others
Rice	-	-	-	-	-	-
Wheat	32.37	23.32	0.24	2.63	0.24	0.00
Maize	57.14	39.29	1.42	10.22	0.48	0.24
Mustard	13.79	13.34	0.24	0.73	0.24	0.24
Vegetable	33.33	21.90	1.18	5.23	0.73	0.24
Potato	89.26	61.65	5.96	13.34	0.94	0.94
Cow	65.70	24.53	3.57	5.47	0.73	0.73
Buffalo	3.81	0.73	0.00	0.73	0.48	0.00
Sheep	4.05	0.73	0.48	0.24	0.48	0.00
Goat	13.10	2.39	0.00	0.24	0.24	0.00
Chyangra	6.20	2.15	0.24	0.24	0.48	0.24
Chicken	41.41	13.34	2.63	4.75	0.94	0.94
Duck	2.84	0.00	0.00	0.24	0.24	0.00
Other	77.62	50.00	4.30	13.58	1.42	1.18
<b>Total(n=3306)</b>						

Source: Annex Table 26 (Figures in the above table is multiple answer does not match with 100%)

Regarding the risk on livestock species, all species are reported to be vulnerable to risks of diseases and pests as well as risk of drought to some extent. Risks of diseases and pest on cow, chicken, and goat were reported by 65.70, 41.41, and 13.109 per cent of the households. Drought effects were reported by 24.53 and 13.34 percent in cow and chicken respectively.

In order to protect from the risk of damage of valuable property insurance is a means of reimbursement of one's property. There are number of insurance companies actively working in this field. In regards to it, an enquiry into the knowledge on insurance companies and schemes, it is interesting to note that only 0.24% of the HH are found to have known about it, but none of the respondents had insured the crops.

**Table 1.27: Frequency and percentage of households having knowledge of insurance**

Knowledge on crop/ livestock insurance	HH	
	No.	%
Yes	8	0.24
No	3299	99.76
<b>Total</b>	<b>3307</b>	<b>100</b>

Source: Annex Table 27

### 2.20 Reasons for Non-Insuring

Though there were so many types of hazards likely to occur due to climate change in crops and livestock, none of the HH are found to have insured their crops and livestock. Some people might not be willing to insure and pay the premium and some people might not know about insurance and its policy. However, an enquiry on it revealed that virtually they do not have any knowledge about it. Out of 1.45 percent households having knowledge about insurance, 440 (66.66%) households cited lack of information was the major reason for non-insuring.

**Table 1.28: Frequency and percentage of household reporting reason for not doing insurance**

Reason for not doing insurance	HH	
	No.	%
Lack of information	-	-
High premium rate	-	-
No access to the service	8	100
Poor insurance service	-	-
Problem in getting back the insured amount	-	-
Others	-	-
<b>Total</b>	<b>8</b>	<b>100</b>

Source: Annex Table 29

TV/Radio was reported as major sources of information on agriculture insurance by 8 (100%) households.

**Table 1.29: Households reporting source of information on agricultural insurance**

Source	HH
Insurance agent	-
DADOs/DLSOs	-
Newspaper	-
TV/Radio	8
ASCs/LSCs	-
Leader farmer/Neighbor/Relatives	-
Other	-
<b>Total</b>	<b>8(100%)</b>

Source: Annex Table 32

All 8 households reported having knowledge about 75 percent subsidy on agriculture insurance.

**Table 1.30: Frequency and percentage of households reporting 75% subsidy on agricultural insurance premium**

Response	No.	%
Yes	8	100
No	-	-
<b>Total</b>	<b>8</b>	<b>100</b>

Source: Annex Table 33

## CHAPTER III: AGRICULTURE AND AGRICULTURE RELATED PRODUCTION AND PRODUCTIVITY

As majority of the population rely on agriculture for their livelihood, land holding is common and integral part of life. In this context, this chapter focuses on land holding, land use by type, cropped area with cropping patterns, crop production, marketing of farm product, livestock, poultries and fisheries, milk and milk product.

