ENHANCING
HUMAN SECURITY

THROUGH LOCAL CLIMATE ACTIONS

Situational Assessment of
Nalgad Municipality and Barekot Rural Municipality,
Jajarkot District, Karnali Province, Nepal

List of Acronyms

CAPI:	Computer Assisted Personal Interviewing
CBA:	Community-Based Adaptation
CBOs:	Community-Based Organizations
CAA:	Climate Change Adaptation
CSOs:	Civil Society Organizations
DPRP:	Disaster Preparedness and Response Plan
DRR:	Disaster Risk Reduction
ECHO:	European Civil Protection and Humanitarian Aid
EIA:	Environmental Impact Assessment
FDGs:	Focus Group Discussion
GDP:	Gross Domestic Product
HDI:	Human Development Index
IPM:	Integrated Pest Management
KIIs:	Key Informant Interviews
LAPA:	Local Adaptation Plans of Action
LDC:	Least Developed Country
M&E:	Monitoring and Evaluation
MoEST:	Ministry of Education, Science, and Technology
MoFAGA:	Ministry of Federal Affairs and General Administration
MoHA:	Ministry of Home Affairs
MoHP:	Ministry of Health and Population
MoUD:	Ministry of Urban Development
MoWCSC:	Ministry of Women, Children and Senior Citizens
NAPA:	National Adaptation Program of Action
NDRRMA:	National Disaster Risk Reduction and Management Authority
NGO:	Non-Governmental Organization
NPR:	Nepali Rupees
PHDI:	Planetary Pressures-adjusted Human Development Index
PWD:	Persons with Disabilities
SDG:	Sustainable Development Goals
SoP:	Standard of Procedure
SPSS:	Statistical Package for Social Sciences
UNDP:	United Nations Development Programme
UNICEF:	United Nations Children's Fund
UN-Women:	United Nations Entity for Gender Equality and the Empowerment of Women
VDC:	Village Development Committee
VRA:	Vulnerability and Risk Assessment

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Executive Summary

In today's global landscape, widespread insecurity stems from various threats like natural hazards and human-induced disasters and conflicts leading to poverty, health crises, and economic downturns. The interconnectedness and mutually reinforcing factors can have compounding effects and threaten gains of sustainable development.

To deal with these threats, human security takes a comprehensive human-centric approach where the individual, and their needs at various levels of personal, political, economic, food, health, environment, and community are the guiding factors of development and peace. Insecurity in one sector can have ripple effects to increase the vulnerabilities of individuals and communities in all other dimensions. For example, increased poverty and economic insecurity without access to credit can directly increase a person's risks of health concerns, poor nutritional intake, and lower quality of life. Various forms of existing inequalities based on gender, disability, age, educational status etc. increase the vulnerability of populations to various forms of risks. Addressing these interconnected risks and vulnerabilities forms an important principle of human security. It aims to achieve a life for humans where they are free from fear and want and live in dignity.

This report is based on the Baseline Survey to Assess Understanding of Local Climate Actions and Human Security at Barekot Rural Municipality and Nalgad Municipality of Jajarkot District, conducted through the Government of Japan and UNDP project on Enhancing Human Security Through Local Climate Actions. The report attempts to capture the status of the human security situation in its seven dimensions, in the two municipalities of western Nepal. The findings reveal that increasing threats of climate change-induced disasters like floods, landslides, alteration in agricultural patterns have the potential to disrupt current progress in various dimensions of human security and exacerbate the inequalities in areas where the vulnerable population already faces high levels of insecurity. More than 90 percent of the populations in both municipalities are engaged in agriculture and face the increasing risk of livelihood disruptions owing to climate change which has a direct bearing on the food, health, income, personal and environmental security of the region. The existing gender inequalities in terms of lower economic participation, ownership and access to resources, inadequate access to health and nutritional requirements and poor educational status threatens personal security of women in the two municipalities making them vulnerable to food, health, and economic insecurities.

Environmental security is a crucial determinant in ensuring resilience, inclusivity, and well-being of the community. To understand the interplay between local climate action and environmental security in the two municipalities, the report took stock of the existing institutional frameworks, community awareness on climate change risks and adaptation practices and the role of key sectors/themes namely agriculture, Early Warning Systems (EWS), energy, and community infrastructure in promoting increased resilience and well-being.

The analysis reveals certain gaps in knowledge and practices for which the necessary, innovative, timely and locally owned solutions are provided in the last chapter. With increased awareness of the local communities about the various dimensions of human security and its importance in developmental and resilience programmes, initiatives to strengthen climate resilience within the community will be more comprehensive, sustainable, and inclusive. The adoption of renewable energy serves as a good example in this regard. In the project area, the adoption of renewable energy for purposes like cooking promote environmental security and gender-inclusive interventions which help improve health security for women and gender equality in the community.

Project on Enhancing Human Security through Local Climate Actions

Nepal, despite its minimal carbon footprint, is among the most vulnerable countries to climate-related risks worldwide. The nation experiences a yearly onslaught of climatic extremes, including floods and landslides, which result in loss of human lives, livelihoods, and infrastructure. Recognizing this reality, Nepal has committed itself to have a risk-resilient society by 2050.

Building on this vision, the project on "Enhancing Human Security through Local Climate Actions", funded by the Government of Japan and implemented by UNDP Nepal, focuses on grassroot climate actions to strengthen community resilience along with reduced inequalities. This one-year project is being implemented in Nalgad Municipality and Barekot Rural Municipality, both located in the Jajarkot District, Karnali Province of Nepal.

The overarching objective of the project is to strengthen human security through climate actions at the local level.

Encompassing the components of climate change, adaptive agriculture, energy solutions, early warning systems, community infrastructure development, and capacity building, the project's initiatives aim to demonstrate that climate action can be leveraged to strengthen human security at the local level and improve understanding of the relationship between human security and climate smart actions. The lessons learnt and demonstrated can then be replicated and upscaled for wider impact.

Introduction

1.1. Background

Nepal is a landlocked country in South Asia with nearly 30 million people, surrounded by India to the east, west and south, and China to the north, covering a territory of approximately 147,181 km^2. The Himalayan country has some of the world's highest mountains and holds tremendous diversity of climatic conditions, flora, fauna. The country is divided into three broad ecological zones: the Himalayan region, the hills and the plains or the terai region. Roughly 75 percent of the country's terrain is mountainous resulting in issues of access for infrastructural and transportation development.

Province	Provincial Capital	Number of Districts	Area	Population (2021 Nepal Census)	Population Density (persons per sq.km)	HDI (2020)[1]	GDP per capita (USD, 2021)
Koshi Province	Biratnagar	14	25,905 km^2	4,961412	192	0.597	1,298
Madhesh Province	Janakpur	8	9,661 km^2	6,114,600	633	0.538	882
Bagmati Province	Hetauda	13	20,300 km^2	6,116,866	301	0.673	2,640
Gandaki Province	Pokhara	11	21,504 km^2	2,466,427	115	0.631	1,348
Lumbini Province	Deukhuri	12	22,288 km^2	5,122,078	230	0.583	1,209
Karnali Province	Birendranagar	10	27,984 km^2	1,688,412	60	0.568	1,043
Sudur-pashchim Province	Godawari	9	19,915 km^2	2,694,783	138	0.579	1,135

Table 1: Nepal's Administrative and geographical profile[3]

Administrative Structure

Nepal became a federal democratic republic following the passing of a new constitution in 2015.

It has 7 provinces, 77 districts and 753 local governments.

With a bicameral legislature, and an executive arm consisting of the Prime Minister, and ministers, the country's adoption and implementation of federalism is in a nascent stage.

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[1] Nepal Human Development Report, 2020
[2] Nepal Economic Survey, 2020-2021
[3] National Population and Housing Census, 2021

Socio-economic status

Nepal seeks to pursue a long-term vision of 'Prosperous Nepal and Happy Nepali' through graduation from the Least Developing Country status to Developing country status by 2026, ensuring an inclusive and sustainable pattern of growth. While Nepal improved its Human Development Index (HDI) ranking[4] from 144th in 2021 to 143rd position in 2022, the value of HDI has marginally declined from 0.604 to 0.602.

Reducing inequalities and poverty is a priority in Nepal's development goals. In the Inequality Human Development Index, Nepal showed a loss of 26.9 percent in its HDI value because of high level of persisting inequalities, with the highest levels of inequality of 41.4 percent in education, followed by 21.5 percent in life expectancy and 15.1 percent in income.[5] Nepal stands at 113th position in global Gender Inequality Index.[6] The gender gaps in female labour force participation stands at 2.1 percent female political participation at 32.7percent education at 15.9 percent The 2021 female HDI value for Nepal is 0.584 in contrast with 0.621 for males, resulting in a Gender Development Index value of 0.942.[7]

Nepal is boasts of socio-cultural and linguistic diversity in terms of the presence of various ethnicities and spoken dialects in the geographically diverse hilly and plain regions of the country. There are over eight dialects of Nepali spoken in the country with most belonging to the Indo-Aryan and Tibeto-Burman families. While Hinduism is the main religion, Kirat, Islam, Buddhism and Christianity are also practiced in Nepal.[8]

Nepal's Gross Domestic Product (GDP) in 2022 was $40,828 million.[9] The GDP per capita of Nepal in 2022 was $1,359, $151 higher than in 2021. The fertile Terai region supports vast agricultural activity of the country with majority of Nepal's population is engaged in agriculture, the returns from which accounts for well over half of the country's export earnings. Despite agriculture remaining the most significant occupation it adds only 25.8 percent to the GDP, with services constituting 61.1 percent and manufacturing contributing the least, 13.1 percent to the GDP. Foreign remittances are a major contributor to the GDP, accounting for 22.8 percent in 2022. Despite the progressive growth, Nepal's economy remains highly dependent on external markets and foreign remittances, making it vulnerable to global disruptions and shocks like the COVID-19 pandemic and those in energy and food supply chains.[10]

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[4] UNDP Human Development Report, 2021-2022
[5] Nepal Human Development Report, 2020, [6] Human Development Report UNDP, 2020-21
[7] National Population and Housing Census, 2021, [8] National Population and Housing Census, 2021
[9] World Bank Open Data, 2022, [10] Nepal Economic Survey, 2020-2021

1.2. Climate Risk Profile of Nepal

Nepal is one of the most vulnerable countries in the world to climate change risks given fragile geological terrain and geographical location. Despite its low contributions to global emissions as seen through the Planetary Pressures-adjusted Human Development Index (PHDI) measures where per capita emissions are 0.6 percent, Nepal continues to face unprecedented levels of climate change-induced disasters such as floods, landslides and droughts impacting the people's lives, livelihoods, and economy.[11] These climate change risks pose a risk to increase inequalities and derail progress made on the Sustainable Development Goals (SDGs). Supporting the vulnerable people from the impacts of climate change and building their resilience is therefore an urgent priority for Nepal.

Nepal experiences a loss of 3% from its HDI value when adjusted for planetary pressures and climate risk vulnerabilities.[12]

Status of Climate-induced Risks and Vulnerabilities in Nepal

80% of Nepal's population is at risk from multiple hazards,[13] on average

647 lives are lost annually and the economy suffers a **$21** million average annual loss due to climate-induced disasters.[14]

Figure 1: Status of climate-induced risks and vulnerabilities in Nepal

To ensure the process of LDC graduation is sustainable and rooted in the vision of the SDGs and Nepal's national development priorities, it is important to consider an inclusive approach of human security while implementing or envisioning development.

Inadequate synergy between development and disaster risk reduction which discounts the problems of poverty, migration and internal displacement, livelihoods and so on during and after disasters, could lead to fractured progress in both disaster resilience and development. Socio-economic status is one of the main determinants of vulnerability to disasters. The need to research the cause-and-effect relationship between disaster and poverty has become crucial if disaster management is to be integrated into development efforts.

It is necessary to include a synergistic approach between development and climate resilience to ensure comprehensive, sustainable, and inclusive progress is made in all fields.

Building on this need for synergy, the report provides a status of the interplay of local climate actions to achieve improved disaster risk resilience and the various dimensions of human security for a more inclusive and sustainable approach at Nalgad Municipality and Barekot Rural Municipality in Karnali Province of Nepal.

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[11] Planetary Pressures Adjusted HDI Report, UNDP, 2021
[12] Human Development Report UNDP, 2020-21
[13] National Disaster Report, 2017
[14] National Framework on Climate Induced Loss and Damage, 2021

1.3. Profile of the Project Zone

Both Nalgad Municipality and Barekot Rural Municipality are in Jajarkot District in the Karnali Province. The province is the largest province in Nepal by geographical spread and borders China to the north, Sudurpaschim province to the west, and Gandaki province and Lumbini province to the east. Despite its vast size, it is sparsely populated with over 1.5 million people, accounting for six percent of the national population, resulting in the lowest provincial density.

The province faces significant challenges in terms of development indicators and issues such as child malnutrition, lack of access to safe water, and inadequate sanitation facilities which contribute to a complex web of human security challenges. The province's contribution to Nepal's GDP is less than four percent, primarily driven by sectors like public administration, defence, education, health, and social work, while the agricultural sector faces challenges like incomplete irrigation facilities and a food availability deficit. Additionally, Karnali Province has the least representation in terms of banks and financial institutions, contributing only 3 percent to the country's total[15].

Gender inequality in lower literacy levels, access to resources like land ownership and internet, lower economic participation increases the personal insecurities of the females making them more vulnerable to the impacts of disasters and disruptions. These inequalities also have an impact on lowering the resilience of the community and the province to respond to and recover from disasters.
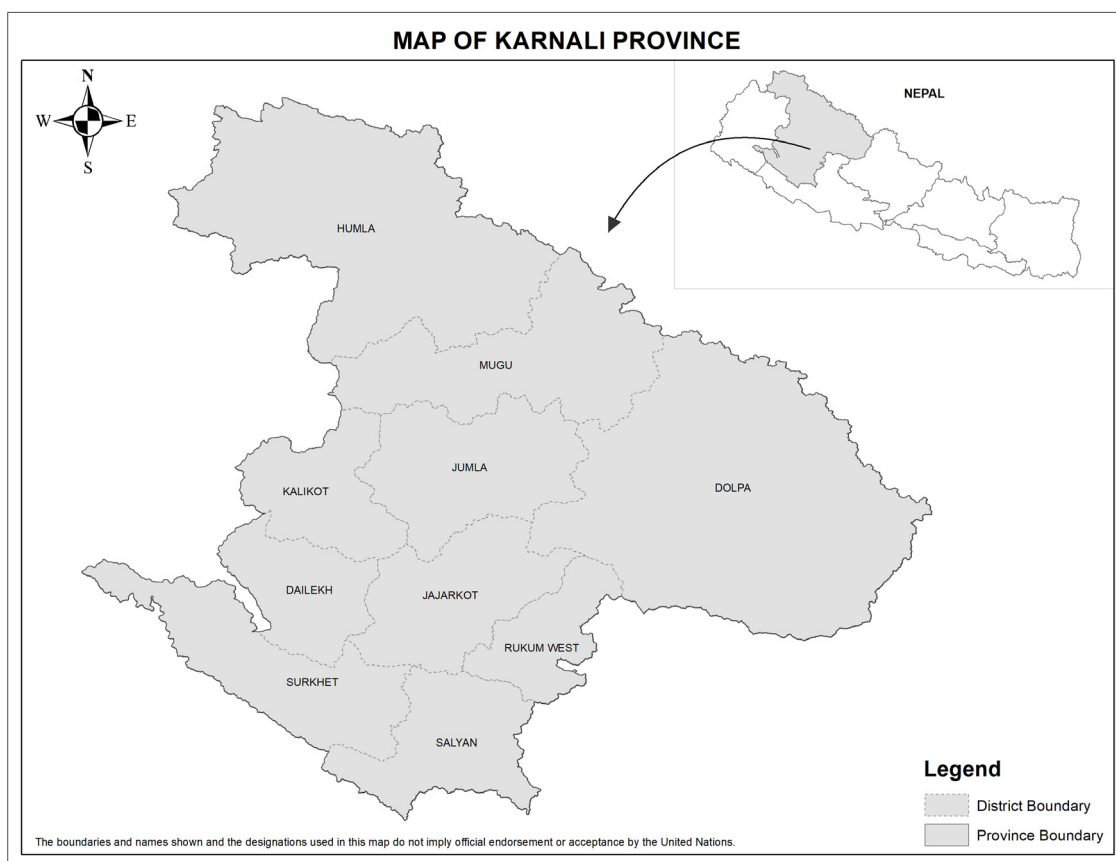
Figure 2: Map of Karnali Province and its districts showing Jajarkot district (red), Barekot Rural Municipality (yellow) and Nalgad Municipality (green) [16]

Disclaimer: *The boundaries and names shown, and the designations used in this map do not imply official endorsement or acceptance by the United Nations.*

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[15] SDG Baseline Report, Karnali Province Planning Commission, 2020
[16] Nepal Administrative unit Map of Karnali Province, UN Nepal

Jajarkot is one of the ten districts of Karnali province, mid-western region of Karnali region with 3 urban municipalities and 4 rural municipalities. It is vulnerable to climate change impacts which exacerbate flood, landslides and other disasters.

