
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 |
| 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

Bara, a Terai district, is one of the 25 pilot districts of Building Resilience to Climate Related Hazards Project (BRCH), situated in Narayani zone of Central Development Region (CDR). Geographically, the district is located in the latitude of 26° 51' to 27° 2' N and the longitude of 84°51' to 85°16' E (Figure 1). The head-quarter of the district is Kalaiya municipality. The people believe that the district is preserved by *Baragadhi* since *Mithila* kingdom to date and it is the reason behind the place being called *Bara* now. The district is bounded by *Rautahat* in the east, *Parsa* in the west, *Makawanpur* in the north and *Bihar* (India) in the south.



Figure 1: Location Map of Bara District

The topography of the district is almost same as other Terai districts. Most part of Bara lies on flat Terai region among which 86.6% of its area is under Lower tropical region having altitude below 1000 feet. Similarly 13.4% of its area lies in between 1000 to 3000 ft. called Upper Tropical region or Siwalik range. The variation of altitude is in between 152 meter to 915 meter. The population of the district consists of 6, 87, 708 with 3, 51, 244 male and 3, 36, 464 female with 1, 08,635HH as of 2011 census. The district has land area of 1190 square kilometer with a density of 578 persons/sq.km., which is more than national population density of 180 persons/sq. km. as of 2011 census.

1.2 Land Utilization

The total area of the district is (1190 km²) 1, 29,563 ha with total cultivable land area of 69,963 ha, which consisted of 62, 823 ha cultivated area (DADO, 2014). The district is covered with pasture land of 2949 ha, forest area of 52,559 ha, and others 4, 092 ha.

1.3 Climate and Rainfall

As the altitude of the district varies, climate of the district can be found different in different altitudes, the classification of which is given as under:

Lower-tropical: Areas located at altitudes of below 300 msl consisted of this type of climate, where summer is hot and winter is cool. Plenty of agricultural land is available in this area. .

Upper tropical: Areas located at altitudes of between 300 to 800 msl consisted of this type of climate, where summer is also hot and winter is cool. Plenty of agricultural land is available in this area also. Besides agricultural land this area has forest land and also consists of small hills of Siwalik range.

As Bara lies in tropical, region it is mostly affected by monsoon. High average maximum temperature up to 34.2 degree Celsius can be observed during June whereas average minimum temperature of 8.6 degree Celsius occurs during January. Minimum rainfall occurs in winter season and 80% of total rainfall occurs during April to September. Average annual rain fall is 1790 mm.

CHAPTER II: DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

This section focuses on the demographic and socio-economic characteristic like age and sex distribution of the HH heads, literacy and education, marital status, occupation, ethnicity, migration, ownership of the HH, sources of energy, toilet and health institution, income and expenditure, capital information, insurance etc.

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) | 104.4 | 117.7 |
| Dependency ratio | | 56.44 |
| Household (HH) size | 6.33 | 5.91 |
| Percent of female headed households | 7.59 | 8.81 |
| HH (%) who own their housing unit | 96.08 | 99.56 |
| HH (%) with piped drinking water | 17.15 | 14.69 |
| HH (%) with access to electricity | 68.29 | 93.11 |
| HH (%) with access to Telephone/Mobile | 63.81 | 86.19 |
| HH (%) with toilet | 30.12 | 74.67 |
| HH (%) using firewood for cooking | 67.22 | 80.89 |
| Literacy rate | 52.5 | 93.62 |

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 54.07 percent is higher than 45.93 percent of female population giving sex ratio of 117.7 in the district. About 27.96 percent of population were under 15 years and 8.12 percent were of 60 years or more old. Thus majority of population (63.92%) were from age group 15-59 years (Table 1.2). The survey data revealed that the overall dependency ratio is 56.44 percent. Regarding the HH size, the average HH size of the district is found to be 5.91 compared to 6.33 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 | 22894 | 3.56 | 19156 | 2.98 | 42050 | 6.54% |
| 5-9 Years | 32233 | 5.02 | 29313 | 4.56 | 61546 | 9.58% |
| 10-14 Years | 38652 | 6.01 | 37441 | 5.83 | 76093 | 11.84% |
| 15-19 Years | 39533 | 6.15 | 27804 | 4.33 | 67337 | 10.48% |
| 20-24 Years | 32153 | 5.00 | 32165 | 5.00 | 64318 | 10.01% |
| 25-29 Years | 28161 | 4.38 | 26937 | 4.19 | 55098 | 8.57% |
| 30-34 Years | 30287 | 4.71 | 24723 | 3.85 | 55010 | 8.56% |
| 35-39 Years | 22803 | 3.55 | 23927 | 3.72 | 46730 | 7.27% |
| 40-44 Years | 23107 | 3.60 | 12809 | 1.99 | 35916 | 5.59% |
| 45-49 Years | 17548 | 2.73 | 17903 | 2.79 | 35451 | 5.52% |
| 50-54 Years | 16815 | 2.62 | 12646 | 1.97 | 29461 | 4.58% |
| 55-59 Years | 10476 | 1.63 | 11037 | 1.72 | 21513 | 3.35% |
| 60-64 Years | 8816 | 1.37 | 10211 | 1.59 | 19027 | 2.96% |
| 65+ Years | 24032 | 3.74 | 9123 | 1.42 | 33155 | 5.16% |
| Total | 347510 | 54.07 | 295195 | 45.93 | 642705 | 100.00% |

Source: Annex Table 1

2.2 Household head and members

Son/daughter constituted largest percentage (38.84%) of household members followed by household heads which constituted 16.90 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 | | Total | |
| | No. | % | No. | % | No. | % |
| Head | 99041 | 15.41 | 9557 | 1.49 | 108598 | 16.90 |
| Husband/wife | 5735 | 0.89 | 93869 | 14.61 | 99604 | 15.50 |
| Son/daughter | 167503 | 26.06 | 82135 | 12.78 | 249638 | 38.84 |
| Grand children | 38016 | 5.92 | 36891 | 5.74 | 74907 | 11.66 |
| Son/daughter in law | 16523 | 2.57 | 50363 | 7.84 | 66886 | 10.41 |
| Daughter/son in law | 434 | 0.07 | 5130 | 0.80 | 5564 | 0.87 |
| Parent | 9471 | 1.47 | 8168 | 1.27 | 17639 | 2.74 |
| Father/mother in law | 1216 | 0.19 | 1607 | 0.25 | 2823 | 0.44 |
| Brother/sister in law | 7215 | 1.12 | 4739 | 0.74 | 11954 | 1.86 |
| Household widow | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Others | 2348 | 0.37 | 2738 | 0.43 | 5086 | 0.79 |
| Total | 347502 | 54.07 | 295197 | 45.93 | 642699 | 100.00 |

Source: Annex Table 2

From the Table 1.3, it is seen that out of 16.90 percent household heads, female formed 1.49 percent of heads in comparison to 15.41 percent of male members who were household heads thus giving overall female household head percentage as 8.81 percent.

2.3 Marital Status of head of households

A total of 65.88 percent of HH members were married. Widow members of the household constituted 0.67 percent of the population. A total of 34.19 percent of population were married male whereas married female population accounted for 31.69 percent of total population.

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

| Marital Status | Gender | | | | Total | |
|----------------|---------------|--------------|---------------|--------------|---------------|---------------|
| | Male | | Female | | Total | |
| | Number | % | Number | % | Number | % |
| Married | 184311 | 34.19 | 170832 | 31.69 | 355143 | 65.88 |
| Divorced | 782 | 0.15 | 391 | 0.07 | 1173 | 0.22 |
| Separate | 825 | 0.15 | 0 | 0.00 | 825 | 0.15 |
| Widow/widower | 2170 | 0.40 | 1431 | 0.27 | 3601 | 0.67 |
| Unmarried | 104297 | 19.35 | 74077 | 13.74 | 178374 | 33.09 |
| Total | 292385 | 54.23 | 246731 | 45.77 | 539116 | 100.00 |

Source: Annex Table 3

Male gender had higher percentage of widow (0.40%) than female gender (0.27%). Unmarried male constituted more (19.35%) of total population than unmarried female (13.74%).

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 93.62 percent compared to 52.5 percent 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 can read and write is high at 21.43 percent, is followed by primary level (20.84%), lower secondary (13.98%), SLC/equivalent (8.94%), inter/equivalent (8.59%) and secondary (8.55%) People having graduated and above graduate level are still found to have quite low at 5.95 percent. Following tables presents the educational status of the population of the district.