### 3.1 Land Holding

In this regards, almost majority of the households (89.58%) in the district have owned their land.

### 3.2 Use of Land by Type

Usually, in hill and mountain area of Nepal, land use in general can be classified into six categories viz. (i) Temporary crops (ii) Temporary meadow (iii) Temporary fallow (iv) Permanent crops (v) Permanent meadow and (vi) Appropriate for forest and (vii) Appropriate for fishery. Temporary crop was grown with average area of 0.0007 ha/HH and overall irrigated land is 0.00074 ha/HH with average number of parcel land is 3.50. Temporary fallow area reported was 0.0021 ha. Use of temporary graze land was not reported. The use of land for permanent crops is reported to be 0.2238 ha/HH with average irrigated area of 0.1641 ha. The land uses for permanent meadow is also low, the average area of which is 0.0025 ha/HH. None of the HH have reported forest area or using land for fishery.

**Table 2.15: Distribution of HH using land by type**

Type of land	No. of HH	Ave. area (ha)	Ave. no. of parcel	Ave. irrigated (ha)
Temporary crop	2045	.0007	3.50	.0004
Temporary graze land	-	-	-	-
Temporary fallow	315	.0021	12.00	0.0000
Permanent crops	3305	.2238	4.7766	.1641
Permanent graze land	630	.0025	5.29	.0024
Appropriate for forest	-	-	-	-
Appropriate for fishery	-	-	-	-

Source: Annex Table 34

### 3.3 Source of Irrigation:

Out of population, who have managed to irrigate in their field with different sources of irrigations, majority (93.90 %) of the households have reported that their source of irrigation was continuous flow canal which is followed by natural flow canal (4.29%).

**Table 2.2: Distribution of HH by sources of irrigation in the district**

Sources of irrigation	HH	
	No.	%
Tube well, boring	16	0.72
Continuous flow canal	2078	93.90
Natural flow canal	95	4.29

Pond/ well	-	-
Mixed	-	-
Others	24	1.08
<b>Total</b>	<b>2213</b>	<b>100</b>

Source: Annex Table 35, 36, 37, and 38

### Leased land

Small segment of population (0.97 %) have given land to others on lease and the average holding of leased out land is 0.0020 ha/household. Comparatively, holding of leased out Khet is higher (0.0025 ha/HH) than in Bari (0.0015 ha/HH) area.

**Table 2.3: Frequency and percentage of households reporting leased out land and holding seize**

Leased out land			HH	
	Area (ha)	Mean (ha/HH)	No.	%
Khet	8.41	.0025	32	0.97 %
Bari	4.80	.0015		
<b>Total</b>	<b>13.21</b>	<b>.0020</b>		

Source: Annex Table 39 and 40

A total of 393 households (11.89%) had owned land on lease from others.

**Table 2.4: Frequency and percentage of households reporting leased in land and holding seize**

Leased in land	HH	
	No.	%
Yes	393	11.89
No	2911	88.11
<b>Total</b>	<b>3304</b>	<b>100</b>

Source: Annex Table 41

Out of 79.26 ha leased in land, largest portion i.e. 77.66 ha or 97.98 percent of land are found to have leased on crop sharing basis.

**Table 2.5: Land by type of land tenure system**

Type of land tenure system	Particulars	Khet	Bari	Orchard	Pond	Total
Contract ( cash)	Sum	1.60	0.00	0	0.00	1.60
	Mean	.0005	0.0000	0.00	0.0000	0.0005
Contract (kind)	Sum	-	-	-	-	-
	Mean	-	-	-	-	-
Crop sharing	Sum	77.47	.19	0.00	0	77.66
	Mean	.0234	.0001	0.0000	0.00	0.0235
Exchange for service	Sum	-	-	-	-	-
	Mean	-	-	-	-	-
Mortgage	Sum	-	-	-	-	-
	Mean	-	-	-	-	-
Others	Sum	-	-	-	-	-
	Mean	-	-	-	-	-

Source: Annex Table 42

### 3.4 Cropping Patterns and Cropped Area

Wheat/n.barley/barley-fallow and Barley/barley -Maize/buckwheat were major cropping pattern of covering 21.65 and 11.56 percent of the land followed by Buckwheat/Maize-Fallow.

