



## Local Adaptation Mechanism to Address Climate Led Food Insecurity in Far-Western Nepal: The Case of Badimalika Municipality.

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### Introduction:

There are more than 1 billion food-insecure people in the world, mostly in developing regions of Asia/Pacific, Sub-Saharan Africa, South/Central America, and the Caribbean (Food and Agriculture Organization, FAO 2016). According to Asian Development Bank (2017) Nepal report rural population is severely food insecure where 75% of poor households reside as a result of lack of production and purchasing power. World Food Program (2017) reports that 3.4 million Nepalese face severe food insecurity with less than 2 dollars per capita income per day. Based on consumption pattern 27 % of rural households are food insecure, 16 % are very poor and 11 % have poor food consumption pattern with minimum level of proteins. Being a mountainous country the impact of climate change has worsened the situation.

### Rationale:

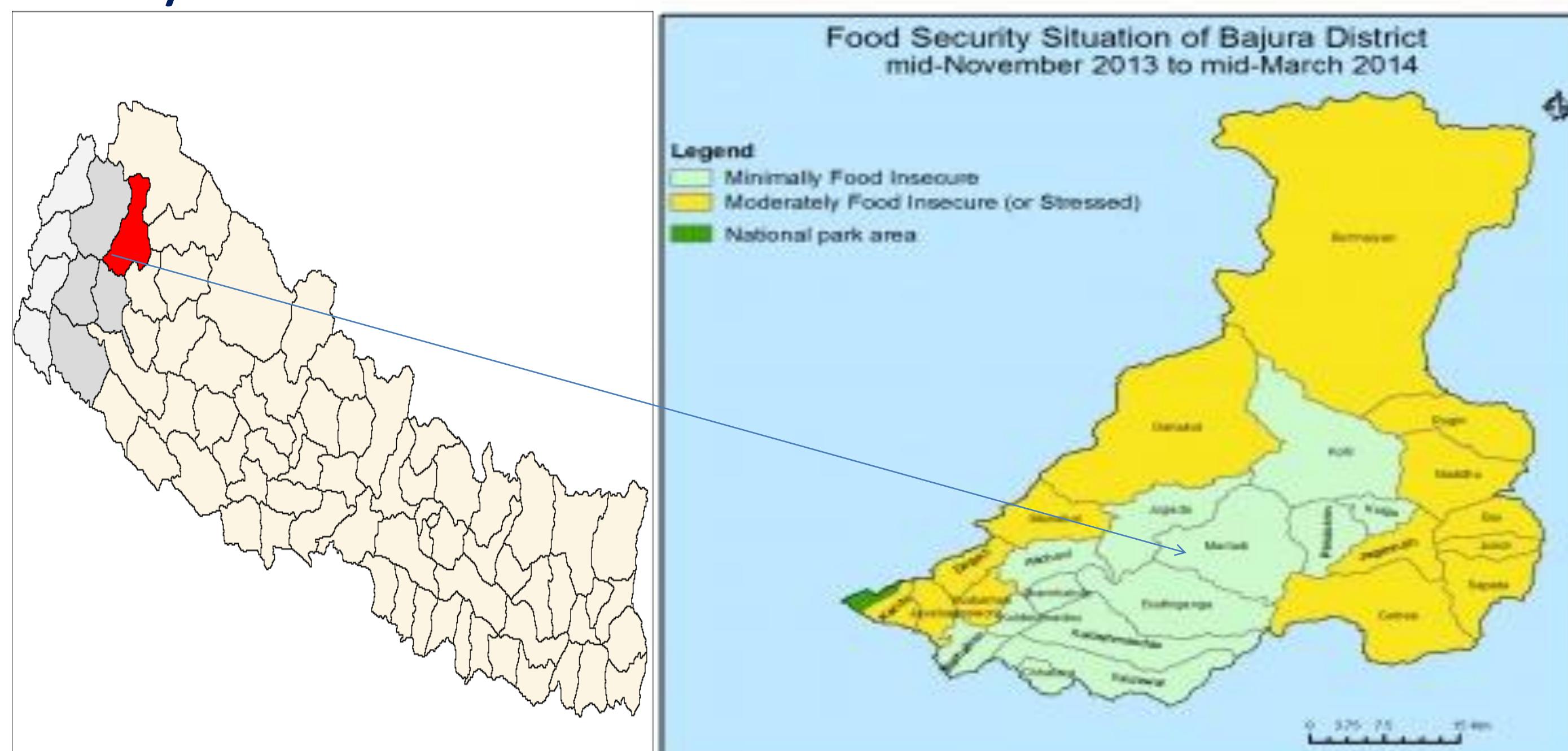
Since the 1990s Nepal has been reliant on food imported from India to feed its growing population. The most food insecure regions of Nepal are mid and far-western development regions. Bajura is one of the districts in far-western region where around 92.7% of economically active age group of 10 years and over are involved in agricultural works but the total agricultural land area is only 9.2% (DAO 2017) with only 1.34% is irrigated. Food insecurity is the main problem of the district that forces the working population to migrate to India in order to secure livelihoods. According to District food security bulletin issued by Nepal Food Security Monitoring System (NeKSAP), Bajura is suffering a critical level of food insecurity, approximately 92,700 people out of a district total of 123,400 are classified as highly or severely food insecure. Low productivity, fragility, inaccessibility, rugged terrain and the climate change are the major factors behind the issue. Climate change will have an impact on human health, livelihood assets, food production and distribution channels, as well as changing purchasing power and market flows.