Table 1.5 Percentage of population by education level and gender

| Education Level | Gender | | | | Total | |
|-----------------------|---------------|--------------|---------------|--------------|---------------|---------------|
| | Male | | Female | | No. | % |
| | No. | % | No. | % | | |
| Cannot read and write | 9031 | 1.50 | 29291 | 4.88 | 38322 | 6.38 |
| Can read and write | 54443 | 9.06 | 74291 | 12.37 | 128734 | 21.43 |
| Beginners | 15647 | 2.60 | 16467 | 2.74 | 32114 | 5.35 |
| Primary (1-5) | 72761 | 12.11 | 52423 | 8.73 | 125184 | 20.84 |
| L. Secondary (6-8) | 51391 | 8.56 | 32568 | 5.42 | 83959 | 13.98 |
| Secondary (9-10) | 32172 | 5.36 | 19158 | 3.19 | 51330 | 8.55 |
| SLC/Equivalent | 33950 | 5.65 | 19739 | 3.29 | 53689 | 8.94 |
| Inter/Equivalent | 30239 | 5.03 | 21333 | 3.55 | 51572 | 8.59 |
| Grad/Equivalent | 19248 | 3.20 | 4951 | 0.82 | 24199 | 4.03 |
| PG/Equi/above | 5734 | 0.95 | 5820 | 0.97 | 11554 | 1.92 |
| Total | 324616 | 54.04 | 276041 | 45.96 | 600657 | 100.00 |

Source: Annex Table 4

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

Currently 30.59 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 30.81 percent and 30.32 percent of their population respectively.

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

| Going to School | Gender | | | | | |
|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Male | | Female | | Total | |
| | No. | % | No. | % | No. | % |
| Yes | 100028 | 30.81 | 83700 | 30.32 | 183728 | 30.59 |
| No | 224589 | 69.19 | 192345 | 69.68 | 416934 | 69.41 |
| Total | 324617 | 100.00 | 276045 | 100.00 | 600662 | 100.00 |

As regards to the accessibility to educational institutions in terms of time, 80.26 percent of the respondents have reported that distance to reach is less than 1 km, whereas 12.35 percent reported distance of 1-5 km and only 1.49 percent reported 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 | 79072 | 43.04 | 68395 | 37.23 | 147467 | 80.26 |
| 1-5 km | 11742 | 6.39 | 10957 | 5.96 | 22699 | 12.35 |
| 5-10 km | 1956 | 1.06 | 782 | 0.43 | 2738 | 1.49 |
| Greater than 10 km | 7258 | 3.95 | 3565 | 1.94 | 10823 | 5.89 |
| Total | 100028 | 54.44 | 83699 | 45.56 | 183727 | 100.00 |

Source: Annex Table 6

Accessibility to educational institution by gender shows that 91.77 percent of the respondents have reported that institutions can be reached within less than 1 hour (Table 1.8). Also comparatively higher male (0.94%) than female (0.88%) travelled for more than 2 hours to reach the educational institution.

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 | 89245 | 48.58 | 79352 | 43.19 | 168597 | 91.77 |
| 1-2 hours | 9044 | 4.92 | 2739 | 1.49 | 11783 | 6.41 |
| More than 2 hours | 1735 | 0.94 | 1608 | 0.88 | 3343 | 1.82 |
| Total | 100024 | 54.44 | 83699 | 45.56 | 183723 | 100.00 |

Source: Annex Table 7

Regarding mode of transport, 83.35 percent of the population reported travelling on foot for educational institution, 8.38 percent using bicycle and 5.49 percent reported using vehicles like school bus (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 | 79638 | 79.62 | 73484 | 40.00 | 153122 | 83.35 |
| Bus | 6908 | 6.91 | 3172 | 1.73 | 10080 | 5.49 |
| Bicycle | 10302 | 10.30 | 5087 | 2.77 | 15389 | 8.38 |
| Foot and bus | 434 | 0.43 | 391 | 0.21 | 825 | 0.45 |
| Other | 2739 | 2.74 | 1565 | 0.85 | 4304 | 2.34 |
| Total | 100021 | 100.00 | 83699 | 45.56 | 183720 | 100.00 |

Source: Annex Table 8

2.6 Occupation

As revealed from the table 1.10, among various types of occupations adopted by the people, 34.47 percent of the population has adopted their main occupation as agriculture in their own land, and few segment of the population have adopted their main occupation as agriculture in the basis of salary/wage worker, which accounted for only 6.97 percent of the population. Student as their occupation accounting for 23.47 percent is followed by household work as their occupation accounting for 14.90 percent. About 9.65 percent of the population was engaged in non-agricultural salaried work, is followed by external jobs in abroad accounting for 3.15 percent. 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 1.48 and 0.45 percent in comparison to 8.16 and 2.70 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 | 99191 | 18.40 | 86623 | 16.07 | 185814 | 34.47 |
| Salaried/wage agriculture | 32513 | 6.03 | 5039 | 0.93 | 37552 | 6.97 |
| Non agriculture salary | 44014 | 8.16 | 7985 | 1.48 | 51999 | 9.65 |
| Own enterprises | 4902 | 0.91 | 953 | 0.18 | 5855 | 1.09 |
| Abroad external job | 14552 | 2.70 | 2434 | 0.45 | 16986 | 3.15 |
| Household work | 8823 | 1.64 | 71484 | 13.26 | 80307 | 14.90 |
| Student | 69796 | 12.95 | 56734 | 10.52 | 126530 | 23.47 |
| No work | 14907 | 2.77 | 14175 | 2.63 | 29082 | 5.39 |
| Other | 3679 | 0.68 | 1301 | 0.24 | 4980 | 0.92 |
| Total | 292377 | 54.23 | 246728 | 45.77 | 539105 | 100.00 |

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 1.36 percent of the households, followed by 0.50 percent for easier lifestyle and 0.27% due to family reason.

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

| Reason for Migration | HH | |
|----------------------|---------------|---------------|
| | No | % |
| Family reason | 826 | 0.27 |
| Education/training | 171 | 0.06 |
| Natural disaster | 86 | 0.03 |
| Looking for work | 4152 | 1.36 |
| Easier lifestyle | 1516 | 0.50 |
| No migration | 298621 | 97.78 |
| Other reason | 43 | 0.01 |
| Total | 305414 | 100.00 |

Source: Annex Table 12

2.8 Alignment of HH Members with Institutions

For facilitating the transaction or to get knowledge about something, different people get associated in different institutions. Among the people who are associated with various institutions, 8.98 percent of the population are associated with saving and credit cooperative followed by vegetable group (5.74%), seed production (4.95%), agriculture marketing group (4.66%) and farmer field school (3.95%),. However, other than the above mentioned institutions, their associations in category 'others' are found to be 13.43 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 | 10039 | 1.86 | 11250 | 2.09 | 21289 | 3.95 |
| Vegetable | 13909 | 2.58 | 17022 | 3.16 | 30931 | 5.74 |
| Water Users Group | 13763 | 2.55 | 4169 | 0.77 | 17932 | 3.33 |
| Commercial Crop Production | 11599 | 2.15 | 3907 | 0.72 | 15506 | 2.88 |
| Saving credit co-operative | 32145 | 5.96 | 16288 | 3.02 | 48433 | 8.98 |
| Agricultural co-op group | 8083 | 1.50 | 1956 | 0.36 | 10039 | 1.86 |
| Agriculture marketing | 12738 | 2.36 | 12381 | 2.30 | 25119 | 4.66 |
| Seed production | 13955 | 2.59 | 12716 | 2.36 | 26671 | 4.95 |

| | | | | | | |
|--------------|---------------|--------------|---------------|--------------|---------------|---------------|
| Other | 34048 | 6.32 | 38361 | 7.12 | 72409 | 13.43 |
| Not in Group | 142100 | 26.36 | 128669 | 23.87 | 270769 | 50.23 |
| Total | 292379 | 54.23 | 246719 | 45.77 | 539098 | 100.00 |

Source: Annex Table 10

2.9 Ethnicity

As per the table 1.13, the distribution of population by ethnicity revealed that majority of the population residing in the district constituted Madhesi, which accounted for 35.70 percent of the total population, followed by Brahmin/Chhetri (24.32%), Adibasi/Janajati (18.33%) and Dalit (7.54%).