**Table 2.6: Cropping patterns in Khet land and mean land holdings area**

Type of cropping pattern	Land area (%)
Wheat/n.barley/barley-Fallow	21.65
Wheat/n.barley/barley- Buckwheat	2.33
Wheat/n.barley/barley- Maize	0.48
Wheat/n. barley/barley-Mustard	0.03
Mustard-Fallow	0.99
N.barley/barley -Maize/buckwheat	11.56
N.barley/barley -Bean	1.34
Buckwheat/Maize-Fallow	5.83
Others (vegetables, potato, fruits etc.)	55.78
Total (2915 ha)	100

Source: Annex Table 43 and 44

Maize-Barley was major cropping pattern in Bari land covering 4.30 percent of Bari land whereas 2.58 percent Bari land was covered by vegetable- vegetable, vegetable-maize, and off season vegetable each.

### 3.5 Use of improved seeds

Only 2.66 per cent of the households reported using improved seeds. Out of 88 households using improved seeds, improved vegetable and potato seeds were used by 0.28 and 2.38 per cent of households.

**Table 2.7: HH using improved seeds (%)**

HH							
Total		Rice	Wheat	Maize	Vegetables	Potato	Other
No.	%	%	%	%	%	%	%
88	2.66	-	-	-	0.28	2.38	
(n=3307)							

Source: Annex Table 45 and 46

### 3.6 Marketing of Farm Product

Following table presents the distribution of HH selling their farm product in different places. Farm gate is found to be the major place where 89.42 per cent of households sell their products, which is followed by rural village market accounting for 5.12 per cent of households. Only 0.68 per cent of the households sell their products in the district market.

**Table 2.8: Frequency and percentage of HH selling produce at different places**

Place of sale	HH	
	No.	%

Farm gate	2062	89.42
Rural haat bazar	118	5.12
District market	16	0.68
Vendor	-	-
Cooperatives	-	-
Sales depot	24	1.02
Others	87	3.75
<b>Total</b>	<b>2306</b>	<b>100.00</b>

Source: Annex table 47

### 3.7 Use of Chemical Fertilizers and Pesticides

As regards to the use of fertilizer and pesticides, 7.62 per cent of the households reported using chemical fertilizers and pesticides.

**Table 2.9: Use of fertilizer and pesticides by the households**

Use of chemical fertilizer and pesticides	HH	
	No	%
Yes	252	7.62
No	3054	92.38
<b>Total</b>	<b>3306</b>	<b>100.00</b>

Source: Annex Table 48

### 3.9 Amount of Chemical Fertilizer Used

Amount of fertilizer used in the farm is very important factor as its adequacy according to the recommendation dose in kg/ha gives better productivity. As has been reported by DADO office the farmers have used following amount of Nitrogen, Phosphate and Potash which is quite low than the recommendations.

**Table 2.106: Average amount of fertilizer nutrients used by households per ha (kg/ha)**

Nitrogen	Phosphate	Potash
3.1	1.08	0.24

Source: DADO (2015)

From the following table, it is clear that out of 252 households using fertilizers and pesticides, only 59.29 percent reported that fertilizers and pesticides were available as and when needed.