Status of Human Security Parameters in Karnali Province

39.5% of its people are multidimensionally poor as compared to **17.4%** nationally.[17]

The Human Development Index (HDI) is 0.427 as compared to the country's HDI which is 0.49. [18]

With a poverty rate of **28.9 percent, a per capita income of $606,** a literacy rate of 62 percent, Karnali lags behind the national average [19]

Health Security [20]

Life expectancy is the lowest among all provinces at **67 years** (national life expectancy is 70.9 years)

58% child malnutrition

35.9% lack of access to safe water

50% inadequate sanitation facilities

Food Security [21]

7.5% children below the age of 5 years, experience malnutrition and are underweight

30% of the total residents face acute malnutrition

Gender Equality [22]

Literacy rate of men aged 15-49 years- **91.5%,** literacy rate of women aged 15-49 years **66.2%**

Only about **8.5%** of women own land

For every 100 men, there are 44 women in the labour force

Women spend about **24%** of time on unpaid domestic work and care

MEN 100   WOMEN 44

Figure 3: Status of Human security parameters in Karnali province

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[17] Multidimensional Poverty Index, Nepal, 2021
[18] SDG Baseline Report, Karnali Province Planning Commission, 2020
[19] Ibid
[20] National Demographic and Health Survey, 2022
[21] Ibid
[22] National Population and Housing Census, 2021
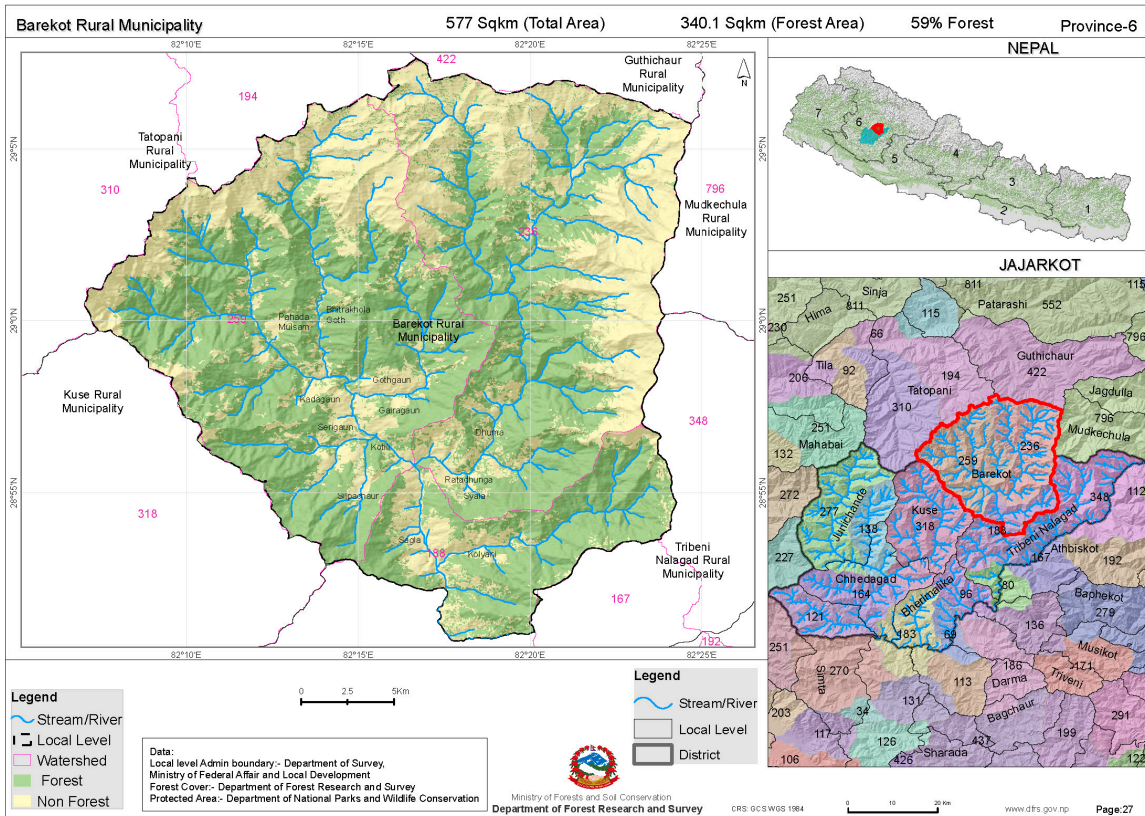
Figure 4: Geographical location of Barekot Rural Municipality [23]

Disclaimer: *The boundaries and names shown, and the designations used in this map do not imply official endorsement or acceptance by the United Nations.*
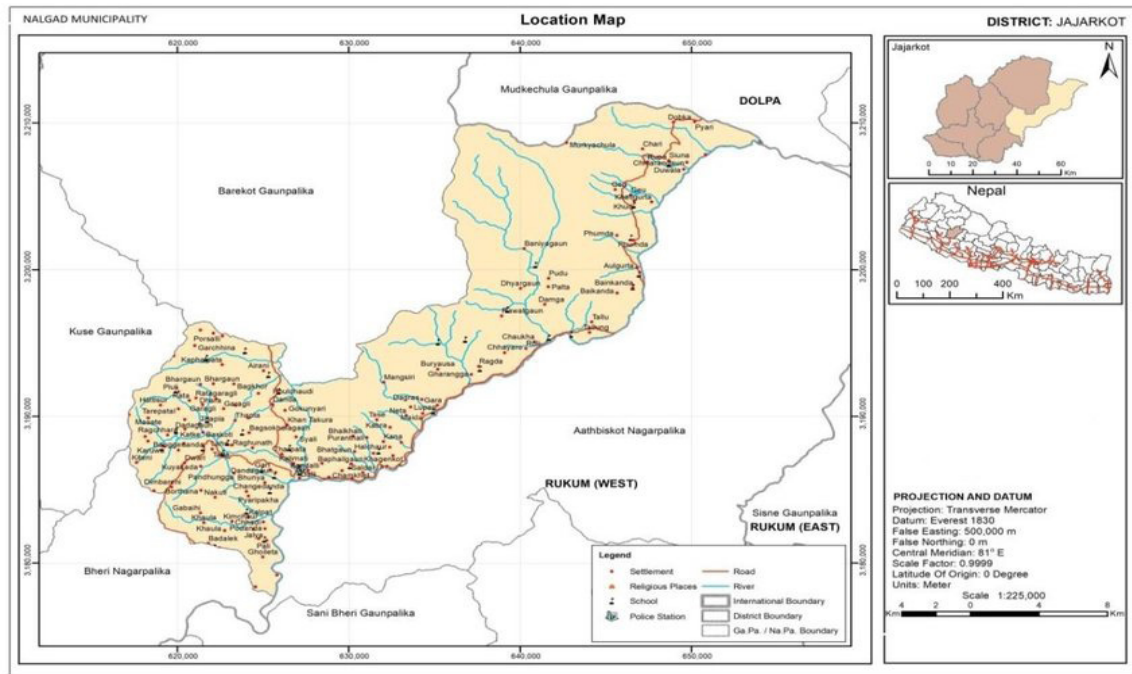
Figure 5: Geographical location of Nalgad Municipality[24]

Disclaimer: *The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations.*

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[23] Nepal in Data, Local Resource Map, Barekot Rural Municipality
[24] Nepal in Data- Nalgad Municipality Map

Factsheet of Barekot Rural Municipality and Nalgad Municipality

Total Area

Barekot Rural Municipality is

577.5 km²

Nalgad Municipality is

387.44 km²

Total Population

Barekot Rural Municipality is

22,005

Nalgad Municipality is

28,922

Population Density

Barekot Rural Municipality

38/km²

Nalgad Municipality

75/km²

Gender Profile

Male
49.7%
Females
50.3%

Male
50.1%
Females
49.9%

Economic Profile

According to the field survey, 90.5% of people in Barekot Rural Municipality and 92.4% in Nalgad Municipality are solely dependent on agriculture as their primary means of livelihood with no other skill or income diversification means like cottage and small-scale industries.

Profile of Persons with Disability

Persons with disability (PWD) population is 5.2% in Barekot Rural Municipality

4.9% in Nalgad Municipality

Basic Amenities

Nalgad Municipality

- 56.2% people use pit toilets and 4.0% are without toilet facilities
- 95.3% houses are mud bonded while only 2.3% are cement bonded houses
- 90.9% of the residents use wood as the main fuel for cooking and only 8.4% of them have Liquefied Petroleum gas (LPG) connections
- 17.3% of the households have access to internet connection

Barekot Rural Municipality

- 64.2% of the residents use pit toilets and 3.9% are without any toilet facility
- 97.1% are mud-bonded houses while only 2.2% are cement bonded households
- 94.8% of the residents use wood as the main fuel for cooking only 4.2% have LPG connections
- 11.4% of the households have access to internet

Literacy Rate

Male
80.3%
Females
67.1%

Male
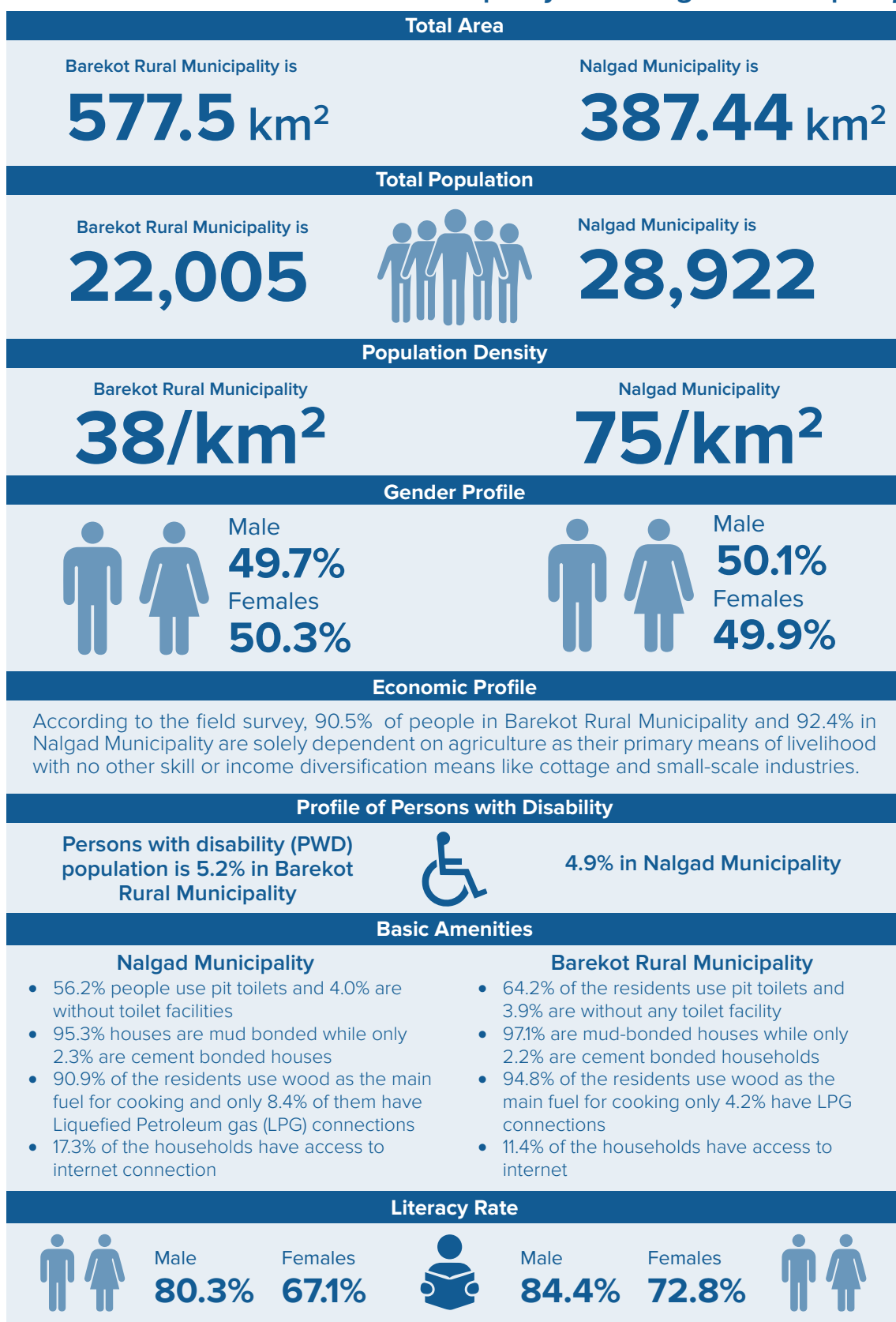**84.4%**
Females
72.8%

Figure 6: Factsheet of Barekot Rural Municipality and Nalgad Municipality[25]

[25] National Population and Housing Census, 2021

Both municipalities face high levels of climate induced risks owing to their geographical sensitivity and skewed development. These risks are further compounded by the rise of inequalities in the community, lack of access to basic services and high levels of dependence on subsistence agriculture as the main source of employment and economic activity.

Gender disparities are evident, with significantly lower literacy rates among women affecting their economic participation, as reflected in unequal labor force representation and minimal land ownership.

The vulnerabilities of the communities in these areas are amplified by climate risks, impacting various dimensions of human security, including economic, social, and physical well-being. [26]

1.4.   Objectives

The overall objective of this report is to understand the existing status of human security in the context of climate action in Nalgad Municipality and Barekot Rural Municipality and to identify the way forward.