Table 1.13: Distribution of population by ethnicity

| Ethnicity | Gender | | | | Total | |
|------------------|---------------|--------------|---------------|--------------|---------------|---------------|
| | Male | | Female | | No. | % |
| | No. | % | No. | % | | |
| Adibasi/Janajati | 61302 | 9.54 | 56479 | 8.79 | 117781 | 18.33 |
| Brahman/Chhetri | 82593 | 12.85 | 73685 | 11.46 | 156278 | 24.32 |
| Dalit | 24532 | 3.82 | 23921 | 3.72 | 48453 | 7.54 |
| Madhesi | 126785 | 19.73 | 102638 | 15.97 | 229423 | 35.70 |
| Others | 52294 | 8.14 | 38481 | 5.99 | 90775 | 14.12 |
| Total | 347506 | 54.07 | 295204 | 45.93 | 642710 | 100.00 |

Source: Annex Table 11

2.10 Housing Ownership

Regarding the ownership of the houses, almost all the HH (99.56%) 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

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

| Types of house ownership | HH | |
|--|---------------|---------------|
| | No. | % |
| Own house | 108121 | 99.56 |
| Rented house | 86 | 0.08 |
| Relative's house | 0 | 0.00 |
| Land owner's house (included in rented land) | 391 | 0.36 |
| Institutional house | 0 | 0.00 |
| Total | 108598 | 100.00 |

Source: Annex Table 13

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 endurable materials such as straw, plastics etc.

Among those, who have owned house, majority (50.42%) of the HH were found to have lived in Semi-pakki houses, 30.86 percent in concrete roof/Pakki houses and only 18.72 percent of the respondents are found to have lived in Kachi/Thatch roofed houses.

Table 1.152: Distribution of houses by types of houses

| Type of residential house | HH | |
|----------------------------------|-------|-------|
| | No. | % |
| Concrete roof/pakki/cemented | 33516 | 30.86 |
| Semi-pakki (tin/tile/slate roof) | 54753 | 50.42 |

| | | |
|-----------------------|---------------|---------------|
| Kacchi- thatched roof | 20333 | 18.72 |
| Others | 0 | 0.00 |
| Total | 108602 | 100.00 |

Source: Annex Table 14

2.11 Households Asset

The most common assets owned by the people are found to be fan/heater phones reportedly constituting 25.65 percent of household items followed by telephones/mobile, cycles, TV, radio/CD player, motorcycle/scooter and assets including jewellery constituting 24.98, 15.48, 11.08, 7.10, 4.95 and 4.19 percent 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 bus/truck formed largest (56.93%) portion of the net value of the all the assets owned by the households followed by motorcycle/scooter, tractor/power tiller and assets including Jewelries constituting 13.10, 9.19 and 8.27percent portion of the net value of the assets. Insignificant proportion of the net value was represented by the assets like refrigerators, washing machine, sewing machine etc.

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

| Types of assets | Items | | Approximate current value | |
|----------------------------|---------------|---------------|---------------------------|---------------|
| | No. | % | (Rs) | % |
| Radio/ cd player | 52129 | 7.10 | 33868339 | 0.22 |
| Cycles | 113590 | 15.48 | 156282341 | 1.01 |
| Motorcycle/scooter | 36322 | 4.95 | 2025958770 | 13.10 |
| Car/jeep | 0 | 0.00 | 0 | 0.00 |
| Bus/truck | 3914 | 0.53 | 8805600000 | 56.93 |
| Telephone/mobile | 183324 | 24.98 | 419102053 | 2.71 |
| Washing machine | 3914 | 0.53 | 31504480 | 0.20 |
| Refrigerator | 9166 | 1.25 | 69641410 | 0.45 |
| Sewing machine | 15599 | 2.13 | 52363537 | 0.34 |
| Fan/heater | 188251 | 25.65 | 178927397 | 1.16 |
| TV | 81315 | 11.08 | 329558645 | 2.13 |
| Assets including Jewelries | 30756 | 4.19 | 1279626098 | 8.27 |
| Tractor/power tiller | 4085 | 0.56 | 1421785900 | 9.19 |
| Thresher/pump set/sprayers | 5173.26 | 0.70 | 351793700 | 2.27 |
| Mill/Ghatta/turbine | 43 | 0.01 | 128370 | 0.00 |
| Others | 6291 | 0.86 | 310430515 | 2.01 |
| Total | 733872 | 100.00 | 15466571554 | 100.00 |

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, 16.84% of the HH have reported they have food sufficiency for 12 or more months. A total of 35.48% of the HH have reported that food is sufficient for 9 to 12 months, indicating that majority of the HH have food sufficiency.

Table 1.173: Food sufficiency of the HH by duration

| Food sufficiency level | HH | |
|--------------------------|---------------|---------------|
| | No. | % |
| Less than 3 months | 5773 | 5.32 |
| 3 to less than 6 months | 21640 | 19.93 |
| 6 to less than 9 months | 24365 | 22.44 |
| 9 to less than 12 months | 38534 | 35.48 |
| 12 months or surplus | 18283 | 16.84 |
| Total | 108595 | 100.00 |

Source: Annex Table 16

2.13 Source of Energy

As regards to the source of energy for lighting, almost all the households (93.11%) have electricity, 5.44 percent households have used kerosene for lighting, and insignificant percent have used biogas for lighting.

Among various sources of energy for cooking, firewood remained a main fuel for cooking, accounting for 80.89% of the total HH. About 8.15% and 6.96% of the HH have used gas cylinder and cow dung cake for cooking.

Table 1.18: Distribution of HH by sources of fuel for lighting and cooking (%)

| Purpose | Main source of energy | HH | |
|--------------|---------------------------------|---------------|---------------|
| | | No. | % |
| Light | Electricity | 101120 | 93.11 |
| | Biogas | 1565 | 1.44 |
| | Solar | | 0.00 |
| | Kerosene | 5913 | 5.44 |
| | Other | | 0.00 |
| | Total | 108598 | 100.00 |
| Cooking fuel | Timber/ firewood | 87838 | 80.89 |
| | Cow dung cake | 7563 | 6.96 |
| | Straw/ dry grass/ eaves/rubbish | 825 | 0.76 |
| | Cylinder gas | 8846 | 8.15 |
| | Biogas | 3521 | 3.24 |
| | Kerosene | | 0.00 |
| | Other | | 0.00 |
| | Total | 108593 | 100.00 |

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. Hand pump/tube well as a source of drinking water was reported by 80.87% of the HH followed by piped water (14.69%). Thus it can be inferred that still substantial percent of households have no access to safe drinking water.

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

| Source | HH | |
|---------------------|---------------|---------------|
| | No | % |
| Piped water | 15953 | 14.69 |
| Covered well | 825 | 0.76 |
| Hand pump/tube-well | 87819 | 80.87 |
| Open well | 2390 | 2.20 |
| Spring water | 1565 | 1.44 |
| River | | 0.00 |
| Other | 43 | 0.04 |
| Total | 108595 | 100.00 |

Source: Annex Table 19

2.15 Toilet Facility

In view of health and healthy environment sanitation is an integral part of life. As revealed from the survey data, there has been significant improvement in the accessibility of toilet in both rural and urban

area. Majority of HH (74.67%) have access to toilet in their HH. Majority (46.59%) of the HH have reported that they have toilet with flush (connected to safety tank) followed by toilet without flush 24.07%. Very less percentage (2.56%) of people have toilet with flush connected to sewer and 25.33% of HHs reported no toilet.

Table 1.20: Distribution of HH using different type of toilets

| Types of toilet used | HH | |
|--|---------------|---------------|
| | No. | % |
| Toilet with flush (connected to sewer) | 2783 | 2.56 |
| Toilet with flush (connected to safety tank) | 50600 | 46.59 |
| Toilet without flush | 26139 | 24.07 |
| Public toilet | 1565 | 1.44 |
| No toilet | 27511 | 25.33 |
| Total | 108598 | 100.00 |

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 substantial percentage of households (29.91%), which is followed by private hospital (20.59%), government district hospital (19.41%) and private pharmacy/clinic (18.53%). Government other institutions and other privates providing services for 7.60% and 3.24% of HHs. Ayurveda and mobile centers center were cited by none and negligible portion of the households.

Table 1.21: Distribution of HH consulting different health institutions

| Health service provider | HH | |
|------------------------------|---------------|---------------|
| | No. | % |
| Government health post/PHC | 32483 | 29.91 |
| Government district hospital | 21084 | 19.41 |
| Government mobile clinic | 391 | 0.36 |
| Government Ayurveda center | 0 | 0.00 |
| Government other institution | 8249 | 7.60 |
| Private hospital | 22357 | 20.59 |
| Private pharmacy/clinic | 20124 | 18.53 |
| Private health worker's home | 391 | 0.36 |
| Private others | 3522 | 3.24 |
| Total | 108601 | 100.00 |

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 33.69% followed by 14.50% expenses on education, 14.15% in input cost for agriculture/livestock/other enterprises.