**Table 2.11: Frequency and percentage of households reporting availability of chemical fertilizer and pesticides**

Response	HH	
	No.	%
Yes	150	59.29
No	103	40.71
<b>Total</b>	<b>253</b>	<b>100.00</b>

Source: Annex Table 49

### 3.8 Sources of Fertilizers/Pesticides

There are various sources of buying fertilizers/pesticides for the use of agricultural purposes. Among them ‘DADO/ASC’ are the main sources, from where 52.63per cent of the households buy them, followed by cooperatives and neighbour farmers who sold fertilizers and pesticides to 26.32 and 15.79per cent of the households respectively.

**Table 2.12: HH buying fertilizers/pesticides from different sources (%)**

Source	HH	
	No.	%
Cooperatives	39	26.32
Agro vets	8	5.26
DADOS/ASCS	79	52.63
Neighbor farmers	24	15.79
Relatives	-	-
Others	-	-
<b>Total</b>	<b>150</b>	<b>100.00</b>

Source: Annex Table 51

A total of 62.82 percent of household reported extension as only source of information on safe use of fertilizer and pesticides followed by neighbor farmers and own experiences.

**Table 2.13: Frequency of households reporting source of information for safe use of fertilizer and pesticides**

Source	HH	
	No.	%
From Purchasing place	8	1.28
Extension Service	386	62.82
Neighboring Farmers	102	16.67
Friends	39	6.41
Relatives	31	5.13
Own experiences	102	16.67
Others	-	-
<b>Total</b>	<b>614</b>	<b>100.00</b>

Source: Annex Table 51

### 3.9 Reason for Low Use of Fertilizers/Pesticides:

An enquiry into the reason for inadequate use of fertilizer nutrients/pesticides by the farmers, not available in time was reported by 9.45 percent and lack of money was reported by 7.20 percent households. However, 83.35 percent households have reported that the reason for not using them is due to ‘other’ factors.

**Table 2.14: HH reporting reasons for low use of fertilizers/pesticides**

Reason	HH	
	No.	%
Not available	298	9.45
No money	227	7.20
Other	2628	83.35



<b>Total</b>	<b>3153</b>	<b>100.00</b>
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Source: Annex Table 52

There is low existence of advice on safe use of fertilizer and pesticides as only 19.06 percent of the households reported its existence.

**Table 2.15: HH reporting on advisory on safe use of fertilizer and pesticides**

Response	HH	
	No.	%
Yes	630	19.06
No	2676	80.94
<b>Total</b>	<b>3306</b>	<b>100.00</b>

Source: Annex Table 53

### 3.10 Livestock Production

Livestock is closely associated with agricultural occupation of the population, hence is an integral part of agriculture for their livelihood. Those who have adopted agriculture as their main occupation, used to hold the livestock as well, as such 76.19 per cent of the households have held livestock.

**Table 2.16: Frequency and percentages of households raising livestock**

Response	HH	
	No.	%
Yes	2519	76.19
No	787	23.81
<b>Total</b>	<b>3306</b>	<b>100.00</b>

Source: Annex Table 54

Majority of the HH have raised local breeds of all kinds of livestock such as cattle, buffaloes, yak, goats, and pigs. Improved breeds of cows were raised by a 3.45 percent of HH. Among all kinds of livestock raising, majority (80.59%) of the HH have raised local breeds of cow, followed by goat (20.92%), horse/mule (19.06%), and yak (8.42%).

**Table 2.177: Types of breeds of livestock owned**

Animal species	Type of breeds	HH (%)	Animal (no.)	Mean (Animal/HH)
Cattle	Local	80.59	6760	3.33
	Improved	3.45	189	2.18
Buffalo	Local	3.14	189	2.4
	Improved	-	-	-
Yak	Local	8.42	2141	10.07
Goat	Local	20.92	13985	26.52
	Improved	-	-	-
Sheep	Local	3.44	15827	182.82
	Improved	-	-	-
Pig	Local	0.94	79	3.33

	Improved	-	-	-
Rabbit	Local	0.31	79	10.00
Horse/mule	Local	19.06	1086	2.26
Others	Local	4.37	1125	10.21
<b>Total (n=2519)</b>				

Source: Annex Table 55

(Note: Total of the percentage will not match with 100 as it is multiple answers)

### 3.12 Livestock Housing and Feeding

Regarding the livestock housing, 64.96 percent of the households have reared their livestock in the shed separately and 30.63 percent of the population have reared livestock in the residential house.