The specific objectives are:

- To understand the situational dynamics of human security in the study area and delve deeper into the dynamics of environmental security as a key pillar of community resilience.
- To gauge the prevailing capacities, gaps, and way forward for the local community and local governments to implement climate actions to achieve human security.
- And provide a situational assessment of four priority sectors and their role in supporting local climate actions to strength human security.

1.5.   Methodology, Scope, and Limitations

The methodology of data collection involved quantitative and qualitative research. The quantitative research collected primary data from household surveys while the qualitative data was collected through both primary and secondary forms. The primary research for qualitative data was in the form of Focus Group Discussion (FDGs) and Key Informant Interviews (KIIs) and the secondary research was done in the form of literature review.

1.5.1.   Quantitative Data Collection: Household Survey

The household survey collected data from two wards, one in each municipality, with a structured questionnaire taking a detailed account of various vulnerabilities like disability, gender, and age to comprehend the magnifiers of vulnerability associated with these identities. The survey aimed to represent each municipality accurately and targeted all households residing in areas vulnerable to various hazards and vulnerabilities within those municipalities. The sample size of 824 households was determined based on factors such as expected rates, margin of error, confidence levels, and population size.

Demographic Profile of Respondents in the Survey

Disability Profile

- Yes (90.40%)
- No (9.60%)

Occupational Status

- Service (5.3%)
- Student (6.6%)
- Others (6.7%)
- Unemployed (7.3%)
- Wages/Labor (13.8%)
- Agriculture and livestock (60.3%)

Education Levels

- **Master level** (0.6%)
- **Secondary Level (Class 9 to 12)** (29.0%)
- **Pre-Primary** (22.0%)
- **Illiterate** (21.0%)
- **Basic education (Class 1 to 8)** (19.0%)
- **Literate (Non-Formal education)** (7.6%)
- **Other** (1.1%)

Age Group of Respondents

- **26 to 35** (30.90%)
- **46 to 60** (23.30%)
- **36 to 45** (22.80%)
- **18 to 25** (15.90%)
- **Above** (7.00%)

Community Group Membership

Percentage of respondent's profile in terms of their group invlovement

- **Mother group** (45%)
- **Farmer group** (44%)
- **Saving and credit Cooperative** (39%)
- **Others** (28%)
- **No group** (20%)
- **Don't know** (4%)

Gender of Respondents

- **Male** (51.70%)
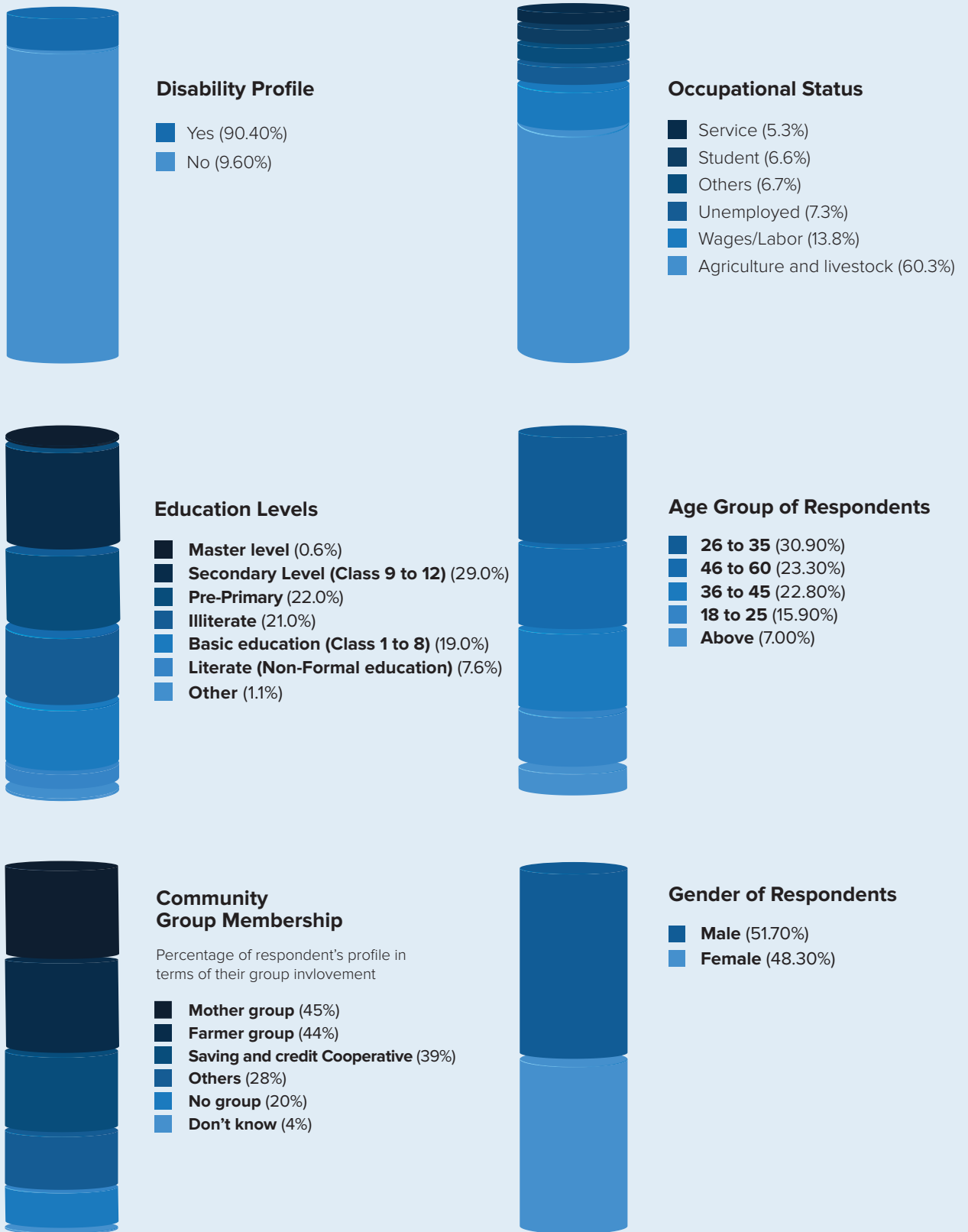- **Female** (48.30%)

Figure 7: Demographic Profile of the Respondents in the Survey

1.5.2. Qualitative Data Collection

Primary Research

The primary research for the qualitative data comprised Focus Group Discussions (FGDs) with the local communities in two wards from each municipality and the Key Informant Interviews (KIIs) with local government officials.

Focus Group Discussions (FGDs)

The target audience in the FDGs were the local community members. It was conducted through a semi-structured questionnaire and the FDGs aimed to collect data on the local community members understanding of hazards, vulnerabilities, experiences, and existing practices related to disaster risk reduction (DRR), local climate actions, participation in government programmes and trainings and the existing infrastructures that are supporting human security. The FDGs include vulnerable community groups, representatives from all genders, and ethnic and religious groups. Eight FGDs were conducted in total, two each in four wards.

Key Informant Interviews (KIIs)

For the KIIs, the targeted interviewees were the local government officials. The interviews aimed to ascertain information on the policy frameworks, governance mechanisms and implementation of various programmes by the local governments to strengthen human security framework in their respective DRR strategies.

Details of the KIIs and FDGs are in the table below.

Target	Tools	Number	Remark
Vulnerable groups (Females including senior citizens), Farmer groups (Including Dalit), CBOs, CSOs	**FGD**	**8**	**2 from each ward**
Palika chair/vice chair	**KII**	**2**	**1 each Palika**
DRR focal person (Palika)	**KII**	**2**	**1 each Palika**
Representative of the Agriculture division of Palika	**KII**	**2**	**1 each Palika**
Ward chair	**KII**	**4**	**1 each ward**
School Teacher/Headteacher	**KII**	**2**	**1 each Palika**
Total		**20**	

Table 2: Qualitative sampling for data collection

The data collection and analysis of the FDGs and KIIs employed Computer Assisted Personal Interviewing (CAPI) platforms and KoboCollect application for surveys, while data analysis for quantitative data was done using the Statistical Package for Social Sciences (SPSS).

Secondary Research

The secondary research to collect qualitative data encompassed literature review of reports, surveys, and indices by the Government of Nepal, UN agencies and other development partners on various indicators of human development.

Literature Review

It utilizes UNDP's report on Human Development highlighting the new dimensions and principles of human security to understand the framework of human security at the conceptual level.[27]

To understand the prevailing human security conditions in the local areas, the report builds on data from the National Housing and Population Census 2021 [28], National Labour Force Survey 2018-19[29], National Demographic Health Survey 2022[30] published by the Nepal government. Other government policies on climate disaster and risk reduction such as the National Plan of Action for Disaster Risk Reduction (2018-2030), the Climate Change Policy of 2019, the Disaster Risk Reduction Management (DRRM) Acts of both the municipalities that form the basis for the interface of human security with local climate actions at the local levels were also referred to.

It also analyzed reports by other UN bodies working in the project area which include UN Women, UNICEF and UNDP's Human Development Index and Multi-dimensional poverty index to get an understanding of the prevailing socio-economic indicators on human security.

1.5.3. Scope and Limitations

It is important to acknowledge that the concept of human security in the context of local climate action is still evolving. This limits the comprehensive understanding of the concept amongst the researcher and the participants in the surveyed areas.

The scope of the survey is confined to the information and data collected through fieldwork and provided by the participants, and the conclusion of the study drawn exclusively from an analysis within the framework of the project. Furthermore, the survey is restricted to two wards selected in each municipality, wherein the data collection was conducted. Due to the schedule constraints, the survey is limited to information and data obtained at the specific point of time.

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[27] UNDP, Human Development Report, 1994
[28] National Population and Housing Census, 2021
[29] Nepal Labour Force Survey 2017-18
[30] National Demographic and Health Survey, 2022

Understanding Human Security

2.1 Definition, Overview and Principles

Human security represents a paradigm shift from the traditional state-centric definition of security which entails absence of physical threat. Instead, it encompasses a positive and ever-evolving definition of individual-centric security that extends to human well-being in various dimensions of life like economic, political, environmental, food, health, community and personal security. By promoting well-being and human dignity, human security seeks to empower people to lead lives free from fear and want. [31]

Principles of Human Security

Any process aimed at achieving human security in its various dimensions should be guided by the following four principles to ensure a sustainable and inclusive outcome (see figure 10). In its attempt to understand the status of human security, the report takes note of these principles in its methodology and recommendations.

The human security approach prioritizes people by considering the diverse conditions that jeopardize the survival, livelihood, and dignity of
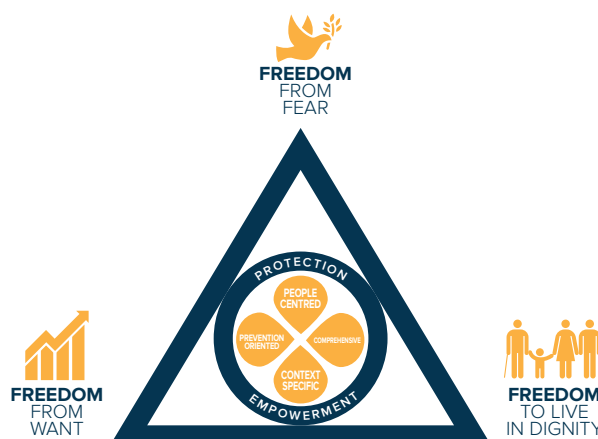

Figure 8: Human security framework [32]

individuals and communities, especially those most vulnerable. Second, it acknowledges the intricate and interconnected nature of challenges, recognizing the comprehensive aspirations of individuals to be free from want, fear, and indignity. This approach ensures coherence, eliminates duplication, and fosters integrated solutions, enhancing the day-to-day lives of people and their communities. Acknowledging the context-specific variations in risks, capacities, and root causes, human security rejects a one-size-fits-all approach.

Unlike quick fixes, the human security approach is prevention-oriented, delving into the real causes of challenges and building sustainable, resilient solutions. It advocates for the development of early warning mechanisms to mitigate current threats and prevent future challenges. Additionally, human security recognizes inherent responsibilities within societies, emphasizing the empowerment of people and communities to articulate and address their needs. It incorporates both top-down and bottom-up, norms, processes, and institutions, such as good governance, rule of law, and social protection instruments, creating a framework to effectively address complex challenges. The principles of the human security approach are interdependent and require true partnerships, leveraging diverse strengths to achieve better impact in addressing today's complex and multidimensional challenges.

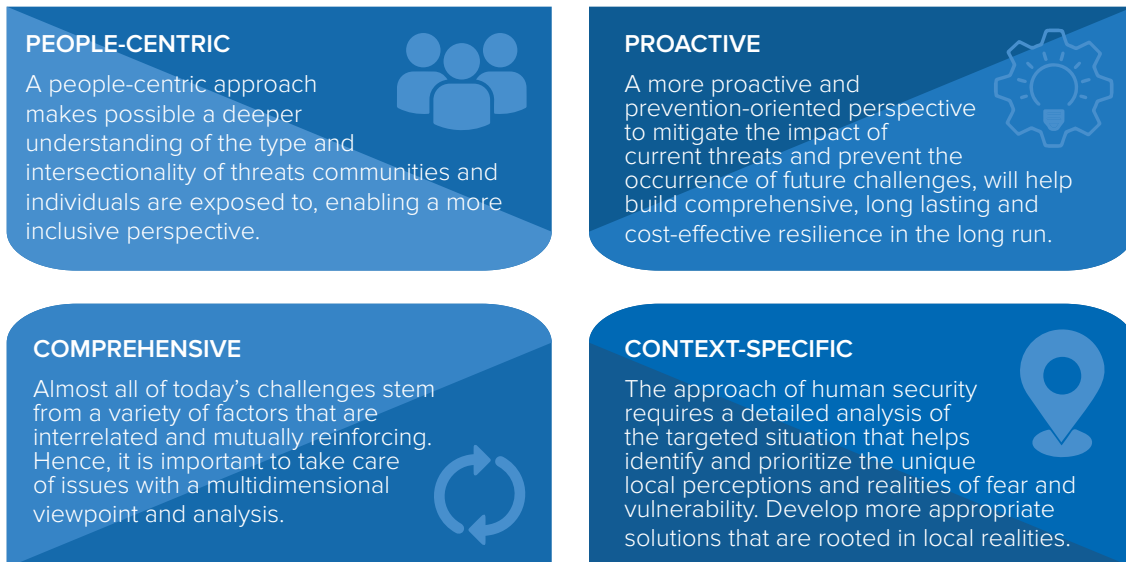[31] Handbook on Human Security, UN Trust Fund for Human Security, 2016
[32] Ibid

PEOPLE-CENTRIC

A people-centric approach makes possible a deeper understanding of the type and intersectionality of threats communities and individuals are exposed to, enabling a more inclusive perspective.

PROACTIVE

A more proactive and prevention-oriented perspective to mitigate the impact of current threats and prevent the occurrence of future challenges, will help build comprehensive, long lasting and cost-effective resilience in the long run.

COMPREHENSIVE

Almost all of today's challenges stem from a variety of factors that are interrelated and mutually reinforcing. Hence, it is important to take care of issues with a multidimensional viewpoint and analysis.

CONTEXT-SPECIFIC

The approach of human security requires a detailed analysis of the targeted situation that helps identify and prioritize the unique local perceptions and realities of fear and vulnerability. Develop more appropriate solutions that are rooted in local realities.