Table 1.22: Expenditure distribution of HH by different items

| Items of expenditure | HH (No). | Total expenditure | | Average expenditure/HH (Rs) |
|----------------------|----------|-------------------|-------|-----------------------------|
| | | Rs | % | |
| Food | 108600 | 4585222120 | 33.69 | 42222 |

| | | | | |
|--|-----------------|--------------------|---------------|---------------|
| Fuel | 90776 | 701308251 | 5.15 | 6458 |
| Apparel and personal items | 107340 | 1180931250 | 8.68 | 10874 |
| Social and religious activities/donation/charity | 72772 | 277099218 | 2.04 | 2552 |
| Insurances and taxes | 22693 | 170251647 | 1.25 | 1568 |
| Repair and maintenance of house, vehicles, equipment | 75764 | 683519576 | 5.02 | 6294 |
| Transportation | 93123 | 556367550 | 4.09 | 5123 |
| Newspaper/communication | 78166 | 329047869 | 2.42 | 3030 |
| Disaster related expenses | 6042 | 44547250 | 0.33 | 410 |
| Input cost for agriculture/livestock/other enterprises | 93007 | 1925936980 | 14.15 | 17735 |
| Health | 101183 | 1077052325 | 7.91 | 9918 |
| Education | 82447 | 1973094762 | 14.50 | 18169 |
| Cash losses | 1388 | 12520252 | 0.09 | 115 |
| Other | 6933 | 94813196 | 0.70 | 873 |
| Total | n=108598 | 13611712246 | 100.00 | 125340 |

Source: Annex Table 22

As regards to the income of the HH in the district, nonagricultural wages/salary was found to be major contributor to total annual income, which accounted for 49.11 percent followed by agricultural wages/labor (44.52%), and sale of agricultural products (45.46%). Milk and milk product sale come to be fourth position with contribution of 34.18 percent of the income. Combining the income from different heading as given in the following table the average income is found to Rs. 223247.

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 | 48345 | 3542210920 | 44.52 | 32618 |
| Nonagricultural wages/salary | 53327 | 8292095250 | 49.11 | 76356 |
| Sale of agricultural products | 49372 | 3211996865 | 45.46 | 29577 |
| Livestock/fisheries sale | 26423 | 793577706 | 24.33 | 7307 |
| Milk and milk product sale | 37118 | 1839704837 | 34.18 | 16941 |
| Remittances | 13600 | 4139988488 | 12.52 | 38122 |
| Occupational work (tailoring, black smithy, carpentry etc) | 7857 | 592405670 | 7.24 | 5455 |
| Forestry related products sale | 391 | 1956800 | 0.36 | 18 |
| Pension | 1302 | 163736320 | 1.20 | 1508 |
| Own enterprise | 8818 | 1252078980 | 8.12 | 11529 |
| Others | 2605 | 414434213 | 2.40 | 3816 |
| Total | n=108598 | 24244186048 | 100.00 | 223247 |

Source: Annex Table 23

From the analysis of income and expenditure, it can be concluded that on an average there is a per annum surplus of income by Rs.97907 per household.

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 28.58 percent of households have taken loan during the last 12 months.

Table1.24: Frequency and percentage of HH taking loan

| Loan taken | HH | |
|--------------|---------------|---------------|
| | No. | % |
| Yes | 31035 | 28.58 |
| No | 77566 | 71.42 |
| Total | 108601 | 100.00 |

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 98.57 percent of the households have reported that there is presence of climate and weather related risks on crops and livestock production.

Table1.25: Distribution of HH reporting presence of climatic and weather related risks in agriculture

| Possibility of risks on crop/livestock | HH | |
|--|---------------|---------------|
| | No. | % |
| Yes | 107039 | 98.57 |
| No | 1558 | 1.43 |
| Total | 108597 | 100.00 |

Source: Annex Table 25

Among the households reporting presence of climate and weather related risks, the risk of diseases and pests in cereals and vegetable was found to be from 41.84 to 64.55 percent. Similarly drought was reported by 34.99 percent to 41.91 percent households as risk on cereals and vegetable. Risk of flood on rice, vegetable, and mustard was reported by 13.42, 6.80, and 5.40 percent of households while risks due to hailstone on wheat, maize and vegetable was reported by 19.56, 19.22, and 13.97 percent of households respectively.

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

| Crop/ livestock | No of HHs and % | Risks in crops and livestock due to climatic hazards | | | | | | |
|--------------------|-----------------|--|---------|-------|---------------|------|--------|--------|
| | | Disease pest | Drought | Flood | Hail stone | All | Others | Total |
| Rice | No of HHs | 104393 | 87045 | 33394 | 17654 | 5088 | 1174 | 248748 |
| | % | 41.97 | 34.99 | 13.42 | 7.10 | 2.05 | 0.47 | 100.00 |
| Wheat | No of HHs | 89870 | 79218 | 2825 | 42004 | 868 | - | 214785 |
| | % | 41.84 | 36.88 | 1.32 | 19.56 | 0.40 | - | 100.00 |
| Maize | No of HHs | 41826 | 33608 | 2348 | 18785 | 783 | 391 | 97742 |
| | % | 42.79 | 34.38 | 2.40 | 19.22 | 0.80 | 0.40 | 100.00 |
| Mustard | No of HHs | 3039 | 3039 | 391 | 783 | - | - | 7252 |
| | % | 41.91 | 41.91 | 5.40 | 10.79 | 0.00 | - | 100.00 |
| Vegetable | No of HHs | 4953 | 3388 | 783 | 1608 | 783 | - | 11514 |
| | % | 43.02 | 29.42 | 6.80 | 13.97 | 6.80 | - | 100.00 |
| Potato | No of HHs | 1737 | 954 | - | - | - | - | 2690 |
| | % | 64.55 | 35.45 | - | - | - | - | 100.00 |
| Cow | No of HHs | 20522 | 1217 | 391 | 391 | - | - | 22521 |
| | % | 91.12 | 5.40 | 1.74 | 1.74 | - | - | 100.00 |
| Buffalo | No of HHs | 13123 | 1253 | - | - | - | 43 | 14419 |
| | % | 91.01 | 8.69 | - | - | - | 0.30 | 100.00 |
| Sheep | No of HHs | 391 | - | - | - | - | - | 391 |
| | % | 100.00 | - | - | - | - | - | 100.00 |

| | | | | | | | | |
|---------|-----------|--------|--------|-------|-------|------|------|--------|
| Goat | No of HHs | 22252 | 734 | - | - | - | - | 22986 |
| | % | 96.81 | 3.19 | - | - | - | - | 100.00 |
| Chicken | No of HHs | 3736 | 563 | - | - | - | - | 4299 |
| | % | 86.91 | 13.09 | - | - | - | - | 100.00 |
| Duck | No of HHs | 1302 | 86 | - | - | - | - | 1388 |
| | % | 93.83 | 6.17 | - | - | - | - | 100 |
| Other | No of HHs | 5161 | 6164 | 783 | 3131 | 783 | 391 | 16412 |
| | % | 31.44 | 37.56 | 4.77 | 19.08 | 4.77 | 2.38 | 100.00 |
| Total | No of HHs | 312305 | 217267 | 40915 | 84356 | 8304 | 2000 | 665148 |
| | % | 46.95 | 32.66 | 6.15 | 12.68 | 1.25 | 0.30 | 100.00 |

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. As 96.81 percent of the household have reported that goat was more prone to risks due to diseases and pests followed by duck (93.83%), cow (91.12%) and buffalo (91.01%). Drought effects were reported by 13.09 percent in chicken followed by 8.69% in buffalo and 6.17% in duck.

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 3.96% of the HH are found to have known about it.

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

| Knowledge on crop/ livestock insurance | HH | |
|--|---------------|---------------|
| | No. | % |
| Yes | 4305 | 3.96 |
| No | 104293 | 96.04 |
| Total | 108598 | 100.00 |

Source: Annex Table 27

Among the household who have knowledge on crop/livestock insurance, 1565 household has insurance their livestock.

Table 1.28: Frequency and percentage of households having Insuring of crop/livestock

| Insuring of crop/livestock in last year | HH | |
|---|-------------|---------------|
| | No. | % |
| Yes | 1565 | 26.67 |
| No | 4305 | 73.33 |
| Total | 5870 | 100.00 |

Source: Annex Table 28

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 100% respondents cited lack of information was the major reason for non-insuring.