**Table 2.18: Place of housing of livestock**

Place of housing livestock	HH	
	No.	%
In the shed separately	1637	64.96
In the residential house	772	30.63
Both	111	4.40
<b>Total</b>	<b>2520</b>	<b>100.00</b>

Source: Annex Table 56

### 3.13 Milk and Milk Products

Among those HH who have raised livestock, only 6.89 percent have reported that they sell milk and milk products. The amount of milk sold per annum was found to be 576 litres per household

**Table 2.19: Milk and milk products production and sale**

Response	HH		Average milk sold
	No.	%	Liters/HH/Year
Yes	95	3.77	1980
No	2424	96.22	
<b>Total</b>	<b>2519</b>	<b>100.00</b>	

Source: Annex Table 57 and 58

Largest percentage (58.51) of the households sold their milk at hotel followed by 32.98 percent in collection center, whereas 8.51 percent sold milk at district headquarters.

**Table 2.20: HH selling milk at different places**

Different Place to sell Milk	HH	
	No.	%
Home	55	58.51
Collection center	31	32.98
Village	-	-
Neighbor	-	-
District headquarter	8	8.51
Hotel	-	-
Others	-	-

Total	94	100
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Source: Annex Table 59

### 3.14 Feeds and feeding

Regarding the type of feeding for the livestock, stall feeding was practiced by 53.48 percent household while feeding in pasture land was reported by 10.61 percent. Stall feeding as well as feeding in pasture land both was reported by 35.92 percent households.

**Table 2.21: HH with different type of feeding**

Type of feeding	HH	
	No.	%
Stall feeding	1346	53.48
Feeding in pasture land	267	10.61
Both	904	35.92
<b>Total</b>	<b>2517</b>	<b>100.00</b>

Source: Annex Table 60

Regarding the type of feeds given to the livestock, mixed feed were fed by 73.57 per cent of the households. Fodder/straw only was fed by 23.93 percent of households.

**Table 2.22: Livestock feeds and feeding types**

Types of Feeds	HH	
	No.	(%)
Fodder/straw	527	23.93
Green Grasses	39	1.79
Forage	-	-
Concentrates	8	0.36
Mixed	1621	73.57
Other	8	0.36
<b>Total</b>	<b>2204</b>	<b>100.00</b>

Source: Annex Table 61

### 3.15 Poultry

Poultry was raised by 38.34 percent of the households in the district.

**Table 2.23: Households raising poultry**

Rearing of poultry	HH	
	No.	%
Yes	1267	38.34
No	2038	61.66
<b>Total</b>	<b>3305</b>	<b>100.00</b>

Source: Annex Table 62

Of the total birds, local poultry hen was raised by 93.17 percent of households. Only 16.77 percent of households raised improved breeds of poultry. Improved breeds were being raised only in case of poultry. Those who have raised poultry in the farm, the average number of improved broiler per farm is found to

be very high at 500. On the other hand, the average number of local chicks and local cocks is found to be 5.65 and 2.35 respectively. Besides poultry no other breeds were reported to be raised by the households.