Figure 9: Principles of Human Security [33]

2.2. Key Dimensions of Human Security

HUMAN SECURITY

Figure 10: Key Dimensions of Human Security [34]

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[33] Human Development Report, New Dimensions of Human Security, UNDP, 1994
[34] Ibid

There are seven key dimensions of human security that provide a holistic understanding of the multifaceted nature of human well-being. These dimensions, namely, economic security, food security, health security, personal security, community security, environmental security, and political security, offer a robust analytical lens for assessing and implementing human security across diverse local communities worldwide. These dimensions acknowledge the interconnectedness of different aspects impacting people's lives and livelihoods. By integrating these dimensions into local analyses, it becomes feasible to develop tailored strategies and interventions that address specific community needs, recognizing that human security is more than just physical safety—it encompasses economic stability, health, food access, environmental concerns, political freedoms, community rights, and much more. This comprehensive approach allows for a nuanced understanding of the complex web of factors that contribute to individuals' overall security and well-being within their specific cultural, social, and environmental contexts. Consequently, local communities can tailor policies and interventions to suit their unique challenges, empowering them to achieve a more sustainable and inclusive approach to human security.

Economic security is fundamental to human well-being. It entails access to basic income, employment opportunities, and safety nets to protect individuals and communities from financial shocks. Ensuring economic security is essential for reducing poverty, promoting stability, and fostering social development.

Food security encompasses the availability, accessibility and utilization of nutritious food and is fundamentally linked to health outcomes. Insufficient access to quality food leads to malnutrition, impacting physical health, immune systems, and cognitive development, particularly in vulnerable populations. Conversely, compromised health can limit an individual's ability to secure food, reducing their resilience to withstand food insecurities. Beyond access, it emphasizes the ability to acquire food through various means, such as self-production, purchase, or public distribution systems. Ensuring food security is essential for individual health and community stability.

Health security centers on access to healthcare services and risk-sharing arrangements to protect individuals and communities from health-related threats. It involves surveillance, education, and the preservation of traditional health practices. Health security is vital for maintaining physical well-being and quality of life.

Personal security encompasses the protection of individual rights and freedoms. It involves the rule of law, safeguarding against violence, discrimination, and other threats to personal well-being. Upholding personal security is crucial for empowering individuals and fostering a sense of safety and justice.

Community security relates to the protection of collective identities and the promotion of inclusivity and social capital. It involves safeguarding ethnic and community identities, ensuring protection from oppressive practices, and supporting adaptive strategies. Building strong community security is essential for social cohesion and resilience. It also encompasses the collective safety and stability of the community as a whole.

Environmental security focuses on sustainable practices, the protection of natural resources, and early warning and response mechanisms for natural and human-made disasters. It also encompasses the preservation of biodiversity and respect for indigenous and traditional practices that honor the environment. Environmental security is integral to safeguarding the planet and human life.

Political security emphasizes the protection of human rights, the prevention of political repression, and good governance. It involves accountability mechanisms, ethical standards, and local leadership. Upholding political security is pivotal for ensuring that individuals are protected from abuses and have the freedom to participate in the decision-making processes that affect their lives.

Dimensions of Human Insecurity	Root Causes
Economic insecurity	Persistent poverty, unemployment, lack of access to credit and other economic opportunities and skill development
Food insecurity	Hunger, famine, sudden rise in food prices, malnutrition
Health insecurity	Epidemics, malnutrition, poor sanitation, lack of access to basic health care, poor health services and infrastructure
Environmental insecurity	Environmental degradation, resource depletion, natural disasters
Personal insecurity	Physical violence in all its forms, human trafficking, child labour, identity-based inequalities like gender and disability, lack of resource ownership or opportunities
Community insecurity	Lack of community resources and infrastructure like drinking water, access to connectivity, Inter-ethnic, religious and other identity-based tensions, crime, terrorism
Political insecurity	Political repression, human rights violations, lack of rule of law and justice

Table 4: Key drivers of human insecurity [35]

2.3 Overview of Human Security in Nalgad Municipality and Barekot Rural Municipality

Due to unavailability of data for the municipalities in certain areas of human security indicators, the figures for Karnali province have been provided to allow readers to get a broad understanding of the local conditions.
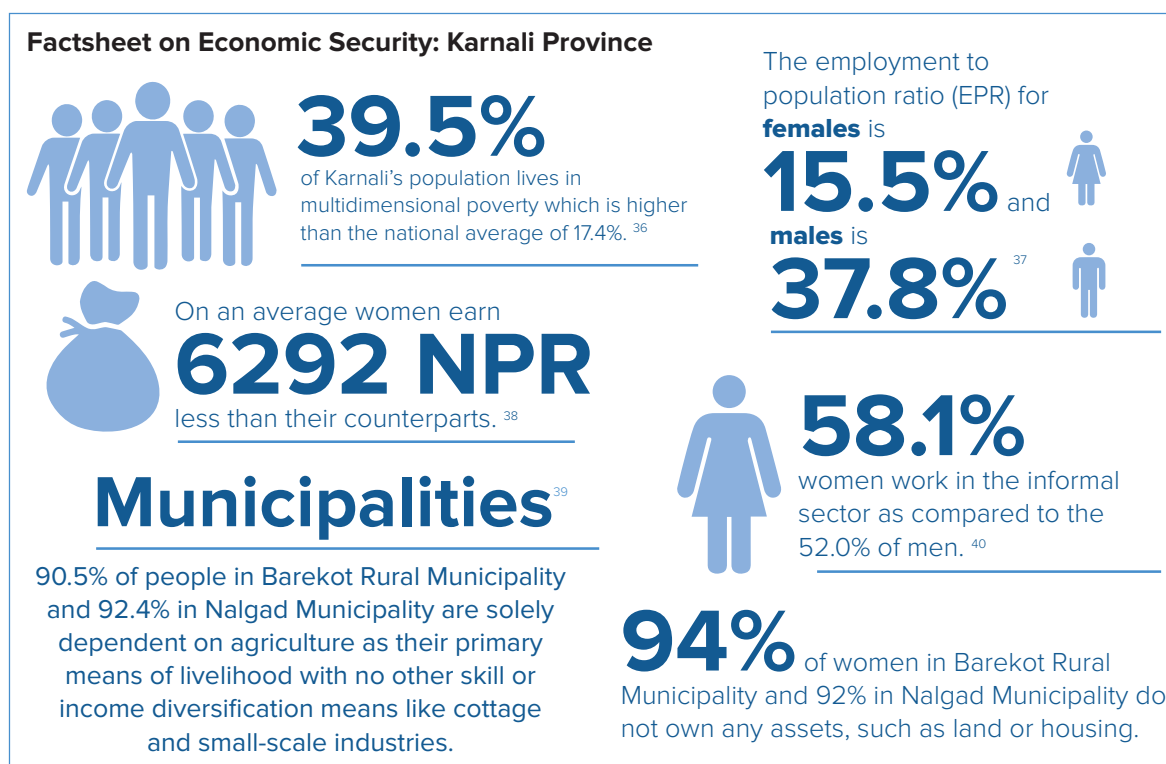
Economic Security

Factsheet on Economic Security: Karnali Province

39.5% of Karnali's population lives in multidimensional poverty which is higher than the national average of 17.4%. [36]

On an average women earn **6292 NPR** less than their counterparts. [38]

Municipalities [39]

90.5% of people in Barekot Rural Municipality and 92.4% in Nalgad Municipality are solely dependent on agriculture as their primary means of livelihood with no other skill or income diversification means like cottage and small-scale industries.

The employment to population ratio (EPR) for **females** is **15.5%** and **males** is **37.8%** [37]

58.1% women work in the informal sector as compared to the 52.0% of men. [40]

94% of women in Barekot Rural Municipality and 92% in Nalgad Municipality do not own any assets, such as land or housing.

Figure 11: Status of economic security in Barekot Rural Municipality and Nalgad Municipality

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[35] Handbook on Human Security, UN Trust Fund for Human Security, 2016
[36] Sustainable Development Goals, Baseline Report for Karnali Province, 2020
[37] Nepal Labour Force Survey 2017-18
[38] Ibid
[39] Ibid
[40] National Population and Housing Census, 2021

Overdependence on agriculture, with little to no other skill and income diversification along with the rising impacts of climate risks, makes majority of the populations in both the municipalities increasingly vulnerable to insecurities in their economic, social and physical well-being. A jeopardized economic security would have a direct impact on the capacity of the people to secure their healthcare, food, and nutrition related needs.

Women's lack of asset ownership means they have limited control and access to income-generating resources. This situation not only perpetuates economic inequalities but also increases their vulnerability to economic shocks and poverty, undermining their overall well-being. Additionally, it hinders their ability to make economic decisions, participate in household and community development, and achieve financial independence, thereby compromising their broader human security. Addressing this gender-based asset gap is crucial for ensuring a more comprehensive and equitable human security framework that empowers women and fosters social and economic well-being.
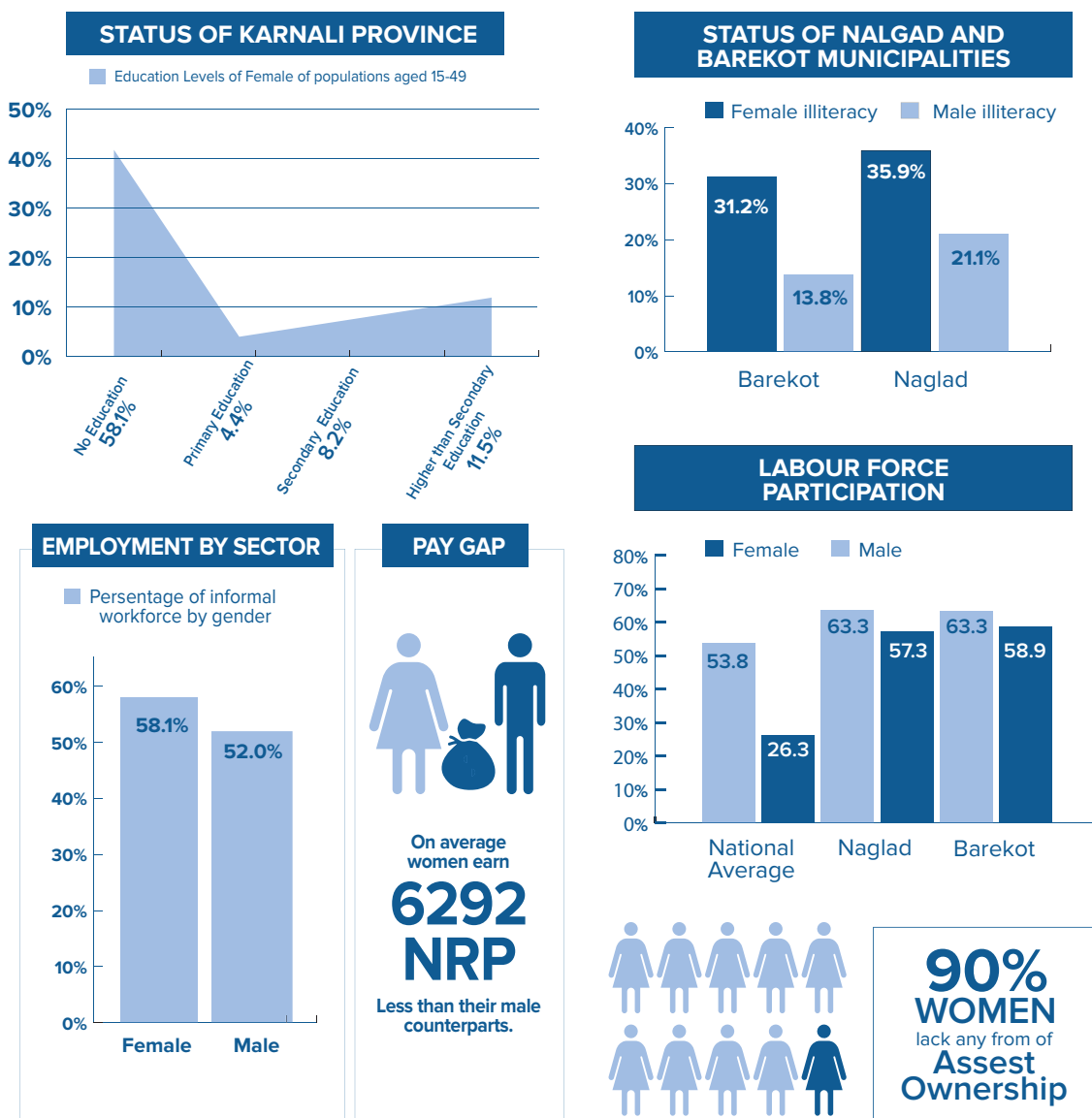
Gender Inequality Data Sheet

STATUS OF KARNALI PROVINCE

Education Levels of Female of populations aged 15-49

- No Education 58.1%
- Primary Education 4.4%
- Secondary Education 8.2%
- Higher than Secondary Education 11.5%

STATUS OF NALGAD AND BAREKOT MUNICIPALITIES

Female illiteracy / Male illiteracy

	Female illiteracy	Male illiteracy
Barekot	31.2%	13.8%
Naglad	35.9%	21.1%

EMPLOYMENT BY SECTOR

Persentage of informal workforce by gender

- Female 58.1%
- Male 52.0%

PAY GAP

On average women earn

6292 NRP

Less than their male counterparts.

LABOUR FORCE PARTICIPATION

Female / Male

	Male	Female
National Average	53.8	26.3
Naglad	63.3	57.3
Barekot	63.3	58.9

90% WOMEN lack any from of **Assest Ownership**

Figure 12: Status of gender inequality measures in Barekot Rural Municipality and Nalgad Municipality [41]

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[41] Gender Equality in Numbers Report, UN Women

Health and Food Security

Fact Sheet on Food and Health Security- Karnali Province

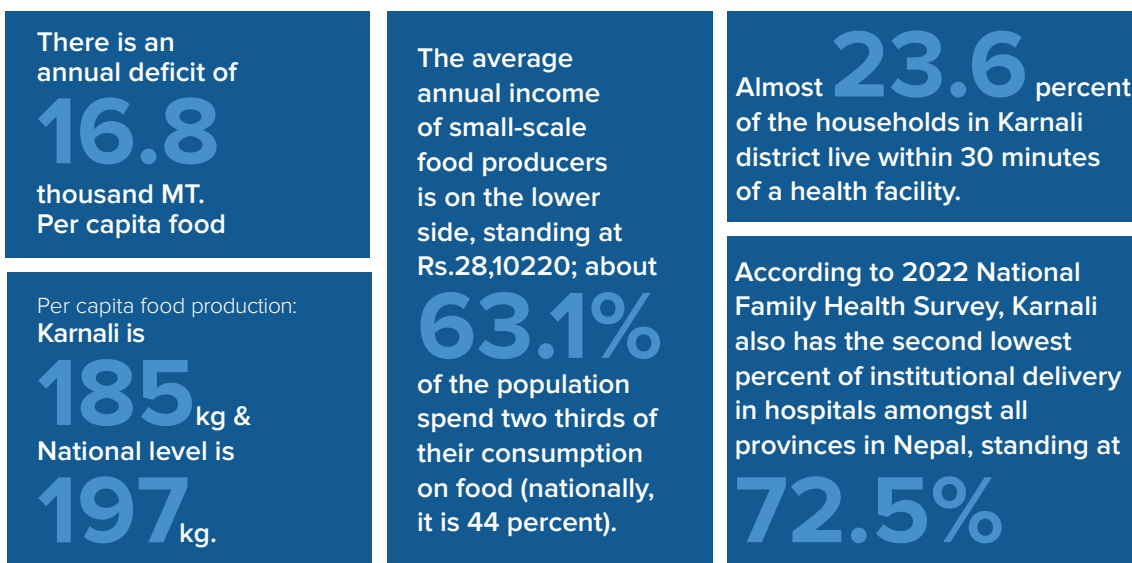There is an annual deficit of **16.8** thousand MT. Per capita food

Per capita food production: Karnali is **185** kg & National level is **197** kg.