### Objectives:

- To understand the food security situation in Badimalika Municipality of Bajura district of far western region, Nepal.
- To know the climate change impacts on agriculture and agricultural productions.
- To explore the possible adaptation measures in agriculture and livelihood of people.
- To analyze the interventions of the government, non government non-government organizations and community organizations in coping food insecure situation.

### Materials and Methods

#### Study area



In Martadi 27% population engage in agriculture.

#### Sampling Procedure:

The sample size (n) for the questionnaire survey was determined by using the following formula given by Arkin and Colton (1963) at 95% confidence level.

$$\text{Sample size (n)} = \frac{N^*z^2*P(1-P)}{N^*d^2 + z^2*P(1-P)}$$

Where,

N = Total number of households (1109)

z = Confidence level at 95% , Z= 1.96

P = estimated population proportion (0.05)

d = error limit of 5% (0.05)

Hence, Sample size (n) = 69

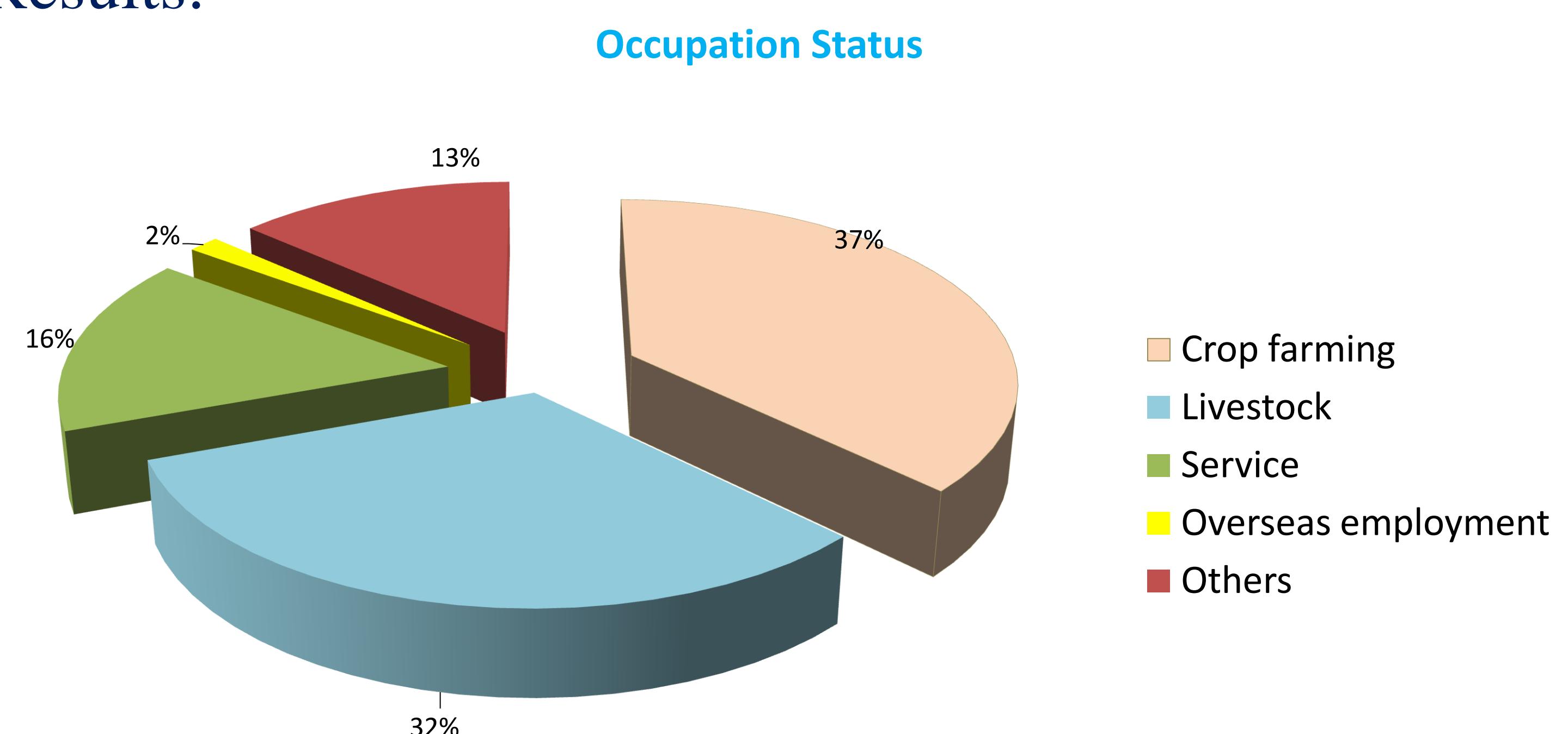
Village	Martadi	Ukhadi	Kabalta	Chaurata	Total
Total HH	758	89	100	162	1109
Samples	48	6	7	10	69