**Table 2.24: Average number of improved and local poultry breed reared**

Type of birds	No. of HHs	HH (%)	No. of birds	Mean
<b>Poultry</b>				
Local Chick	205	16.15	1157	5.65
Local Cock	1055	83.23	2479	2.35
Local Hen	1181	93.17	4997	4.23
Local dry	24	1.86	31	1.33
Improved Broiler	8	0.62	3935	500.00
Improved Layer	205	16.15	1157	5.65
<b>Duck</b>	-	-	-	-
Local chick	-	-	-	-
Local Cock	-	-	-	-
Local Hen	-	-	-	-
Local dry	-	-	-	-
<b>Pigeon</b>	-	-	-	-
Local Chick	-	-	-	-
Local male	-	-	-	-
Local female	-	-	-	-
<b>Other</b>	-	-	-	-
<b>Total</b>	(n=1267)			

Source: Annex Table 64(Note: Total of the percentage will not match with 100 as it is multiple answers)

### 3.16 Fishery

As the nature of the district is mountainous, fishery is one of the unfamiliar components of agriculture, none of the households reported rearing of fish.

### 3.17 Forest

As regards to the HH involving in forest land, 0.24 percent of the households reported involvement in compact forest, scattered forest, NTFP area, and community forest, the average holding is found to be 1.57 ha/HH. Thus in forest land the involvement of the households are found to be negligible.

**Table 2.25: Frequency and percentage of HH having different forest area**

Different forest area	No. of HHs	HH (%)	Total (ha)	Mean(ha)
Compact Forest	8	0.24	8	1.00
Scatter Forest	8	0.24	15.74	2.00
NTFP Area	8	0.24	15.74	2.00
Community Forestry	8	0.24	15.74	2.00
Other Forest Area	8	0.24	7.87	1.00
<b>Total</b>	(n=3307)		<b>63.09</b>	<b>1.57</b>

Source: Annex Table 66

## CHAPTER IV: CLIMATE CHANGE, AGRO-ADVISORY & AGRO-MET ADVISORY

One of the major components of BRCH project is to provide timely and proper use of weather forecasts, agro-advisory and agro-met advisory operations in order to increase production and productivity of commodities through proper use of introduced agricultural management information system. By the impact of climate change, environment relating to eco-systems become more vulnerable to natural hazards, which need to be adjusted in existing practices, processes or structures in order to counter potential future disasters. Through the warnings and advisory services, it is expected that BRCH project might benefit the people residing in the study districts and climate-vulnerable communities in particular.

### 4.1 Climatic Hazards, their Occurrence and Support

The survey result about the experience on climate change by the community revealed that the households experiencing climate change during last one year was reported to be 97.58 percent of the households. In case of climatic hazards, 96.10 percent of the households who have experienced climate change reported drought which is followed by experience on frost(95.85%),*hail storm* (57.56%), extreme high temperature (49.02%) and *extreme cold* (30.00%).

**Table 3.1: Experience on different kinds of climatic hazards (extreme events) during last one year**

Experiencing climate change	HH	
	No.	%
Climate change	3227	97.58
<b>Experiencing Climatic Hazards</b>		
Hail Storm	1857	57.56
Extreme high temperature	1582	49.02
Extreme cold	968	30.00
Extreme Frost	3093	95.85
Floods	551	17.07
Drought	3101	96.10
Others	118	3.66
<b>Total</b>	<b>3227</b>	<b>100.00</b>

Source: Annex Table 67 and 68

(Note: Total of the percentage will not match with 100 as it is multiple answers)

At the time of occurrence of hazards, it is natural and obvious to seek support from the government as well as from the NGOs/INGO. In this regard, 97.64 percent households reported that they had family support, followed by 23.62 and 21.52 percent who reported having support from own saving and from friends/relative respectively.

**Table 3.2: Households reporting support from different agencies during climatic hazards**

Agencies	HH	
	No.	%
Government support	55	1.84
Family support	2928	97.64
INGO	24	0.79
Saving	708	23.62
Asset	24	0.79
Friend/relative	645	21.52
Others	24	0.79
<b>Total</b>	<b>2998</b>	<b>100.00</b>

Source: Annex Table 69(Note: Total of the percentage will not match with 100 as it is multiple answers)

At the time of occurrence of hazards, it is the responsibility of the people to protect their life and their goods, agricultural crops, livestock etc. provided that if the people have knowledge and experience about the reduction of hazard due to climate change. In this regards, as has been already explained that since insignificant number of person have knowledge and experience on climate change, most of the households (99.51%) are known to have taken measure to reduce risks of climatic hazards to protect lives.