Table 1.29: Frequency and percentage of household reporting reason for not doing insurance

| Reason for not doing insurance | HH | |
|--------------------------------|------|--------|
| | No. | % |
| Lack of information | 1565 | 100.00 |
| High premium rate | 0 | 00 |

| | | |
|--|-------------|---------------|
| No access to the service | 0 | 00 |
| Poor insurance service | 0 | 00 |
| Problem in getting back the insured amount | 0 | 00 |
| Others | 0 | 00 |
| Total | 1565 | 100.00 |

Source: Annex Table 29

Newspaper, TV/Radio and insurance agent were reported as major sources of information on agriculture insurance reported by 75, 50 and 50 percent of the respondents

Table 1.30: Frequency and percentage of households reporting source of information on agricultural insurance

| Source | HH | |
|----------------------------------|-------------|---------------|
| | No. | % |
| Insurance agent | 783 | 50.00 |
| DADOs/DLSOs | 391 | 25.00 |
| Newspaper | 1174 | 75.00 |
| TV/Radio | 783 | 50.00 |
| ASCs/LSCs | 391 | 25.00 |
| Leader farmer/Neighbor/Relatives | 391 | 25.00 |
| Other | | 0.00 |
| Total | 1565 | 100.00 |

Source: Annex Table 32

Out of 2348 households, only 1174 (50%) reported having knowledge about 75 percent subsidy on agriculture insurance.

Table 1.31: Frequency and percentage of households reporting 75% subsidy on agricultural insurance premium

| Response | HH | |
|--------------|-------------|---------------|
| | No. | % |
| Yes | 1174 | 50.00 |
| No | 1174 | 50.00 |
| Total | 2348 | 100.00 |

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 all the households (93.28%) in the district have owned their land.

3.2 Use of Land by Type

Usually in 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 0.5462 ha/HH and overall irrigated land is 0.4696 ha/HH with average number of parcel land is 1.70. Very insignificant land was used for temporary graze land, the average area of which is found to be 0.0007ha. Use of temporary fallow is also very low with average area 0.0007 ha/HH. Except for temporary crop, the use of land for permanent crops is slightly less; the average area covered is 0.0040ha/HH with average irrigated area of 0.0015 ha. Average land appropriate for fishery was found 0.0001 ha.

Table 2.15: Distribution of HH using land by type

| Type of land | Ave. area (ha) | Ave. no. of parcel | Ave. irrigated (ha) |
|-------------------------|----------------|--------------------|---------------------|
| Temporary crop | .5462 | 1.70 | 0.4696 |
| Temporary graze land | .0007 | 1.00 | 0.0000 |
| Temporary fallow | .0007 | 1.37 | 0.0000 |
| Permanent crops | .0040 | 2.03 | 0.0015 |
| Permanent graze land | .0000 | 0.00 | 0.0000 |
| Appropriate for forest | .0000 | 0.00 | 0.0000 |
| Appropriate for fishery | .0001 | 0.00 | 0.0000 |
| No of HH | | | 108600 |

Source: Annex Table 35

3.3 Source of Irrigation:

Out of 88974 respondents, who have managed to irrigate in their field with different sources of irrigations for temporary crops, majority (50.37%) of the HH have reported that their source of irrigation was continuous flow canal managed by the people themselves, which is followed by tube well, boring (26.38%), and natural flow canal (17.10%). Similarly tube well, boring was reported as source by 52.36 percent respondents in case of irrigated agricultural land followed by continuous flow canal (47.64%).

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

| Sources of irrigation | Temp. crops | | Irrigated agriculture land | | Temp Graze | | App. forest | |
|-----------------------|-------------|-------|----------------------------|-------|------------|---|-------------|---|
| | No. | % | No. | % | No. | % | No. | % |
| Tube well, boring | 23473 | 26.38 | 477 | 52.36 | - | - | - | - |
| Continuous flow canal | 44815 | 50.37 | 434 | 47.64 | - | - | - | - |
| Natural flow canal | 15214 | 17.10 | 0 | 0.00 | - | - | - | - |

| | | | | | | | | |
|--------------|--------------|---------------|------------|---------------|---|---|---|---|
| Pond/ well | 1957 | 2.20 | 0 | 0.00 | - | - | - | - |
| Mixed | 0 | 0.00 | 0 | 0.00 | - | - | - | - |
| Others | 3515 | 3.95 | 0 | 0.00 | - | - | - | - |
| Total | 88974 | 100.00 | 911 | 100.00 | - | - | - | - |

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

Leased land

Only 1% of respondent have given land to others on lease and the average holding of leased out land is 0.0037 ha/household.

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 | 397.30 | .0037 | | |
| Bari | 0 | .00 | | |
| Total | 397.30 | .0037 | 1082 | 1.00 |

Source: Annex Table 41 and 42

A total of 9686 households (8.92%) had owned land on lease from others.

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

| Leased in land | HH | |
|----------------|---------------|---------------|
| | No. | % |
| Yes | 9686 | 8.92 |
| No | 98913 | 91.08 |
| Total | 108599 | 100.00 |

Source: Annex Table 43

Out of 4475.27 ha leased in land, major portion i.e. 2758.59 ha (61.64%) of land are found to have leased on crop sharing basis followed by contract (cash) basis 1378.28 ha (30.79%) and contract (kind) basis 338.35 ha (7.56%). There are various ways of leasing land in the district viz. exchange for service, mortgage and other, however the proportion of them is found to be low.

Table 2.5: HH reporting leasing land by type of land tenure system

| Type of land tenure system | Particulars | Khet | Bari | Orchard | Pond | Total |
|----------------------------|--------------|---------|--------|---------|------|-----------------|
| Contract (cash) | Sum (ha) | 1245.75 | 132.53 | 0.00 | 0.00 | 1378.28(30.79%) |
| | Mean (ha/HH) | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 |
| Contract (kind) | Sum (ha) | 338.35 | 0.00 | 0.00 | 0.00 | 338.35(7.56%) |
| | Mean (ha/HH) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Crop sharing | Sum (ha) | 2732.09 | 26.51 | 0.00 | 0.00 | 2758.59(61.64%) |
| | Mean (ha/HH) | 0.03 | 0.00 | 0.00 | 0.00 | 0.03 |
| Exchange for service | Sum (ha) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean (ha/HH) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mortgage | Sum (ha) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean (ha/HH) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Others | Sum (ha) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean (ha/HH) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | | | | | | 4475.27 |

Source: Annex Table 44

3.4 Cropping Patterns and Cropped Area

Rice-Wheat-Fallow (46.70%) and Rice-Rice-Wheat (17.97%) and Rice-Wheat-Maize (17.57%) were major cropping pattern of khet land with mean land holding of 0.2769, 0.1065 and 0.1042 ha/HH.

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

| Type of cropping pattern | Total area (ha) | Percentage of total land area (%) | Mean (ha/HH) |
|--------------------------------|-----------------|-----------------------------------|---------------|
| Rice-Rice-Wheat | 11569.59 | 17.97 | .1065 |
| Rice-Wheat-Fallow | 30070.76 | 46.70 | .2769 |
| Rice-Wheat-Maize | 11316.12 | 17.57 | .1042 |
| Rice-Wheat-Vegetable | 191.12 | 0.30 | .0018 |
| Rice-Pulses-Fallow | 602.95 | 0.94 | .0056 |
| Rice-Wheat-Moong (green gram) | 525.48 | 0.82 | .0048 |
| Rice-Wheat-Dhaincha (Sun hemp) | 0.00 | 0.00 | 0.0000 |
| Rice-Potato-Fallow | 145.76 | 0.23 | .0013 |
| Rice-Maize-Fallow | 3859.09 | 5.99 | .0355 |
| Rice-Fallow-Fallow | 3406.93 | 5.29 | .0314 |
| Rice-Barley-Fallow | 0.00 | 0.00 | 0.0000 |
| Rice-Millet-Fallow | 0.00 | 0.00 | 0.0000 |
| Other | 2705.90 | 4.20 | .0249 |
| Total (n= 108600) | 64393.72 | 100.00 | .5929 |

Source: Annex Table 45

Vegetable-Vegetable (81.87%), off season vegetable (7.39%) and Vegetable-Maize (7.02%) were major cropping pattern in bari land.