The average annual income of small-scale food producers is on the lower side, standing at Rs.28,10220; about **63.1%** of the population spend two thirds of their consumption on food (nationally, it is 44 percent).

Almost **23.6** percent of the households in Karnali district live within 30 minutes of a health facility.

According to 2022 National Family Health Survey, Karnali also has the second lowest percent of institutional delivery in hospitals amongst all provinces in Nepal, standing at **72.5%**

Figure 13: Status of food security in Barekot Rural Municipality and Nalgad Municipality [42]

Food security is a major concern in Karnali Province. With only 31.5 percent of arable land, the region faces recurring food shortages. Lower food production per capita in Karnali, when compared with the national figures, shows lesser availability of food for consumption and trade which impacts the food, health, economic and community security. [43]

In both Barekot Rural Municipality and Nalgad Municipality, an overwhelming majority—90.5 percent and 92.4 percent respectively—depend primarily on agriculture for their livelihood, with little income diversification. These figures underscore the vulnerability of the population to food insecurity, especially given the escalating impacts of climate-related risks and lack of economic security associated with diversified sources of income or skill development.

The affordability and availability of food reinforce the health and well-being of people. For example, about 29.4 percent of the women of reproductive age in Karnali province suffer from anemia; the national average is 33.5 percent. Anemia is understood to be hidden hunger, which results in poor pregnancy outcomes as well as impaired physical and cognitive development in newborns. The prevalence of malnutrition (underweight malnutrition) in children under 5 years of age stands at 7.5 percent in the province, which is approximately two percentage lower than the national average. Apart from its impacts on health security, malnutrition has a cascading impact on the economic productivity of the population and impacts the economic security of the individual and the community. 46 percent of the population travels for more than 1 hour by foot to reach the nearest health facility during the monsoon (rainy) season.

The predominant use of wood as the primary cooking fuel in both municipalities has adverse health implications, particularly for women and children. The inhalation of harmful smoke can lead to respiratory illnesses, impacting health security. Promoting cleaner cooking technologies is vital for improving health security, which will also empower the most vulnerable sections i.e. women and children.

Personal Security

Personal security ensures the protection of individuals from various forms of harm, abuse, and threats to their well-being. It encompasses freedom from violence, discrimination, and threats to life, liberty, and dignity.

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[42] National Demographic and Health Survey, 2022
[43] Sustainable Development Goals, Baseline Report for Karnali Province, 2020

Factsheet on Personal Security:

- Educational status of women aged 15-49 in the Karnali province: **41.9%** have no education, **4.4%** have completed primary education, **8.2%** have completed secondary education and 11.5% have more than secondary education.
- Only **7.5%** of women aged 15- 49 have ever used internet as compared to Nepal's national target of **98%** by 2030 for women aged 15-24.
- In Barekot Rural Municipality illiteracy is **31.20% in females** and **13.87% in males**. In Nalgad Municipality the figures stand at 21.1% for males and 35.9% for the females.
- **7.4% women** in Barekot Rural Municipality and **8.41%** in Nalgad Municipality are married before the age of 15.
- PWD population **5.17% in Barekot Rural Municipality** and **4.85% in Nalgad Municipality**

Figure 14: Status of community security in Barekot Rural Municipality and Nalgad Municipality[44]

Vulnerable sections of society, such as PWD populations and women, often face amplified risks due to their increased susceptibility to discrimination, marginalization, and violence. For instance, PWD individuals are at a higher risk due to physical or mental limitations, making them more vulnerable to exploitation and abuse.

According to the field survey, there are 5.17 percent of PWD population in Barekot Rural Municipality and 4.85 percent in Nalgad Municipality. Ensuring their needs and well-being are key priorities in planning efforts is crucial.

Gender inequality emerges as a significant barrier to achieving personal security and well-being in the two municipalities. Data on skewed asset ownership, lower levels of education and access to technology and early marriages amongst women continue to highlight the disproportional impact of gender inequality on personal security of female individuals. Barekot Rural Municipality and Nalgad Municipality both record a higher percentage of illiteracy in females aged 10 years or above as compared to their male counterparts. Furthermore, access to internet, in which women lag behind significantly, is crucial for mainstreaming gender equality and providing women opportunities to engage meaningfully in the family, economy, and society, thereby enhancing their personal security.

Guaranteeing the personal security of these vulnerable groups is crucial not only for their individual well-being but also for the overall security of the community.

Community Security

Factsheet on Community Security Indicators

7.6% of households in Barekot Rural Municipality and

6.1% in Nalgad Municipality lack any of the basic essential amenities such as internet access and communication connectivity, transportation connectivity through cars, scooters etc.

73% of households in Barekot Rural Municipality and

57% in Nalgad Municipality have access to clean, piped water supply system.

91% houses in Nalgad Municipality and

94.1% in Barekot Rural Municipality use grid electricity and solar for main sources lighting.

Figure 15: Status of community security in Barekot Rural Municipality and Nalgad Municipality[45]

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[44] National Population and Housing Census, 2021
[45] Ibid

Community security ncompasses the collective safety and stability of the community as a whole. Therefore, gaps in ensuring the well-being and personal security of the vulnerable communities also have a direct impact on the security of the community. One of the components of community security, which includes the safety and protection of the various sections of society and the development of the social capital is directly harmed with existing inequalities like gender and disability inequalities.

This report also considers the presence of essential infrastructure, such as well-constructed roads, reliable access to amenities like clean drinking water, and proper sanitation facilities, as a significant part of community security to ensure collective safety and well-being of the population. Lack of adequate facilities for safe drinking water in Nalgad Municipality and Barekot Rural Municipality increases the community's dependence on rivers, streams, uncovered wells which could threaten their health and long-term productivity and security. Adequate infrastructure directly impacts economic prosperity, as efficient transportation systems foster trade and access to markets, thereby contributing to economic security. Moreover, the provision of clean water and sanitation is instrumental in promoting good health, reducing water-borne diseases, and enhancing overall well-being. Safe and secure communities bolster personal security by diminishing the risk of violence and societal unrest. Furthermore, access to amenities and secure community spaces is closely tied to food security, as it directly influences the availability and distribution of food resources within the community.

Political Security

Factsheet on Political Security Indicators

A total of **43%** acrossboth municipalities acknowledge themselves as active participants in the annual budget formulations, highlighting the needs and requirements of the community before the political officials at various levels of administration, according to the field survey data.

Gender equality and political security in Karnali province [46]

Aggregate average of both the municipalities shows male participation in participatory governance is higher than femes by **6.5%**

At least **1,436** women elected as ward members, among whom **718 Dalit women**, out of **3,590 ward members.**
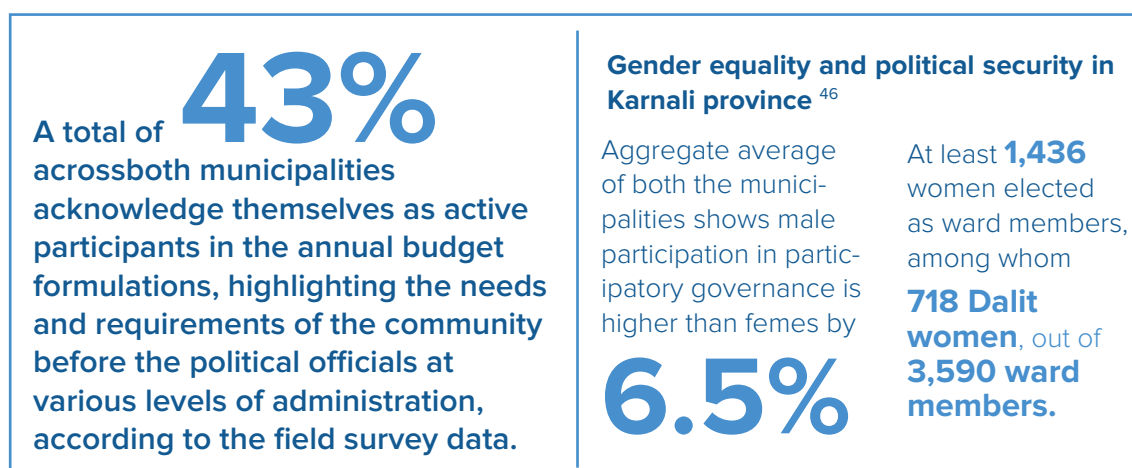
Figure 16: Status of political security in Barekot Rural Municipality and Nalgad Municipality

Good governance, ethical standards, and accountability mechanisms are vital for political security. The democratization of politics, including the implementation of a robust federal system with local governments based on the principles of transparency and accountability has increased a people-led, locally owned procedure of development and human security angle in local policies. However, as federalization and local governance is still an ongoing nascent process in Nepal, including in the surveyed municipalities, the data collected from the field diagnosed a low level of local participation in governance. ccording to the field survey conducted in the two municipalities, only 2.4% of people from Nalgad Municipality feel they are active participants in local decision-making mechanisms whereas in Barekot Rural Municipality this figure stands at 13.5%.

Gender disparity in terms of representation and participation of women in local governments not only impacts their individual political and personal security but also weakens the community's inclusive ownership process.

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[46] Gender Equality in Numbers Report, UN Women, 2021

This indicates that while some respondents actively contributed to the local government policymaking and planning discussions at various administrative levels, there are underlying disparities especially vis-à-vis gender gaps which needs to be addressed to promote a more inclusive base of local participation in decision making and governance.

Environmental Security

Analysis of data from the field survey and the national census from both the municipalities shows that environmental security is one of the most threatened dimensions within the human security of the two municipalities. With rapidly rising climate-induced risks and hazards, low capacity of the communities to recover from it, and high dependence of the local communities of agriculture as the primary source of income, makes them highly vulnerable to these risks. Environmental security also emerges as a key pillar which has a significant bearing on all other forms of human security in municipalities.

Owing to its importance and related impact on all other dimensions of human security, the next section discusses it in greater detail.

2.4 Environmental Security: A Key Pillar of Human Security in the Municipalities

Both Nalgad Municipality and Barekot Rural Municipality have a fragile geology coupled with higher risks of landslides, floods and climate change. Addressing environmental concerns becomes pivotal as it holds the potential to positively impact multiple dimensions of human security, further underlining the need for comprehensive and interconnected interventions to uplift these communities across the spectrum of their well-being.

The economic security situation in these regions is intricately linked with the success of agriculture, access to infrastructure like credit, roads, markets, irrigation canals, all of which are at risk owing to climate-induced disruptions. The lack of asset ownership among majority of the women in the two municipalities is particularly alarming, with 94 percent in Barekot Rural Municipality and 92 percent in Nalgad Municipality not possessing any property rights, further exacerbating economic inequalities, and leaving them more susceptible to environmental, health, food and economic shocks.

Insufficient income levels and overdependence on agriculture contribute to food, income, health and physical insecurity, while gender disparities in asset ownership severely impact women's overall well-being, personal autonomy which has ripple effects on their ability to make decisions and avail benefits vis-à-vis their health, social, physical and even economic independence.

Fact Sheet on Climate-induced Risks to Human Security in Nalgad Municipality and Barekot Rural Municipality
- On average, about 35% population of Nalgad Municipality are affected by landslides, 7% are affected by floods and 8.5% are affected by fire. Almost all people are affected by lightning and epidemics.
- On average, about 39% population of Barekot Rural Municipality are affected by landslides and flash floods. Almost all people are affected by lightning, fire, and epidemics.
- 75 % of respondents from Barekot Rural Municipality, and 59% from Nalgad Municipality have personally experienced erratically changing climatic conditions which go on to threaten the agricultural sector.
- Two-thirds of the total respondents in the survey reported witnessing observable environmental changes in the climate over the past 15 to 20 years.
- Out of these, 75.7% of the participants emphasized landslides as the predominant consequence of climate change, often accompanying floods, with 67 percent of respondents acknowledging this correlation.

Figure 17: Climate-induced risks and vulnerabilities in Barekot Rural Municipality and Nalgad Municipality [47]

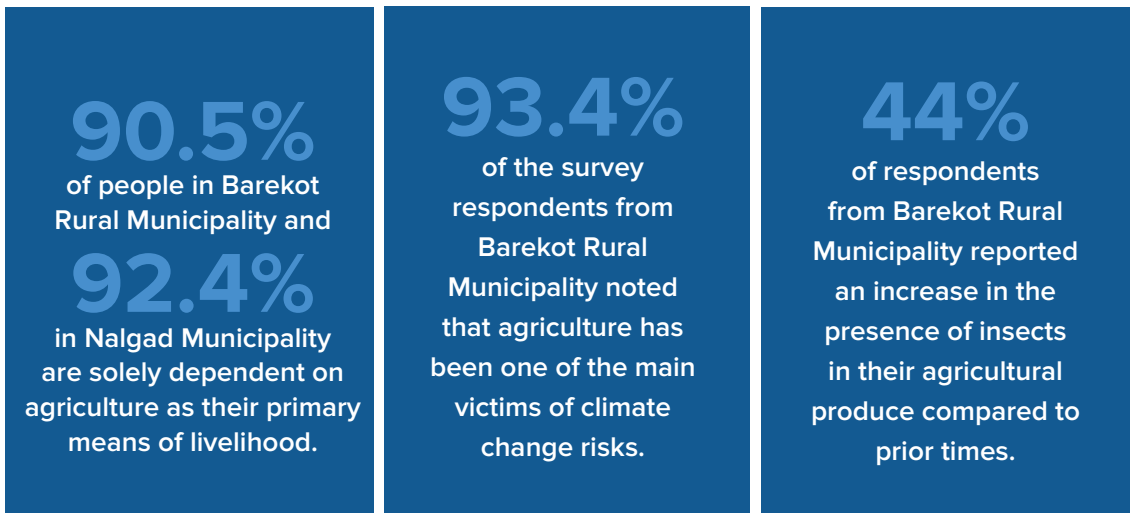[47] These figures are from the field survey conducted in the two municipalities

90.5% of people in Barekot Rural Municipality and **92.4%** in Nalgad Municipality are solely dependent on agriculture as their primary means of livelihood.	**93.4%** of the survey respondents from Barekot Rural Municipality noted that agriculture has been one of the main victims of climate change risks.	**44%** of respondents from Barekot Rural Municipality reported an increase in the presence of insects in their agricultural produce compared to prior times.

Figure 18: Impacts of climate change on agriculture in Barekot Rural Municipality and Nalgad Municipality [48]

52.7 % of the participants from both municipalities noted drought as a risk for farmers, particularly during paddy planting seasons such as Asar-Shrawan (June-July) which affects the context of their livelihood security and the food security of a of the community.