#### Data collection:

- Primary data
  - Structure Interview
  - Field observation
  - Household question survey
  - Key informant survey
  - Focal group discussion

- Secondary data
  - Hydro-Meteorological data
  - Socio-Economic data

### Results:



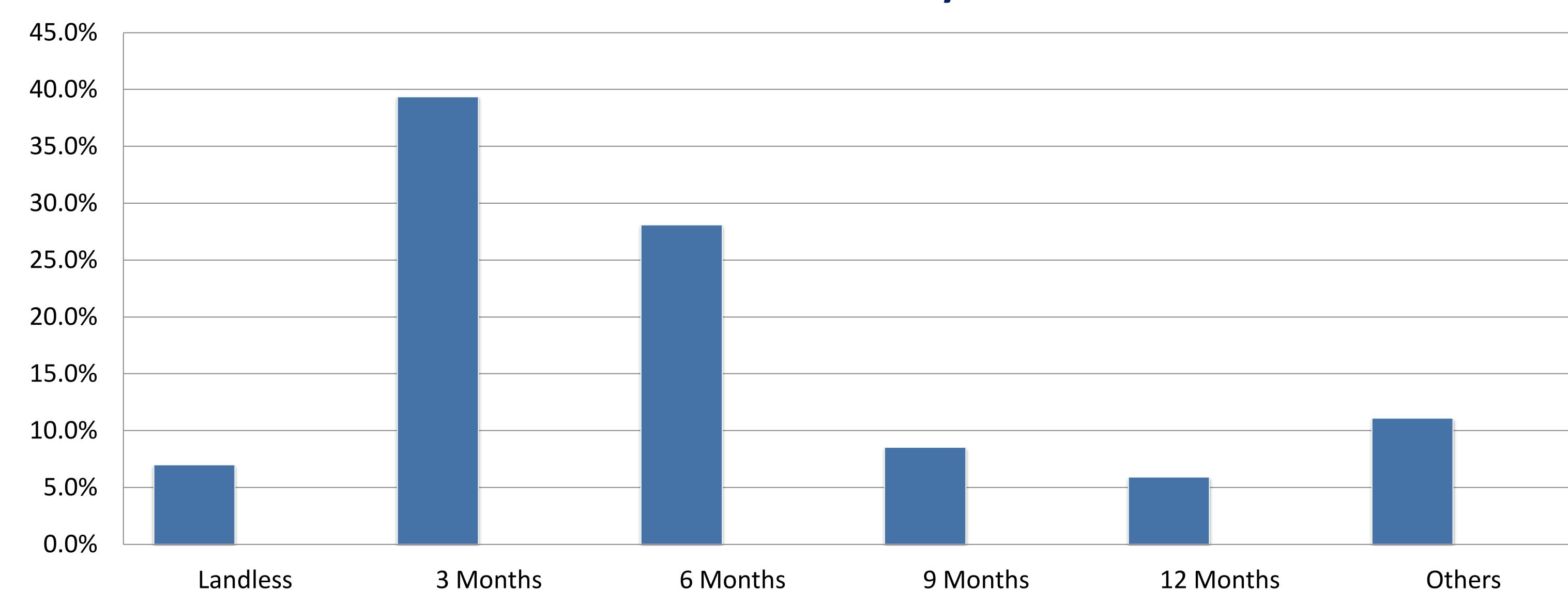
Winter production is reduced by 20% due to hail storms and drought

Food grains requirement per person per year is 201 Kg.

Total Requirement is 24185 Mt.

Deficit is 7161.1 Mt.