Table 2.76: Cropping patterns in Bari land and mean Bari land area

| Type of cropping pattern | Total area (ha) | Percentage of total land area (%) | Mean (ha/HH) |
|---------------------------|-----------------|-----------------------------------|---------------|
| Maize/Upland rice-Fallow | 29.82 | 0.83 | .0003 |
| Maize/Millet-Fallow | 0.00 | 0.00 | 0.0000 |
| Maize/Millet-Wheat | 28.98 | 0.81 | .0003 |
| Upland rice-Fallow-fallow | 0.00 | 0.00 | 0.0000 |
| Maize-Tori-Fallow | 7.25 | 0.20 | .0001 |
| Maize- Rice-Wheat | 0.00 | 0.00 | 0.0000 |
| Maize-Barley | 0.00 | 0.00 | 0.0000 |
| Jute-Tori-Fallow | 0.00 | 0.00 | 0.0000 |
| Jute-Wheat- Fallow | 0.00 | 0.00 | 0.0000 |
| Vegetable-Vegetable | 2937.48 | 81.87 | .0270 |
| Vegetable-Maize | 251.80 | 7.02 | .0023 |
| Off season vegetable | 265.05 | 7.39 | .0024 |
| Others | 67.50 | 1.88 | .0006 |
| Total (n= 108600) | 3587.88 | 100.00 | .0330 |

Source: Annex Table 46

3.5 Use of improved seeds

About 77.26 percent of the HHs reported to have used improved seeds. Among this 97.92 percent households were using improved seeds of rice followed by wheat 76.47 percent and maize 43 percent.

Table2.8: HH using improved seeds (%)

| Use of improved seeds | HH | |
|-----------------------|---------------|---------------|
| | No. | % |
| Yes | 83907 | 77.26 |
| No | 24690 | 22.74 |
| Total | 108597 | 100.00 |

Source: Annex Table 45 and 46

Table2.9: HH using different kinds of seeds (%)

| Commodity | HH | |
|--------------|--------------|---------------|
| | Nos | % |
| Rice | 81780 | 97.92 |
| Wheat | 63869 | 76.47 |
| Maize | 35913 | 43.00 |
| Oilseed | 1388 | 1.66 |
| Pulses | 3430 | 4.11 |
| Vegetables | 2214 | 2.65 |
| Potato | 477 | 0.57 |
| Sugarcane | 1217 | 1.46 |
| Other | 826 | 0.99 |
| Total | 83516 | 100.00 |

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 65.30 percent of households sell their products, which is followed by rural haat bazar accounting for 22.1 percent of households. Only 4.39 percent of household sells their product to vendor followed by distant market (4.39%).

Table 2.10: Frequency and percentage of HH selling produce at different places

| Place of sale | HH | |
|------------------|--------------|---------------|
| | No. | % |
| Farm gate | 34953 | 65.30 |
| Rural haat bazar | 11826 | 22.10 |
| District market | 1865 | 3.48 |
| Vendor | 2348 | 4.39 |
| Cooperatives | 0 | 0.00 |
| Sell centers | 1217 | 2.27 |
| Others | 2488 | 4.65 |
| Total | 53524 | 100.00 |

Source: Annex table 49

3.7 Use of Chemical Fertilizers and Pesticides

As regards to the use of chemical fertilizer and pesticides out of a sample of 108598 HH, 84.99 percent of the households have used chemical fertilizers and pesticides.

Table 2.11: Use of fertilizer and pesticides by the households

| Use of chemical fertilizer and pesticides | HH | |
|---|---------------|---------------|
| | No | % |
| Yes | 92296 | 84.99 |
| No | 16302 | 15.01 |
| Total | 108598 | 100.00 |

Source: Annex Table 50

As has been reported by MoAD, the total amount of fertilizer sold in the district is divided by the cultivated area to obtain average amount of Nitrogen, Phosphate and Potash used in farm in different varieties of crops, which is given in the following table. However, the amounts of different fertilizer nutrients used are all lower than the recommended dose in all kinds of crops whether it is irrigated or rain-fed.

Table 2.12: Amount of fertilizer nutrients used by HH in different crops (kg/ha)

| Nitrogen | Phosphate | Potash |
|----------|-----------|--------|
| 21.17 | 12.0 | 1.68 |

Source: MoAD (2014)

From the following table, it is clear that out of 92296 households using fertilizers and pesticides, 76.02 percent of households reported that fertilizers and pesticides were available as and when needed.

Table 2.13: Frequency and percentage of households reporting availability of chemical fertilizer and pesticides

| Response | HH | |
|--------------|--------------|---------------|
| | No. | % |
| Yes | 70167 | 76.02 |
| No | 22130 | 23.98 |
| Total | 92297 | 100.00 |

Source: Annex Table 51

3.8 Sources of Fertilizers/Pesticides

There are various sources of buying fertilizers/pesticides for the use of agricultural purposes. Among them agro-vets was the main source, from where 76.49 percent of the HH buy them, followed by other sources (11.89%).

Table 2.14: HH buying fertilizers/pesticides from different sources (%)

| Source | HH | |
|------------------|--------------|---------------|
| | No. | % |
| Cooperatives | 3693 | 5.55 |
| Agro vets | 50913 | 76.49 |
| DADOs/ASCS | 391 | 0.59 |
| Neighbor farmers | 2434 | 3.66 |
| Relatives | 1608 | 2.42 |
| Others | 7911 | 11.89 |
| Total | 66560 | 100.00 |

Source: Annex Table 52

A total of 39130 household reported that they get the information on safe use of fertilizer and pesticides. Out of them 80% of HHs get information from purchasing shop followed by friends (5%) and neighboring farmers/ extension service/ relatives each 3 percent.

Table 2.15: Frequency of households reporting source of information for safe use of fertilizer and pesticides

| Source | HH | |
|----------------------|-------|-------|
| | No. | % |
| From Purchasing Shop | 31303 | 80.00 |
| Extension Service | 1174 | 3.00 |
| Neighboring Farmers | 1174 | 3.00 |
| Friends | 1957 | 5.00 |
| Relatives | 1174 | 3.00 |

| | | |
|----------------|--------------|---------------|
| Own Experience | 4305 | 11.00 |
| Other | 0 | 0.00 |
| Total | 39130 | 100.00 |

Source: Annex Table 53

3.9 Reason for Low Use of Fertilizers/Pesticides:

An enquiry into the reason for inadequate use of fertilizer nutrients/pesticides by the farmers, lack of money is reported by 57.58 percentage of the HH and non-availability in time was reported by 10.18 percent households.

Table 2.16: HH reporting reasons for low use of fertilizers/pesticides

| Reason | HH | |
|---------------|--------------|---------------|
| | No. | % |
| Not available | 3914 | 10.18 |
| No money | 22130 | 57.58 |
| Other | 12389 | 32.24 |
| Total | 38433 | 100.00 |

Source: Annex Table 54

There is very low existence of advice on safe use of fertilizer and pesticides as 38.59 percent of households reported its existence.

Table 2.17: HH reporting on advisory on safe use of fertilizer and pesticides

| Response | HH | |
|--------------|---------------|---------------|
| | No. | % |
| Yes | 41914 | 38.59 |
| No | 66688 | 61.41 |
| Total | 108602 | 100.00 |

Source: Annex Table 55

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 62.36 percent of the households have held livestock.

Table 2.18: Frequency and percentages of households raising livestock

| Response | HH | |
|--------------|---------------|---------------|
| | No. | % |
| Yes | 67723 | 62.36 |
| No | 40878 | 37.64 |
| Total | 108601 | 100.00 |

Source: Annex Table 56

The distribution of types of breeds of livestock owned by the HH is presented in the following table. As revealed from the same table majority of the HH have raised local breeds of all kinds of livestock such as cattle, buffaloes, goats, sheep and pigs. Improved breeds of cows, buffaloes and goat were raised by 16.23, 14.81 and 15.90% of HH.

Table 2.197: Types of breeds of livestock owned

| Animal | Type | HH (%) | HH | Animal (no.) | Mean (Animal/HH) |
|--------|----------|--------|-------|--------------|------------------|
| Cattle | Local | 55.97 | 37907 | 62648 | 1.65 |
| | Improved | 16.23 | 10995 | 20039 | 1.82 |

| | | | | | |
|--------------|----------|----------------|-------|--------|------|
| Buffalo | Local | 25.14 | 17024 | 32409 | 1.90 |
| | Improved | 14.81 | 10028 | 13416 | 1.34 |
| Goat | Local | 44.59 | 30195 | 123668 | 4.10 |
| | Improved | 15.90 | 10768 | 56341 | 5.23 |
| Sheep | Local | 0.06 | 43 | 128 | 3.00 |
| | Improved | 0.06 | 43 | 43 | 1.00 |
| Pig | Local | 0.06 | 43 | 43 | 1.00 |
| | Improved | 0.58 | 391 | 2740 | 7.00 |
| Others | Local | 1.16 | 783 | 1174 | 1.50 |
| Total | | n=67723 | | | |

Source: Annex Table 57

(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 and feeding 91.48 percent of the HH have reared their livestock in the shed separately; it was followed by in the residential house (5.51%) and both type (3.01%).