These examples showcase the intricate relationship between climate change and potential risks to human security. The income and livelihood of the majority of the population is directly impacted by these risks, having a ripple effect on their capacity to afford and fulfill nutritional, economic, healthcare needs etc.

Climate-induced disasters like floods and landslides pose significant risks to the communities' personal safety and security, causing loss of lives, displacement, and damage to infrastructure, exacerbating the overall human security challenges in these regions.

In August 2018 the economic cost of flooding alone in the Nalgad Municipality was around 1 million Nepali Rupees causing widespread infrastructure destruction including homes, roads, irrigation canals all of which correspond to various dimensions of human security like food, income, physical, community and health.

97.5 percent of the respondents in Barekot Rural Municipality note that one of the major causalities of the past climate change disasters has been the destruction of primary infrastructure like roads and irrigation canals which not only directly impacts agriculture and income security but also inhibits connectivity in the region exacerbating issues like access to healthcare centers and markets to ensure a dignified life of well-being.

It is important to note that climate-induced disasters have the potential to exacerbate the existing inequalities faced by the vulnerable groups in both municipalities.

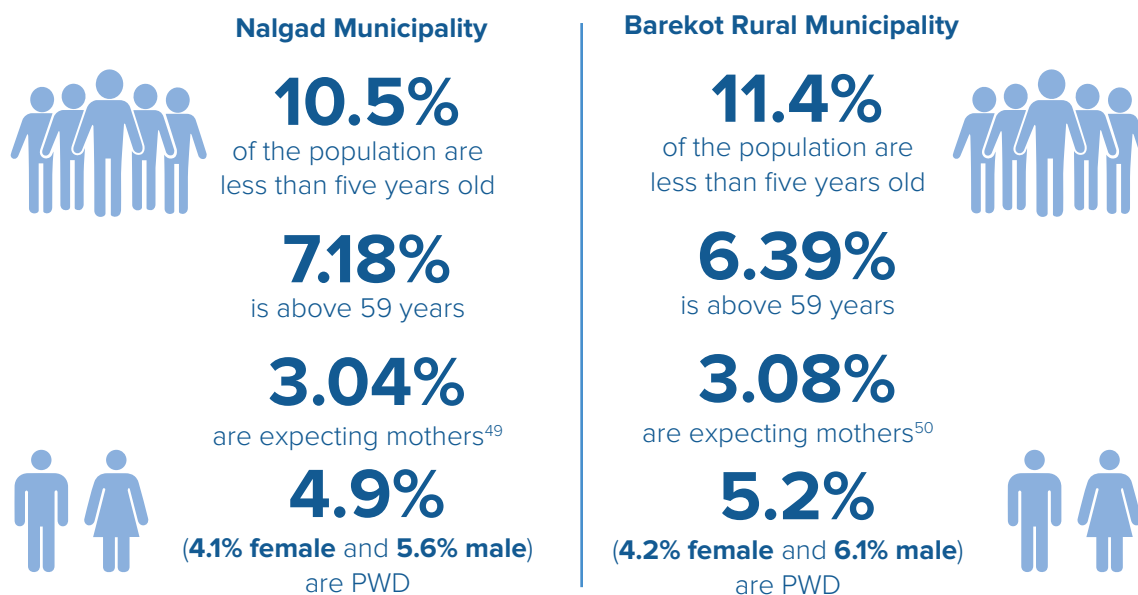
[48] Ibid.

Factsheet: Recognizing Vulnerabilities

Nalgad Municipality

10.5%
of the population are
less than five years old

7.18%
is above 59 years

3.04%
are expecting mothers[49]

4.9%
(**4.1% female** and **5.6% male**)
are PWD

Barekot Rural Municipality

11.4%
of the population are
less than five years old

6.39%
is above 59 years

3.08%
are expecting mothers[50]

5.2%
(**4.2% female** and **6.1% male**)
are PWD

Figure 19: Recognizing vulnerable groups in Barekot Rural Municipality and Nalgad Municipality [51]

Children, women, pregnant and lactating mothers, persons with disabilities, and the elderly, have increased health, food, and personal security needs which when combined with existing inequalities that they face in various indicators of human and personal security, makes them highly vulnerable to any climate-induced disaster events. The survey highlighted that more than 55 percent of respondents from both areas identified Children and Women as the groups predominantly affected by these disaster events.

This shared perspective from both municipalities highlights the vulnerable demographics that experience heightened vulnerability during these disaster situations. Recognizing Children and Women as the most affected groups emphasize their unique challenges, often due to their specific needs and circumstances.

Local climate action, including the implementation of sustainable agricultural practices, and the development of resilient community infrastructure and early warning systems for disaster preparedness, is imperative. Such interventions not only mitigate the immediate impact of climate risks but also foster long-term resilience and human security in these communities.

Investing in local climate action is fundamental for achieving broader human security in Nalgad Municipality and Barekot Rural Municipality. It is essential to develop and implement policies and programmes that focus on climate resilience to safeguard the livelihoods, health, and overall well-being of the communities in the face of escalating climate risks. By recognizing and addressing these challenges, local interventions can play a critical role in promoting a more comprehensive human security framework that ensures the safety and prosperity of the residents in these regions.

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[49] National Demographic and Health Survey, 2022
[50] Ibid
[51] National Population and Housing Census, 2021

Understanding Environmental Security and Local Climate Actions Interplay in Nalgad Municipality and Barekot Rural Municipality

The Role of Institutional Frameworks, Community Engagement, and Key Sectors in ensuring Environmental Security

To understand the interplay of environment security and local climate actions, this report looks at three major areas; institutional policies and framework, the engagement of the community, and the key sectors where the policies and local ownership translates into building a more climate resilient social and physical infrastructure.

These three areas have been chosen to align the research methodology with larger principles envisioned in the UN Trust fund for Human Security's handbook,[52] which recognizes four principles of the approach: preventive, context-specific, people-centric and comprehensive.

The governance framework and policies determine the extent and nature of resource-distribution for various aspects of societal problems and sets the agenda and priorities through laws, budgetary provisions and capacity building of the government officials and the society. This is also true with respect to setting policies and priorities for climate resilience to strengthen human security. Accordingly, this report presents an understanding of the extent to which these policies align with a preventive rather than reactive approach, a people-centric and a comprehensive approach rooted in context-specific realities.

The local community being the first responder to disasters and the most affected, face the highest levels of risks to disruptions to their livelihoods along with holding the key to the most effective response to disasters, minimizing risks and building resilience. This principle of Localization is increasingly becoming the guiding force for all humanitarian and development work [53]. The project on '*Enhancing Human Security through Local Climate Actions*' also recognizes the importance of the community as a key stakeholder in ensuring effectiveness of climate resilience actions to build a sustainable future of well-being for all. By looking at the knowledge, awareness, capacity, and engagement of the local community with the policy frameworks and the key sectors, the report provides an understanding of the extent to which people-centrism, local ownership and participation as principles of human security are prevalent in the two municipalities.

Figure 20: Interrelation between local climate action and environmental security[54]

The key sectors have been identified according to the principle of context-specificity and comprehensiveness in the human security framework as envisaged by the UN. More than 90 percent of the population in both municipalities is engaged in agriculture, which faces increased risks with rapid changes in weather patterns, emergence of insects, floods, landslides etc. Community infrastructure along the lines of green jobs, green infrastructure, renewable energy and early warning systems look at bottom-up, community-led efforts which help fortify the communities and their human security against these risks.

The synergy between these three aspects is important to ensure that the research and future actions adhere to the four principles mentioned above and ultimately achieve long-term, sustainable solutions to protect and empower the communitie.

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[52] Handbook on Human Security, UN Trust Fund for Human Security, 2016
[53] Localization | IFRC,
[54] Handbook on Human Security, UN Trust Fund for Human Security, 2016

3.1 Existing Municipality-level Institutional Frameworks for Enhancing Environmental Security

3.1.1. Policy and Legal Frameworks

This section tries to gauge a preliminary understanding of the extent to which environmental security is understood and included in the legal and policy frameworks of climate disaster risk management.

Policy frameworks that recognize the disproportionality of the impacts of climate-risks and the different capacities and needs of different sections of society will be more capable to ensuring any policies to reduce climate risks are also simultaneously reducing inequalities and human insecurities across the 7 dimensions.

For example, a policy which includes the specific needs of women in post-disaster relief work, including specific healthcare needs like sanitation and nutrition would help promote an increased level of women empowerment and participation in the community.

The National Plan of Action for Disaster Risk Reduction (2018-2030) briefly address social security across various sectors, including food security, health security, the well-being of vulnerable groups, and the prevention of gender-based violence during emergencies. However, there is a need for this approach to percolate down to the municipal level disaster management practices.

Barekot Rural Municipality has developed the Local Disaster Management Act, Disaster Preparedness and Response Plan (DPRP), and Local Adaptation Plans of Action (LAPA). The DPRP and LAPA include addressing disaster risk management, climate change, and human security through the lens of different aspects of social security, such as food, health, and gender violence. However, the field survey noted limited technical capacity at the municipal level for implementing the DPRP and LAPA, hindering the translation of policies into action.

Like Barekot Rural Municipality, Nalgad Municipality has formulated the Climate Change and Disaster Management Act, DPRP, and LAPA which show an integration of human security principles across the parameters of addressing gender-based violence during disasters, social security for more vulnerable populations and food and health security of the community. However, the implementation of these policies faces challenges due to limited funding and technical capacity.

3.1.2. Inter and Intra Municipal Coordination and Collaboration

Collaboration and coordination between the wards of a municipality and within the municipalities can be done by sharing good practices in various local climate actions, saving time and money.

Barekot Rural Municipality actively collaborates with communities and wards, fostering inclusive decision-making during disasters and emergencies. However, there is little evidence of efforts taken by the Barekot Rural Municipality to coordinate with neighboring municipalities regarding climate and disaster data and information, which represents a missed opportunity for regional collaboration.

Nalgad Municipality faces similar challenges like Barekot Rural Municipality when it comes to coordinating with neighboring municipalities regarding climate change adaptation, disaster risk reduction, and human security issues. Coordination within the municipality appears to be limited, as evidenced by their lack of awareness of critical factors such as the presence of hydropower stations and flood-prone areas within their municipal territory. The absence of upstream and downstream linkages further hinders informed decision-making regarding weather and climate hazards.

3.1.3. Staff Training for Effective Disaster Response

Building capacity of the municipal staff to spread awareness about the interlinkages of climate resilience with human security is important to ensure local municipal actions on climate change include a holistic approach to address wider human security challenges which if missed, will only get aggravated by climate risks.

Barekot Rural Municipality has an ad hoc local emergency operation centre but lacks a permanent institution on the same line. While a few municipal staff have received training in Climate Change and Disaster Management, there is a need to increase these trainings and bring increased capacity and uniformity in response.

It is also important to ensure that these trainings adopt a more proactive approach to build resilience of communities across all dimensions of human security rather than the current reactive approach which remains restricted to climate disaster response and only comes into action after a disaster has occurred.

Nalgad Municipality currently has limited training, orientation, or awareness-raising activities on disaster risk management and climate change adaptation for the municipal officials, resulting in limited capacity.

3.1.4. Financial Mechanisms for Disaster Response

Financial mechanisms and allocation of resources highlight policy priorities and show the direction and nature of development in a region.

Barekot Rural Municipality: has established a disaster management fund, however, it is primarily used for post-disaster relief material distribution. A Standard of Procedure (SoP) should be developed which can help ensure proportional and targeted relief for the more vulnerable sections of society and accountability and transparency in the usage of the funds. Developing a proper SoP for relief fund can also help strengthen human security by allocating funds based on the principle of proportionality to various vulnerable populations like women, children, elderly and the PWD.

Nalgad Municipality: has an ad-hoc nature of funds allocation, wherein ten different policy and procedural documents are used by the authorities to allocate resources while disbursing disaster relief funds. This should be reformed to develop a designated disaster management fund to effectively deal with disaster relief and response activities. This ad-hoc nature of disaster management funds allocation also reduces the policy-making space to allocation needs-based targeted funds to meet the special needs of the vulnerable population, increasing human insecurities for the community as a whole.

3.2. Status of the Community Engagement in Promoting Environmental Security

A people-centric approach which considers the local needs and priorities is a crucial component of human security, recognized for its efficacy in fostering sustainable and enduring solutions by and for the communities.

When communities have a stake in the policies, interventions, and actions that directly impact their well-being, the outcomes tend to be more sustainable and effective. This active involvement not only enhances the sense of ownership and responsibility within the community but also ensures that the interventions are better tailored to address their unique challenges and aspirations, thereby fostering a more resilient and secure environment.
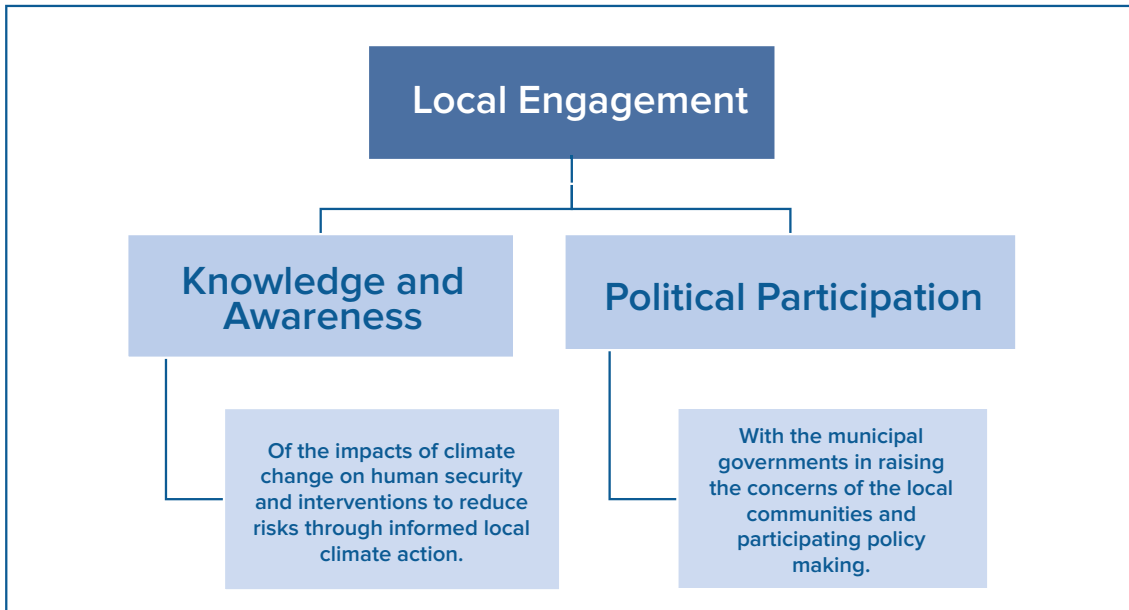
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                    ┌─────────────────────────┐
                    │    Local Engagement     │
                    └─────────────────────────┘
            ┌──────────────────┐      ┌──────────────────────┐
            │   Knowledge and  │      │ Political Participation │
            │     Awareness    │      │                      │
            └──────────────────┘      └──────────────────────┘
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Knowledge and Awareness

Of the impacts of climate change on human security and interventions to reduce risks through informed local climate action.

Political Participation

With the municipal governments in raising the concerns of the local communities and participating policy making.