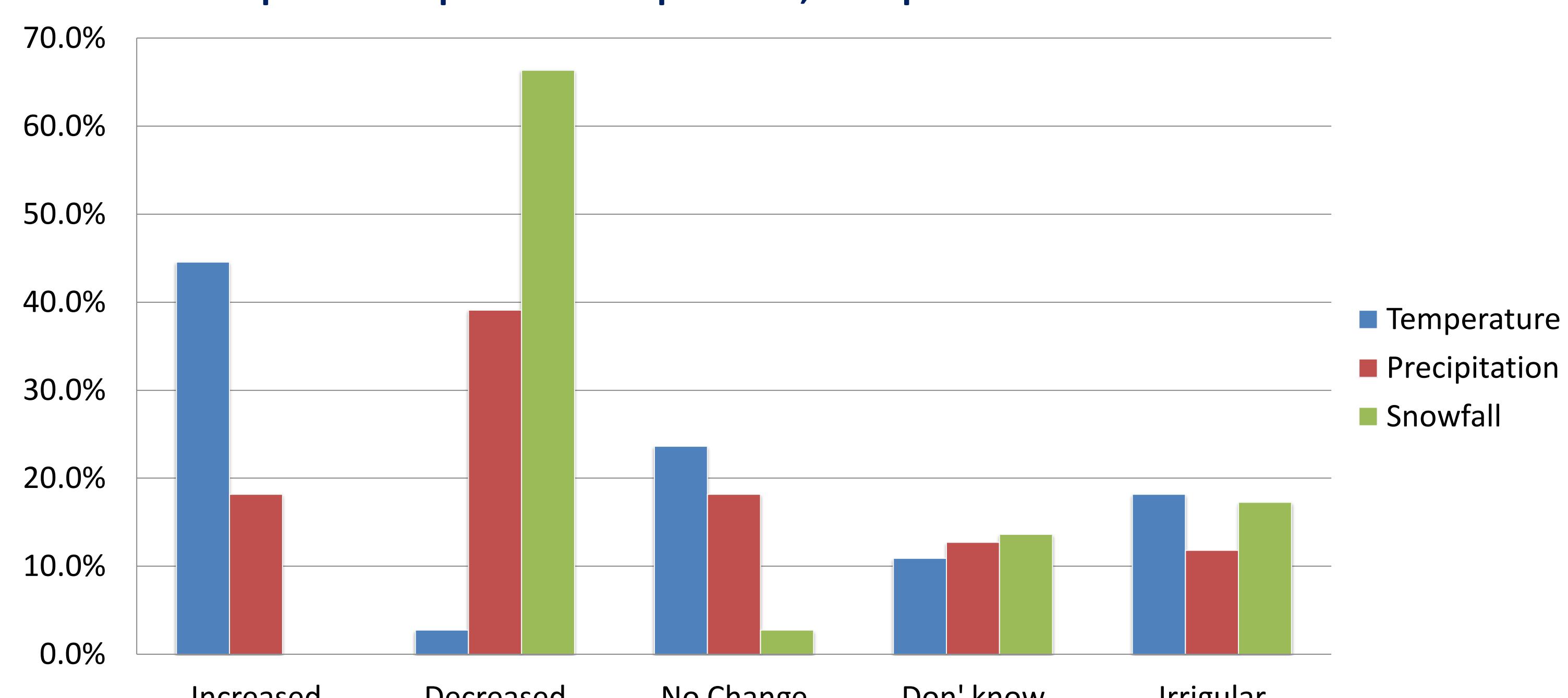
#### Food Sufficiency



#### Rainfall and Temperature:

The rainfall is decreasing by 16.74mm/yr. The monsoon rainfall is decreasing by 18.75 %; Pre-monsoon by 3.51%; Post monsoon by 1.6%; winter by 6.47%. The mean annual temperature for the year 2017 was recorded 15.9 degree Celsius and increasing by 0.06 degree Celsius/yr.

#### Peoples' Perception on Temperature, Precipitation and Snowfall Pattern



#### Local Adaptation Mechanisms:

- Seasonal migration in and outside country
- Growing drought resistant crops: Finger Millet (*Elusine coracana*), Foxtail Millet (*Setaria italic L.*), Wheat (*Triticum aestivum*), and Amaranth (*Amaranthus sp.*)
- Food supply by the government
- Use of Surface Irrigation Channels
- Frequent weeding of the crops during harvesting
- Mulching using dry leaves
- Use of botanical pesticides for biological pest management

#### Technological Innovations to be Promoted:

Slow-forming terraces, conservation tillage, crop diversification, selection and promotion of drought-resistant varieties of crops, ecological pest management, seed and grain storages

#### Recommendations:

- Research on impact of climate change on specific crops
- Promote cultivation of climate resilient indigenous crops
- Government and civil society organizations to extend innovative technologies to adapt climate change