Table 2.20: Place of housing of livestock

| Place of housing livestock | HH | |
|----------------------------|--------------|---------------|
| | No. | % |
| In the shed separately | 61949 | 91.48 |
| In the residential house | 3730 | 5.51 |
| Both | 2041 | 3.01 |
| Total | 67720 | 100.00 |

Source: Annex Table 58

3.13 Milk and Milk Products

Among those HH who have raised livestock, 53.90 percent have reported that they sell milk and milk products. The amount of milk sold per annum was found to be 1731.14 litres per household.

Table 2.21: Milk and milk products production and sale

| Response | HH | | Average milk sold/year (litre) |
|--------------|--------------|---------------|--------------------------------|
| | No. | % | |
| Yes | 36506 | 53.90 | 1731.14 |
| No | 31218 | 46.10 | - |
| Total | 67724 | 100.00 | |

Source: Annex Table 59 and 60

Large percentage (55.77%) of the HH sold their milk in collection center followed by 31.24 percent at home and 11.10% percent HH sold milk at hotel.

Table 2.22: HH selling milk at different places

| Different Place to sell Milk | HH | |
|------------------------------|--------------|---------------|
| | No. | % |
| Home | 10034 | 31.24 |
| Collection center | 17911 | 55.77 |
| Village | 171 | 0.53 |
| Neighbor | 1174 | 3.66 |
| District headquarter | 43 | 0.13 |
| Hotel | 3565 | 11.10 |
| Others | 0 | 0.00 |
| Total | 32116 | 100.00 |

Source: Annex Table 61

3.14 Feeds and feeding

Regarding the type of feeding for the livestock, stall feeding was practiced by 60.32 percent household while feeding in pasture land was reported by 8 percent. Stall feeding as well as feeding in pasture land both was reported by 31.68 percent households.

Table 2.23: HH with different type of feeding

| Type of feeding | HH | |
|-------------------------|--------------|---------------|
| | No. | % |
| Stall feeding | 40849 | 60.32 |
| Feeding in pasture land | 5417 | 8.00 |
| Both | 21457 | 31.68 |
| Total | 67723 | 100.00 |

Source: Annex Table 62

Regarding the type of feeds given to the livestock, mixed feeds constituted major portion of livestock feed as it was fed by 66.67 percent of households followed by 27.33 percent who fed fodder/straw and 10.56% of HHs feed green grasses to their livestock.

Table 2.24: Livestock feeds and feeding types

| Types of Feeds | HH | |
|----------------|--------------|---------------|
| | No. | (%) |
| Fodder/straw | 16437 | 27.33 |
| Green Grasses | 6347 | 10.56 |
| Forage | 1174 | 1.95 |
| Concentrates | 4696 | 7.81 |
| Mixed | 40089 | 66.67 |
| Other | 0 | 0.00 |
| Total | 60134 | 100.00 |

Source: Annex Table 63

3.14 Poultry

Poultry was raised by only 15.31 percent of the households in the district.

Table 2.25: Households raising poultry

| Rearing of poultry | HH | |
|--------------------|---------------|---------------|
| | No. | % |
| Yes | 16631 | 15.31 |
| No | 91966 | 84.69 |
| Total | 108597 | 100.00 |

Source: Annex Table 64

Of the total birds, local birds were raised by 7.54 to 69.45 percent of household and only 4.71 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 boiler per farm is found to be at 7. On the other hand, the average number of local cock and local hen is found to be 2.30 and 3.32 respectively. Similarly, the average number of ducks per HH was found to be 1.47 for local cock and 3.39 for local hen and around 4.3 in case of pigeon

Table 2.26: Average number of improved and local poultry breed reared

| Types of birds | Nos of HHs | % | Sum | Mean |
|----------------|------------|---|-----|------|
| Poultry | | | | |

| | | | | |
|------------------|----------------|-------|-------|------|
| Local Chick | 7295 | 43.86 | 51217 | 7.02 |
| Local Cock | 11551 | 69.45 | 26624 | 2.30 |
| Local Hen | 10248 | 61.62 | 34047 | 3.32 |
| Local dry | 1253 | 7.54 | 2378 | 1.90 |
| Improved Broiler | 783 | 4.71 | 5479 | 7.00 |
| Improved Layer | | | | |
| Duck | | | | |
| Local Chick | 776 | 4.67 | 4218 | 5.43 |
| Local Cock | 3987 | 23.97 | 5852 | 1.47 |
| Local Hen | 3247 | 19.52 | 11019 | 3.39 |
| Local Dry | 128 | 0.77 | 128 | 1.00 |
| Pigeon | | | | |
| Local Chick | 868 | 5.22 | 7374 | 8.49 |
| Local Cock | 1737 | 10.44 | 7460 | 4.30 |
| Local Hen | 1345 | 8.09 | 5894 | 4.38 |
| Total HHs | n=16631 | | | |

Source: Annex Table 66

3.16 Fishery

It was surprising that though the nature of the district is plains terai, fishery is not found to be one of the familiar components of agriculture, the share of households in this field is found to be 1174 households with average area of 2.67 ha of pond area. Average quantity of fish sold was accounted 123.33 kg per respondent household in the district

Table 2.27: Frequency of HH involved in fisheries, pond area and amount of fish sold

| HH (No.) | Number of pond/HH | Pond area/pond (ha) | Quantity of Fish Sold (Kg) |
|----------|-------------------|---------------------|----------------------------|
| 1174 | 1 | 2.67 | 123.33 |

Source: Annex Table 67

3.17 Forest

As regards to the HH involving in forest land, a total of 2519 HH (48.82%) of the HH involving in community forest with the average holding 5.23 ha /HH followed by 41.23 percent HH involving in scatter forest area. Similarly, households involving in each compact forest/NTFP area/other forest area are 3.32 percent with the average holding 1, 1 and 2 ha /HH.

Table 2.28: Frequency and percentage of HH having different forest area

| Different forest area | No of HHs | % of HHs | Total area (ropani) | Mean |
|-----------------------|---------------|----------|---------------------|------|
| Compact Forest | 171 | 3.32 | 171 | 1.00 |
| Scatter Forest | 2128 | 41.23 | 19910.32 | 9.36 |
| NTFP Area | 171 | 3.32 | 171.16 | 1.00 |
| Community Forestry | 2519 | 48.82 | 13171.62 | 5.23 |
| Other Forest Area | 171 | 3.32 | 342.32 | 2.00 |
| Total | n=5161 | | | |

Source: Annex Table 68

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 HH experiencing climate change was during the last one year is reported by 80.71 percent of the HH out of 108597 households. In case of climatic hazards, 99.46 percent of the HH who have experienced climate change reported extreme high temperature which is followed by experience on *drought* (93.31%), *extreme cold* (89.89%), *extreme frost* (78.97%), *hail storm* (58.59%) and *floods* (23.32%).

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

| Experiencing climate change | HH | |
|--------------------------------------|--------------|---------------|
| | No. | % |
| Climate change | 87648 | 80.71 |
| Experiencing Climatic Hazards | | |
| Hail Storm | 51354 | 58.59 |
| Extreme high temperature | 87173 | 99.46 |
| Extreme cold | 78785 | 89.89 |
| Extreme Frost | 69222 | 78.97 |
| Floods | 20436 | 23.32 |
| Drought | 81786 | 93.31 |
| Others | 4305 | 4.91 |
| Total | 87650 | 100.00 |

Source: Annex Table 69 and 70

(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, out of 70743 households who got support, 94.96 percent reporting family support as main support followed by friend/relative support 79.26%. Either Support from their own saving or their assets was reported by 37.49% and 8.30 percent of the households.

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

| Agencies | HH | |
|--------------------|-------|-------|
| | No. | % |
| Government support | 1957 | 2.77 |
| Family support | 67178 | 94.96 |
| INGO | 1957 | 2.77 |
| Saving | 26520 | 37.49 |
| Asset | 5870 | 8.30 |
| Friend/relative | 56074 | 79.26 |

| | | |
|--------------|--------------|---------------|
| Others | 1174 | 1.66 |
| Total | 70743 | 100.00 |

Source: Annex Table 71

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, 98.34% of household reported that they protect their lives followed by protect household goods (93.56%), protect agriculture (86.34%) and protect livestock (60.73%).