Figure 21: Parameters for analyzing local engagement of the community in local climate actions

3.2.1 Awareness of Climate Change and Related Risks

Roughly 46 percent of the survey participants have encountered the term "climate change," although their comprehension may not be extensive. Data from the individual municipalities shows that nearly half of those from Barekot Rural Municipality are deeply conscious of climate change, while in Nalgad Municipality the figure stands at 41.3 percent. Moreover, approximately 49 percent of male respondents are acquainted with the term. In contrast, around 42 percent of the female counterparts have been exposed to it, highlighting the importance of strategy to close the gender gap in awareness and understanding.

Encountered the Term Climate Change

45.9%	**Total %**	54.1%
42.2%	**Female**	57.8%
49.3%	**Male**	50.7%
41.3%	**Nalagad Municipality**	58.7%
50.5%	**Barekot RM Municipality**	49.5%

■ Yes ■ No
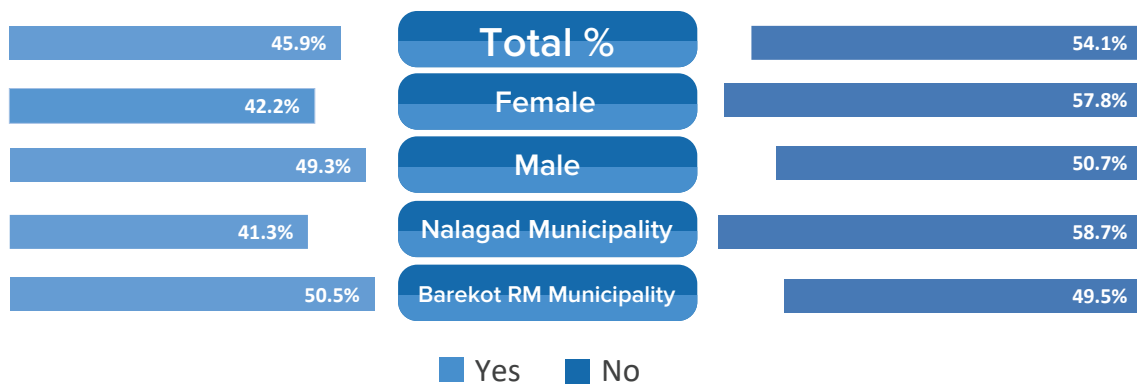
Figure 22: Percentage of respondents who encountered the term climate change

Among the 45.9 percent of the participants who were familiar with the term 'Climate change', a mere 18.3 percent fully understand climate change as a comprehensive concept along with its associated risks. Notably, the breakdown reveals that within the Barekot Rural Municipality respondents, this understanding was found in 21.8 percent, while within the Nalgad Municipality respondents, it stood at 14 percent.

According to the survey conducted in the meetings addressing climate change adaptation issues in project sites, around 89 percent of the respondents from Barekot Rural Municipality showed their concerns about climate change adaptation during these meetings. In contrast, it appears that in Nalgad Municipality 40 percent of them fear it. Additionally, a slightly larger number of males than females indicated their concerns about climate change.
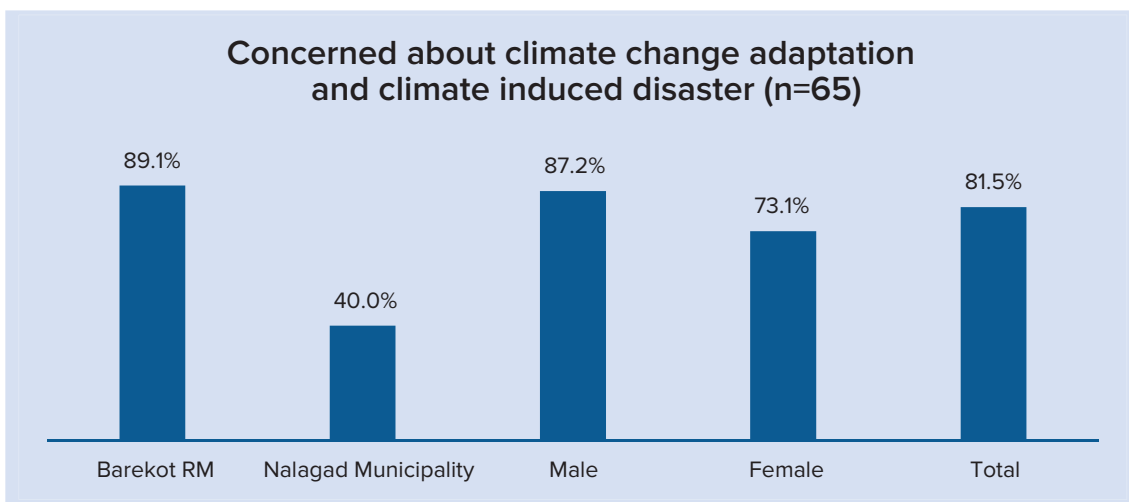

Concerned about climate change adaptation and climate induced disaster (n=65)

Barekot RM: 89.1%
Nalagad Municipality: 40.0%
Male: 87.2%
Female: 73.1%
Total: 81.5%

Figure 23: Percentage of respondents who showed concern about climate change related issues in both municipalities.

In terms of sources of information about climate change, the survey conducted in the project sites shows that Radio emerges as a significant information source in both local units, followed by television and the Internet.

Sources of Information about Climate Change (n=378)

Radio: 84.7%
Television: 48.4%
Internet: 47.1%
Friends/fa…: 23.8%
Newspaper: 22.5%
Governme…: 8.5%
CSOs/CBOs: 8.2%
Others: 14.0%
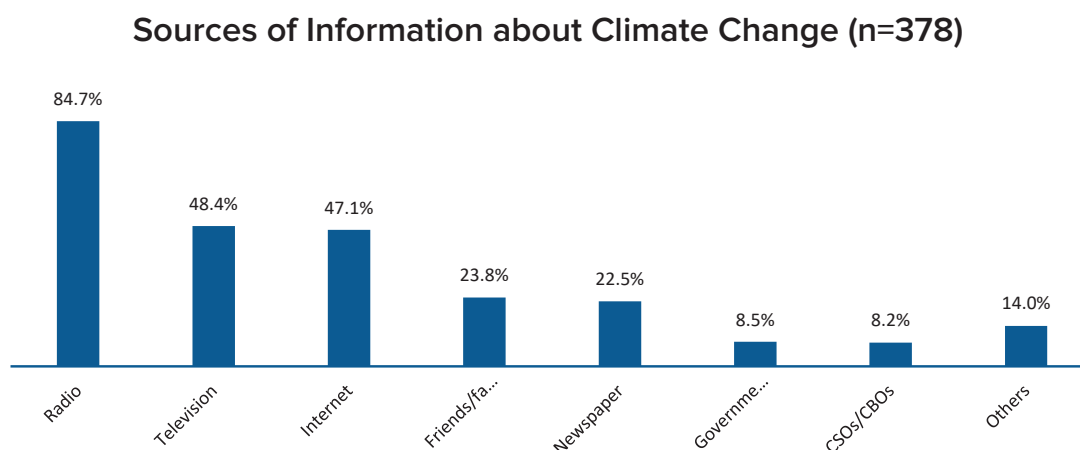
Figure 24: Sources of information about climate change for respondents who showed concern about climate change related issues in both municipalities.

3.2.1.1. Knowledge about the Impact Climate-induced Disasters on Human Security

Apart from a generic understanding of climate change which was covered in the previous section, this section focuses on the various types of disasters, the damage done, and types of insecurities faced by the communities vis-à-vis their overall security. It provides a deeper understanding of the unique challenges faced by the region and the community's understanding and experience regarding these unique climate-induced challenges.

When inquiring into the most significant climate-induced disasters in the area over the last decade, a noteworthy trend emerged from the responses. More than two-thirds of the participants, a substantial majority, identified landslides as the primary disaster they have experienced and which threatens their physical, economic and community security in terms of destruction of infrastructure. Following closely, approximately 48 percent of them mentioned flooding and heavy floods which threaten agriculture, the livelihood of the majority in the surveyed areas. Additionally, respondents acknowledged drought and the emergence of insects as major disaster incidents that have affected their locality. These findings collectively highlight the prevalence and impact of climate-related impacts on the community in the recent decade.

Personal Experience of Respondents with Various Types of Disasters in the Past 10 Years

Disaster	Percentage
More cold winter	4.9%
Unusual change of nature	6.9%
High temperature	8.3%
Less rainfall in winter	12.3%
Heavy rainfall in summer	19.9%
Emergence of insects	32.4%
Drought	35.3%
Flood/Heavy Flood	47.9%
Landslides	67.0%
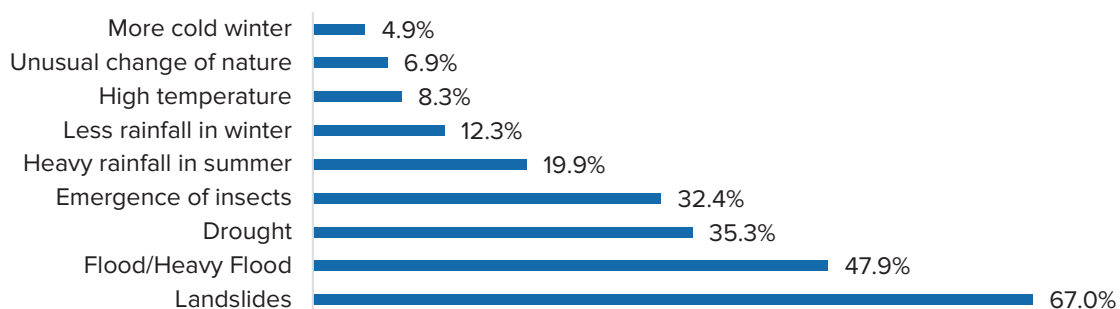
Figure 25: Personal Experience of respondents with various types of disasters in the past 10 years, in both municiplaities

The survey results show that while the respondents had a deep understanding of the various climate-induced hazards, their assessment of the impacts on the various dimensions of human security limited to only include an understanding of physical and economic security in terms of income source and infrastructure affected due to the disasters.

Deeper aspects of human security like impacts of these disasters in exacerbating the inequalities faced by women, disrupting healthcare access and food security and its overall implications for the well-being of the community were relatively absent.

In terms of impact to economic and physical security the respondents noted significant damage across various aspects of their livelihood and infrastructure in the project sites. Particularly, almost all the respondents from Barekot Rural Municipality noted the damage to both agriculture which is a major source of income and infrastructure, highlighting difficulties in connectivity with markets and access to resources. In contrast, the extent of damage reported by respondents in Nalgad Municipality is comparatively lower than in Barekot Rural Municipality. This disparity highlights a distinct scenario wherein Barekot Rural Municipality is facing a more serious impact from the disaster having a direct impact on the economic, food, healthcare access and community infrastructural security of the people. The widespread damage to agriculture products and physical infrastructure in Barekot Rural Municipality underscores the vulnerability of the area in the face of disasters.

Type of Damage	Municipality		Total
	Barekot Rural Municipality	Nalgad Municipality	
Damage was done to agriculture due to these disasters	93.4%	31.5%	62.1%
Impacts on physical infrastructures (roads, irrigation canals, bridges, etc.)	97.5%	22.4%	59.6%
Total number	408	416	824

Table 5: Type of damage done by climate change-induced disasters in the surveyed areas, according to the respondents.

3.2.1.2. Knowledge about the Impact Climate-induced Disasters on the Security of Vulnerable Sections

The survey concludes an important finding showing that most of the respondents were aware about the underlying vulnerabilities of the marginalized sectors and the cross-fertilization and manifestations of existing inequalities of human security in the impacts of climate-induced disasters.

Approximately 55 percent of respondents from both areas identified children and women as the groups predominantly affected by disaster events. Following closely, around 44 percent of respondents recognized that people with disabilities face significant challenges during such disasters, while approximately 42 percent of the respondents noted that senior citizens are exposed to threats by disasters. This shared perspective from both municipalities highlights the vulnerable demographics toward disaster events that is becoming more and more intense. Besides, it has become apparent that considering the diverse needs, irrespective of gender and age, is essential in disaster management and relief efforts.

Knowledge about the Most Vulnerable Sections to Impacts of Climate Induced Disaters
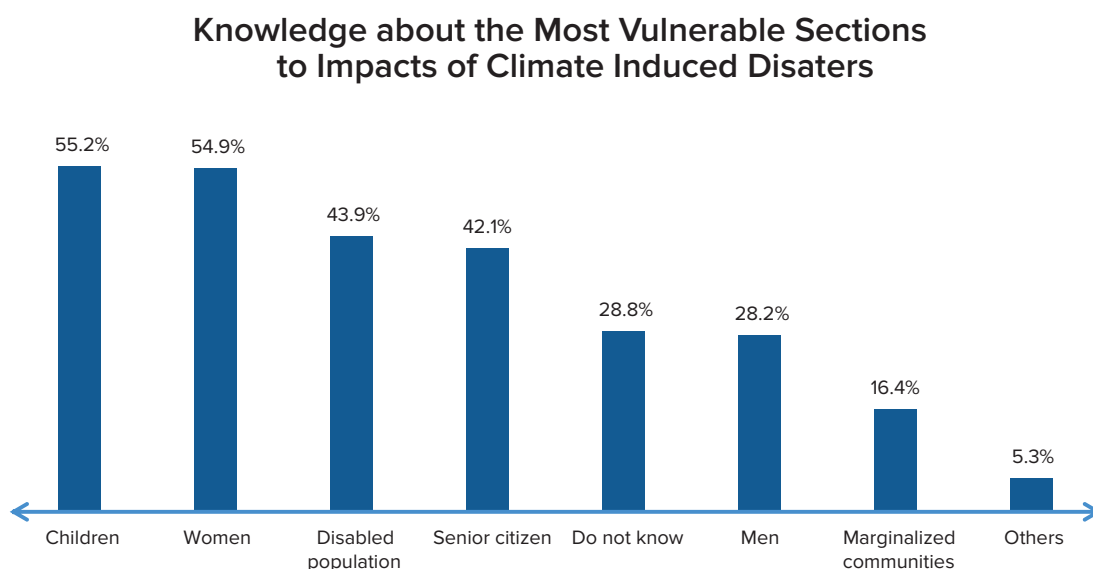
Figure 26: Category of most affected by disaster in the surveyed community, according to the respondents
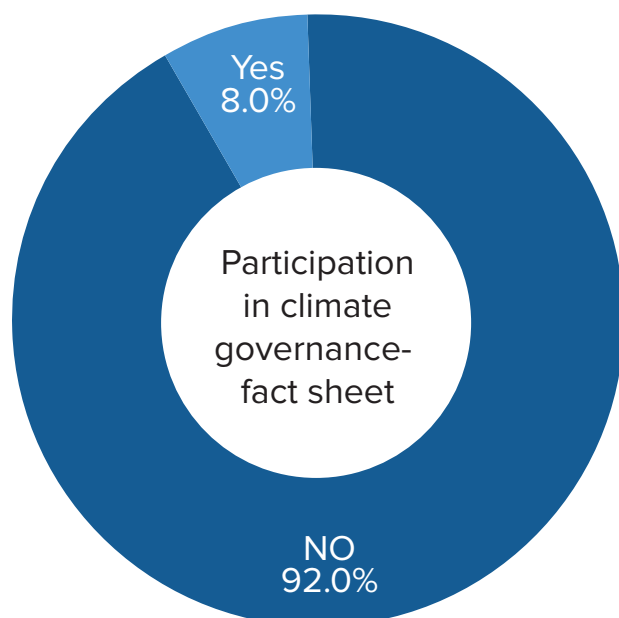
3.2.2. Community Participation in Local Climate Governance

Awareness of the community about the impact of climate-induced disasters on human security is not sufficient unless they are able to effectively communicate their concerns and needs to the government and participate in the creation policies to promote their well-being.