**Table 3.3: Households taking measures to mitigate climatic hazards**

Measures	HH	
	No.	%
Protect lives	3211	99.51
Protect household goods	1763	54.63
Protect agriculture	55	1.71
Protect livestock	842	26.10
Protect others	16	0.49
<b>Total</b>	<b>3227</b>	<b>100.00</b>

Source: Annex Table 70(Note: Total of the percentage will not match with 100 as it is multiple answers)

## 4.2 Experience on different types Climatic Extremes in different Seasons

During last 15 years, 97.13 percent of the households reported experiencing change in climate.

**Table 3.4: Households experiencing climate change in last 10 - 15 years**

Response	HH	
	No.	%
Yes	3211	97.13
No	95	2.87
<b>Total</b>	<b>3306</b>	<b>100.00</b>

Source: Annex Table 71

Among the households who had experienced change in climate, 95.83, 1.23, and 49.75 percent of the households reported low rainfall during rainy, dry, and winter season while 1.47, 98.04, and 1.72 percent reported high rainfall. Frequent droughts and floods were reported by 1.47 percent and 92.16 percent household in rainy season. Increased temperature was reported by 94.12, 26.47, and 9.07 percent households during dry, rainy and winter season. Frequent hail storm was reported by 50.73, 35.54, and 30.15 percent of the households during dry, rainy, and winter season. During winter season, 90.93 percent households reported experiencing extreme cold and 41.91 percent frequent drought.

Table 3.5: HH experiencing different types of climatic extremes

Types of Climatic Extreme	Dry Season (Jan-April)		Rainy Season (May-August)		Winter Season (September-December)	
	No.	%	No.	%	No.	%
Less overall rainfall	3077	95.83	39	1.23	1598	49.75
More overall rainfall	47	1.47	3148	98.04	55	1.72
More frequent drought	3132	97.55	47	1.47	1346	41.91
More frequent flood	71	2.21	2959	92.16	118	3.68
Strong wind	2920	90.93	1684	52.45	1983	61.76
More cold spells or foggy days	1716	53.43	661	20.59	2920	90.93
Higher temperature	3022	94.12	850	26.47	291	9.07
Frequent hailstorm	1629	50.73	1141	35.54	968	30.15
Lower ground water table	3022	94.12	110	3.43	1338	41.67
Total	<b>n=3211</b>					

Source: Annex Table 72(Note: Total of the percentage will not match with 100 as it is multiple answers)

### 4.3 Early Warning Messages

The survey result shows that the awareness on early warning message about climate/weather hazards were reported by 65.48 percent of the households in the district.

Table 3.6: Households reporting receipt of early warning messages

Response	HH	
	No.	%
Yes	2164	65.48
No	1141	34.52
<b>Total</b>	<b>3305</b>	<b>100.00</b>

Source: Annex Table 73

Among various sources of early warning messages (such as telephone, Radio/TV, siren, Bulletin/ Newspaper), 97.08 percent of households have reported that the early warning was received from Radio/TV followed by bulletin/newspaper (16.79%),telephone (12.77%), and hand mike (5.11%).

Table 3.7: Households reporting receipt of early warning from different sources

Sources	HH	
	No.	%
Telephone	275	12.77
Radio/TV	2093	97.08
Siren	87	4.01
Colorful flag	71	3.28
Hand mike	110	5.11
Bulletin/newspaper	362	16.79
Others	16	0.73
<b>Total</b>	<b>2156</b>	<b>100.00</b>

Source: Annex Table 74(Note: Total of the percentage will not match with 100 as it is multiple answers)

### 4.3.1 Perception about the Need of Types of Communication Media for Early Warning

Communication plays an important role for the development of any region or place. When asked about the early warning system from various communication media, 96.17 percent of households preferred siren, radio/TV (92.34%) and digital display board (91.63%).