Table 3.3: Households taking measures to mitigate climatic hazards

| Measures | HH | |
|-------------------------|--------------|---------------|
| | No. | % |
| Protect lives | 76962 | 98.34 |
| Protect household goods | 73221 | 93.56 |
| Protect agriculture | 67576 | 86.34 |
| Protect livestock | 47531 | 60.73 |
| Protect others | 8219 | 10.50 |
| Total | 78265 | 100.00 |

Source: Annex Table 72

(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 10-15 years, 96.24% of the household reported experiencing change in climate.

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

| Response | HH | |
|--------------|---------------|---------------|
| | No. | % |
| Yes | 104513 | 96.24 |
| No | 4084 | 3.76 |
| Total | 108597 | 100.00 |

Source: Annex Table 73

Among HH who had experienced change in climate, 95.47% of the HH reported low rainfall during rainy season while 53.71% reported high rainfall. Frequent floods and droughts were reported by 47.97% and 70.55% HH and more frost was reported by 29.66% HH in rainy season. Increased temperature was reported by 93.31, 79.28 and 82.61% HH during dry, rainy and winter season. Frequent hail storm was reported by 45.06% of the HH during winter season. Likewise lower ground water table was reported by 89.77 percent of HH during rainy season (Table 3.5).

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) | | Total | |
|--------------------------------|---------------------------|-------|------------------------------|-------|---------------------------------------|-------|--------|-------|
| | No. | % | No. | % | No. | % | No. | % |
| Less overall rainfall | 102516 | 98.09 | 99776 | 95.47 | 95129 | 91.02 | 104472 | 99.96 |
| More overall rainfall | 44523 | 42.60 | 56136 | 53.71 | 26563 | 25.42 | 70396 | 67.36 |
| More frequent drought | 98779 | 94.51 | 73732 | 70.55 | 95435 | 91.31 | 101910 | 97.51 |
| More frequent flood | 9044 | 8.65 | 50137 | 47.97 | 15697 | 15.02 | 55616 | 53.21 |
| Strong wind | 73281 | 70.12 | 34427 | 32.94 | 64091 | 61.32 | 80454 | 76.98 |
| More cold spells or foggy days | 52961 | 50.67 | 31003 | 29.66 | 81701 | 78.17 | 89528 | 85.66 |
| Higher temperature | 97520 | 93.31 | 82862 | 79.28 | 86336 | 82.61 | 100125 | 95.80 |
| Frequent hailstorm | 28655 | 27.42 | 11784 | 11.27 | 47092 | 45.06 | 52962 | 50.68 |
| Lower ground water table | 94951 | 90.85 | 93820 | 89.77 | 93172 | 89.15 | 98908 | 94.64 |

| | |
|--------------|-----------------|
| Total | n=104513 |
|--------------|-----------------|

Source: Annex Table 74

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

4.3 Early Warning Messages

Though there are some services of early warning messages through various organizations, these messages were not being implemented by the community as they have less capacity to cope with disaster. They are more dependent on natural on natural resources for their livelihoods. In this regards, the survey result shows that the awareness on early warning message about climate/weather hazards were reported by 5.12 percent of the HH in the district.

Table 3.6: Households reporting receipt of early warning messages

| Response | HH | |
|--------------|---------------|---------------|
| | No. | % |
| Yes | 5564 | 5.12 |
| No | 103034 | 94.88 |
| Total | 108598 | 100.00 |

Source: Annex Table 75

Among various sources of early warning messages (such as telephone, Radio/TV, siren, Bulletin/Newspaper), Majority of HHs (82.58%) have reported about the early warning was received from Radio/TV followed by bulletin/newspaper (74.32%) and telephone (41.29%).

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

| Sources | HH | |
|--------------------|-------------|---------------|
| | No. | % |
| Telephone | 1957 | 41.29 |
| Radio/TV | 3914 | 82.58 |
| Siren | 1174 | 24.77 |
| Colorful flag | 1174 | 24.77 |
| Hand mike | 1174 | 24.77 |
| Bulletin/newspaper | 3522 | 74.32 |
| Others | 43 | 0.90 |
| Total | 4739 | 100.00 |

Source: Annex Table 76

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, 91.89 percent of HH preferred digital display board, FM Radio/TV (83.57%), SMS on mobile (64.59%), telephone (42.10%) and siren (39.91%) as medium for delivery of early information. Internet is preferred by 13.97 percent of HHs.

Table 3.8: Households (%) selecting suitable EWS and agricultural information medium

| Medium for delivery of Early information | HH | |
|--|-------|-------|
| | No. | % |
| Telephone | 45171 | 42.10 |
| SMS on mobile | 69299 | 64.59 |
| Siren | 42822 | 39.91 |
| FM Radio/TV | 89669 | 83.57 |
| Newspaper | 40255 | 37.52 |
| Digital display board | 98597 | 91.89 |
| Internet | 14994 | 13.97 |
| Others | 1174 | 1.09 |

| | | |
|-------|--------|--------|
| Total | 107298 | 100.00 |
|-------|--------|--------|

Source: Annex Table 77

(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 54.54 percent of the households. Second priority was given agro vet (16.77%) followed by ASC/LSC (14.16%).

Table 3.9: Priority of location suitable for Digital Display Board

| Location | HH | |
|----------------------------------|---------------|---------------|
| | No. | % |
| DADO/DLSO offices | 57230 | 54.54 |
| Agriculture/Livestock Sub Center | 14860 | 14.16 |
| VDC/DDC offices | 8205 | 7.82 |
| Markets | 7042 | 6.71 |
| Agro Vet | 17596 | 16.77 |
| Other place | 0 | 0.00 |
| Total | 104933 | 100.00 |

Source: Annex Table 78

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 only 1.64 percent of the HH are found to have received agro advisory service during the last 12 months (Annex Table 79).

Sources of agro advisories

Among those HH who have received advisory were only on crop production and livestock/fishery farming. None of the HH has reported advisory on vegetable/fruits, plant protection and marketing etc.

4.3.3 Need for Agro Advisory

At present thought overwhelming majority of the respondents are found to have not taken advisory, they were interested to have advice from the service providers. In this regards, 94.71 percent of the HH have preferred mobile service, 89.29 percent digital display board at district office, 72.09 percent toll free service, 48.06 percent telephone and 38.81 percent newspaper/bulletin. Few HHs (14.70%) have preferred internet service.

Table 3.10: HH preferring advisory services by type

| Types of advisory | HH | |
|-----------------------|---------------|---------------|
| | No. | % |
| Mobile service | 101953 | 94.71 |
| Telephone | 51739 | 48.06 |
| Newspaper/Bulletin | 41777 | 38.81 |
| Toll free | 77603 | 72.09 |
| Internet service | 15819 | 14.70 |
| Digital display board | 96114 | 89.29 |
| Others | 4696 | 4.36 |
| Total | 107646 | 100.00 |

Source: Annex Table 81

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 quite low at only 23.18 percent of the households regularly listened. Only 24.3 percent of the household reported watching agricultural program in television and 16.81 percent of theHH read newspapers and magazines. This shows that communication media are not effectively penetrating to general mass of people (annex Tables 82, 83 and 84)

Annex1**Average Maximum and Minimum Temperature and Rainfall (2000-2010)**

| Month | Maximum Temperature (°C) | Minimum Temperature (°C) | Rainfall (mm) | No. of Rainy days |
|--------------|----------------------------------|----------------------------------|----------------------|--------------------------|
| January | 21.5 | 8.6 | 12.8 | 1.2 |
| February | 24.9 | 10.1 | 26.1 | 3.2 |
| March | 29.7 | 13.6 | 27.2 | 3.3 |
| April | 33.6 | 18.6 | 52.5 | 5.7 |
| May | 34.1 | 23.1 | 99.2 | 8.1 |
| June | 34.2 | 24.9 | 258.5 | 12.2 |
| July | 32.5 | 25.6 | 409.2 | 15.9 |
| August | 32.3 | 25.3 | 399.4 | 16.3 |
| September | 32 | 24.1 | 250.3 | 11.5 |
| October | 31.4 | 20.4 | 83.4 | 5.4 |
| November | 28.7 | 14 | 23.6 | 3.5 |
| December | 24.5 | 10.1 | 33.4 | 3.5 |