**Table 3.8: Households selecting suitable EWS and agricultural information medium**

Medium for delivery of Early information	HH	
	No.	%
Telephone	2983	90.67
SMS on mobile	1354	41.15
Siren	3164	96.17
FM Radio/TV	3038	92.34
Newspaper	976	29.67
Digital display board	3014	91.63
Internet	527	16.03
Others	31	0.96
<b>Total</b>	<b>3290</b>	<b>100.00</b>

Source: Annex Table 75 (Note: Total of the percentage will not match with 100 as it is multiple answers)

When asked about the location for fixing the digital display board, DADO/DLSO was given the highest priority for placing the digital display board by 67.89 percent of the households. Second priority was given to agro vet (20.04%).

**Table 3.9: Priority of location suitable for Digital Display Board**

Location	HH	
	No.	%
DADO/DLSO offices	2212	67.89
Agriculture/Livestock Sub Center	157	4.82
VDC/DDC offices	157	4.82
Markets	79	2.42
Agro Vet	653	20.04
Other place	0	0.00
<b>Total</b>	<b>3258</b>	<b>100.00</b>

Source: Annex Table 76

### 4.3.2 Accessibility to Agricultural Advice and Sources

There are various sources of agro and agro-met advisory service providers in the district such as District Agriculture Development Office (DADO), Livestock Service Centre (LSC), Agricultural Research Farm, NGOs/INGOs, and Agro Vets etc. in the district. However, the survey result shows that 31.90 percent of the households are found to have received agro advisory service during the last 12 months. (Annex Table 77).

#### Sources of agro advisories

A total of 762 households who have received agro advisory reported DADO as their source of agro advisories.



### 4.3.3 Need for Agro Advisory

At present though many of the households are found to have not taken advisory, they were interested to have advice from the service providers. In this regards, 98.19 percent of the households have preferred mobile service, 94.22 percent digital display board, 86.28 percent toll free service, and 85.92 percent telephone.

**Table 3.10: HH preferring advisory services by type**

Types of advisory	HH	
	No.	%
Mobile service	2141	98.19
Telephone	1873	85.92
Newspaper/Bulletin	559	25.63
Toll free	1881	86.28
Internet service	433	19.86
Digital display board	2054	94.22
Others	16	0.72
<b>Total</b>	<b>2180</b>	<b>100.00</b>

Source: Annex Table 79

### 4.3.4 Communication and Media for Agricultural Program

For the development of any region or place communication plays an important role. There are number of communication media such as FM radio, television, newspaper etc., through which agriculture programmes are being broadcasted in order to make farmers aware of adopting farming system and disseminating information on pre-warning of climate and weather. However, from the survey it is observed that the percentage of HH listening agriculture programme on radio is found to be 16.67 percent of the households regularly listened while 22.15 percent of the households reported watching agricultural program in television,. A total of 11.14 percent of the households reported reading agricultural subjects in newspapers and magazines. This shows that communication media are catering to about one third of the population. (Annex Tables 80.81, and 82)

**Annex 1****Table Average monthly temperature and rainfall of Jomsom, Mustang**

	<b>Month</b>	<b>Maximum</b>	<b>Minimum</b>	<b>RainfallMM</b>
1	January	10.9	-2.5	8.6
2	February	11	-1.6	11.3
3	March	14.8	1.8	20.8
4	April	17.1	3.8	19
5	May	19.8	7.7	16.7
6	June	23	12	19.9
7	July	22.8	13.4	41.1
8	August	22.4	13.4	35.2
9	September	21.3	10.9	30.4
10	October	17.9	6.3	33.7
11	November	14.4	1.7	5.7
12	December	11.9	-1.2	7.3