This section tries to develop an understanding of the extent and nature of local participation in decision-making processes promoting environmental and political security of both the municipalities.

3.2.2.1. Community Participation in Decision-Making Process

While there is a satisfactory participation of people in government meetings especially with respect to the budgetary meetings, there exist structural inequalities vis-à-vis gender representation in these meetings. The levels of participation were higher in Barekot Rural Municipality as compared to Nalgad Municipality.

Community Participation in Climate Governance- Fact Sheet

2.4 percent from Nalgad Municipality

13.5 percent from Barekot Rural Municipality

Male representation in these meetings is higher by 6.5 percent in comparison to female involvement.

Majority of this participation, 52.3 percent is at the ward level.

43.1 percent of the respondents took part in the annual budgetary meetings at the Municipal level.

Figure 27: Participation of the locals in the Decision-making processes

The community in the Barekot Rural Municipality actively raises a variety of concerns related to climate-induced disasters, diseases, insects, crop issues, landslides, lightning, and agricultural imbalances at various levels of these meetings with municipal officials. Many of these problems are directly linked to climate change impacts and shows that their awareness translates into active participation and action-taking on their behalf.

While physical security in terms of economic cost of disasters and income loss are widely raised and understood issues, others which are more indirect like gender inequalities, food security especially of the vulnerable population are absent from the list of issues raised by the community members.

The issues raised by the community members and their correlation with various dimensions of human security are closely correlated with the awareness and knowledge of the community members about the close correlation between these dimensions.

Like Barekot Rural Municipality, the community in Nalgad Municipality raises concerns related to landslides, diseases, insects, crop issues, lightning, and agricultural imbalances, most of which are linked to climate-induced disasters and lack a more diverse and holistic understanding of other areas of human security that are at risk because of these climate-induced disasters.

FDGs from the field concluded that while a host of issues were raised by the community members budgetary constraints and slow implementation processes lead to inadequate implementation and timely inclusion of these concerns by the municipal governments.

Level of Meetings Where Locals Participated In the Decision Making Process
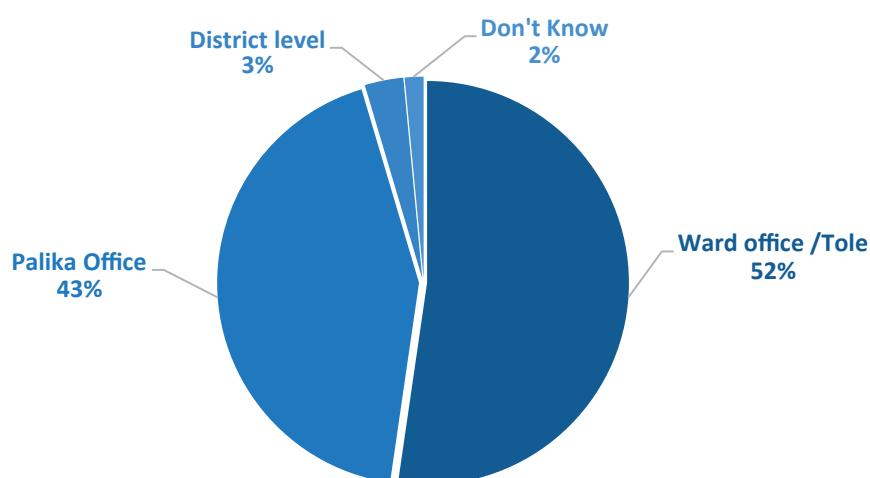

Figure 28: Level of meetings where locals participated in the decision making process

Participation of the local community in the decision-making process at local levels of governance	Municipality		Gender	
	Barekot Rural Municipality	Nalgad Municipality	Male	Female
Yes	13.5%	2.4%	9.2%	6.5%
No	86.5%	97.6 %	90.8%	93.5%
Total	100.0%	100.0%	100.0%	100.0%
Total number	**408**	**416**	**426**	**398**

Table 6: Participation of the respondents in the decision-making process by municipality and gender

3.2.2.2. Community Participation in Climate Adaptation Training

Various stakeholders organize training sessions focusing on climate change adaptation and disaster management. In particular, the local government plays a pivotal role in conducting such training, often with the support of different Community-Based Organizations (CBOs) and Non-Governmental Organizations (NGOs).

When assessing the extent of participation in the training programmes, it was found that approximately only 10 percent of the respondents had taken part in such initiatives. Upon comparing participation rates between municipalities, a noteworthy contrast emerged. Roughly 20 percent of respondents from Barekot Rural Municipality had engaged in these training and orientation programmes, whereas the participation figure was considerably lower at 1 percent for Nalgad Municipality. Moreover, the data reveals a minimal disparity in participation proportions between genders. Both males and females participated at roughly the same rate, around 10 percent.

Participation of the respondents in training on climate change adaptation and climate-induced disaster	Municipality		Gender		Total	
	Barekot Rural Municipality	Nalgad Municipality	Male	Female	Frequency	Percent
Yes	19.6%	1.0%	10.6%	9.8%	84	10.2
No	80.4%	99.0%	89.4%	90.2%	740	89.8
Total number	**408**	**416**	**426**	**398**	**824**	**100.0**

Table 7: Participation of respondents in climate change-induced adaptation trainings

When surveying the different components covered in the training sessions, it was found that search and rescue was the most common. Specifically, 90.5 percent of respondents identified it as the major content. Furthermore, Vulnerability and Risk Assessment (VRA) and Mitigation strategies were also mentioned by the participants of the survey, but only by less than 20 percent. This indicates that the training primarily concentrated on search and rescue, and they put relatively less emphasis on other training such as VRA and Mitigation strategies. (Information from the field- whether these trainings included human security dimensions-like gender and disability sensitivity in search and rescue, what are the components of vulnerability and risk assessment- do they club people differently depending on gradients of vulnerabilities- like population without any access to credit facility would be more vulnerable etc.)
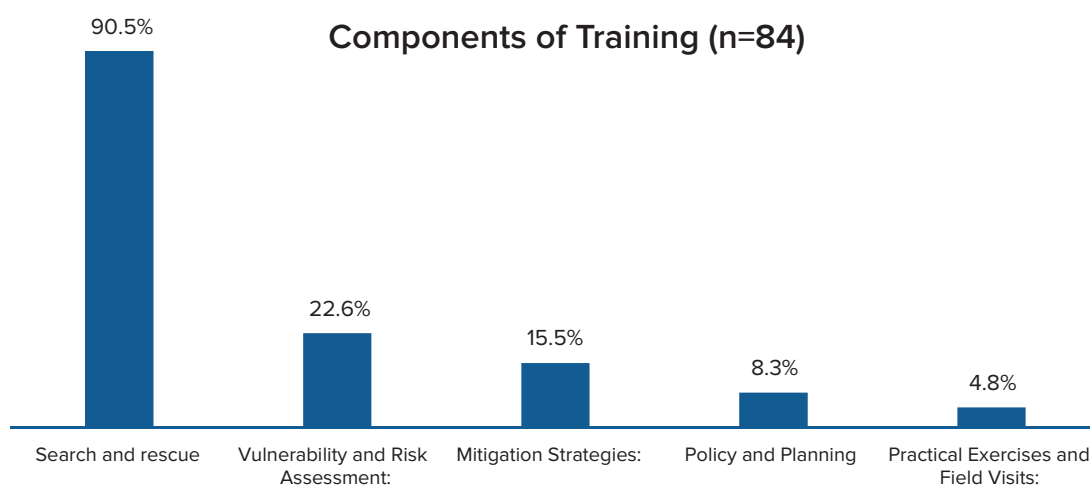

Figure 29: Detailed components of climate action-related trainings

3.3. Status of Key Priority Sectors in Promoting Environmental Security through Local Climate Actions

This section examines the role of four key sectors in the human security project: agriculture, Early Warning Systems (EWS), energy, and green infrastructure.

These four priority sectors have an important role in in reducing climate-disaster risks and if implemented through a broader approach of human security, they have the potential of generating benefits in a variety of social areas like equality, stronger financial security, and healthier communities.

3.3.1. Agriculture

This section deals with various local climate actions in agriculture for environmental security of the community. Agriculture is one of the most vulnerable sectors to increasing climate change risks and 90.5 percent of people in Barekot Rural Municipality and 92.4 percent in Nalgad Municipality are solely dependent on agriculture as their primary means of livelihood, directly impacting food security, income generation, and overall community resilience.

From the perspective of climate adaptive agriculture and climate-smart agriculture, the discussion mainly focuses on how the resilience and sustainability of the agriculture sector can be improved.

Climate-Adaptive Agricultural Practices

Approximately 14 percent of the respondents have taken the proactive step of implementing climate-adaptive agricultural practices on their land.

Many farmers have independently embraced the practices, encompassing techniques such as Integrated Pest Management (IPM), tunneling methods for vegetable cultivation, and reducing pesticides and chemical fertilizers.

The practice of tunnel vegetable farming, for instance, gained traction in recent years following the construction of roads in Dolpa, enabling improved access to markets. One of the agricultural representatives from Nalgad Municipality mentioned that they are currently promoting the use of natural pesticides and fertilizers while discouraging the use of chemical fertilizers and pesticides for farmers' land.

The proportion of respondents adopting these practices is notably higher in the Barekot Rural Municipality region, where 25.5 percent of respondents have integrated them into their practices. In contrast, this figure is substantially lower in Nalgad Municipality, hovering around 3 percent. Besides, it has become apparent that there is no big gender difference in the practices.

Adoption of climate smart agricultural practices by the local communities	Municipality		Gender		Total	
	Barekot Rural Municipality	Nalgad Municipality	Male	Female	Frequency	Percent
Yes	25.5%	2.9%	14.8%	13.3%	116	14.1
No	47.3%	90.4%	69.0%	69.1%	569	69.1
Not now, but thinking about it	27.2%	6.7%	16.2%	17.6%	139	16.9
Total	100.0%	100.0%	100.0%	100.0%	824	100.0

Table 8: Adoption of climate smart agricultural practices by the respondents

Climate resilience crop selection was mentioned most frequently as a part of their agricultural practice, where they have roughly 73 percent of the total respondents. Following that, 57 percent of the respondents have embraced agroforestry practices, while 16.4 percent have taken steps to improve animal housing conditions.

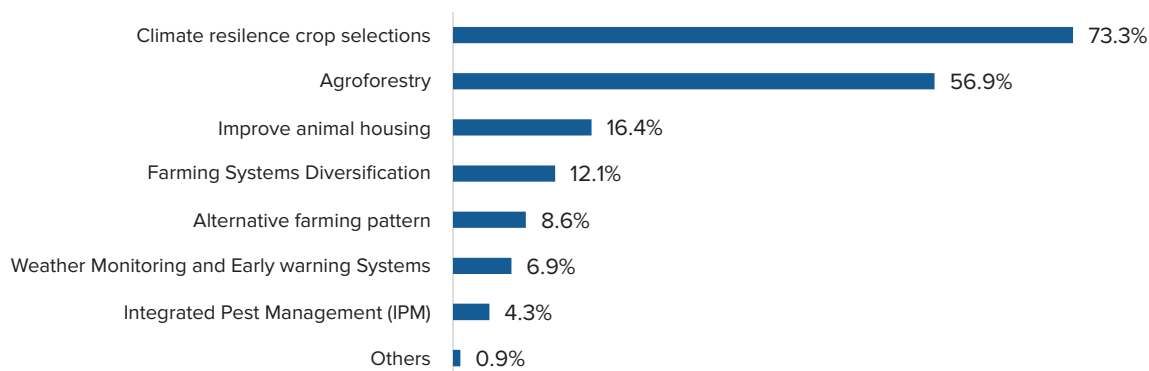## Types of Cliamte Resilient Practices Adopted by Respondents

Practice	Percentage
Climate resilence crop selections	73.3%
Agroforestry	56.9%
Improve animal housing	16.4%
Farming Systems Diversification	12.1%
Alternative farming pattern	8.6%
Weather Monitoring and Early warning Systems	6.9%
Integrated Pest Management (IPM)	4.3%
Others	0.9%

Figure 30: Types of climate resilient agricultural practices adopted by the respondents

Barekot Rural Municipality

Regarding smart agriculture, plastic tunnels have been distributed for commercial farming under the Smart Agriculture programme by the local government. Training for farming, water supply system, and public awareness programmes have been conducted in one village of each ward. Fifteen households have the availability of 10/6 plastic tunnels (Green House). Houses are chosen from each community in a meeting, and the seeds of fruits and vegetables, such as the low-chilling variety of apples and kiwi, have been distributed. Overall, 70 percent of the households have benefited from smart agriculture programmes.

Nalgad Municipality

The agriculture department of the Municipality implemented an initiative in two wards, namely wards 5 and 3, where they provided training on Integrated Pest Management (IPM) technology to the participants. The participants were able to learn IPM technology for its practice. However, compared to the case in Barekot Rural Municipality, Nalgad Municipality has shown limited progress on innovative agricultural practices for enhancing human security. Continued traditional farming methods are exposing the community to vulnerabilities particularly affected by changing weather patterns and environmental shifts.

Addressing the challenges each municipality is facing is crucial to enhance human security, as the sustainability of livelihoods depends heavily on the adaptive capacity of agricultural practices. The adoption of climate-smart farming techniques, along with access to information on best practices, will lead to more resilient agricultural systems. These measures will contribute to food security and, empower local communities to withstand environmental pressures and promote the overall establishment of their sustainable life.

3.3.2. Community Infrastructure

Community infrastructure that contributes towards sustainable lifestyles ensuring protection of the environment and greater resilience of the community to climate risks directly strengthens environmental, personal, food, health, economic and community security.

The survey on green infrastructure unveiled that roughly 14 percent of the participants had a grasp of the concept. However, this comprehension exhibited notable differences across

the two distinct local units. 27 percent of respondents from Barekot Rural Municipality were acquainted with the idea of green infrastructure, whereas only about 2 percent from Nalgad Municipality were aware of it.

Basic awareness of respondents about green infrastructure	Municipality		Gender		Total	
	Barekot Rural Municipality	Nalgad Municipality	Male	Female	Frequency	Percent
Yes	26.7%	1.9%	16.0%	12.3%	117	14.2
No	73.3%	98.1%	84.0%	87.7%	707	85.8
Total	100.0%	100.0%	100.0%	100.0%	824	100.0

Table 9: Percentage of respondents who have a basic awareness about green infrastructure.

Nearly all respondents from both local units indicated that they were familiar with community forests. Each community ward is associated with at least one community forest. These community forests are managed and operated by the forest user committee within the respective ward. Most people depend on the community forests for various needs such as firewood and grass for their livestock and resources.

When it comes to other initiatives such as agroforestry and conservation agriculture, a notable gap emerges, and those in Barekot Rural Municipality are more familiar with them. The data illustrates the variations in familiarity with the environmental and conservation concepts between the two regions.

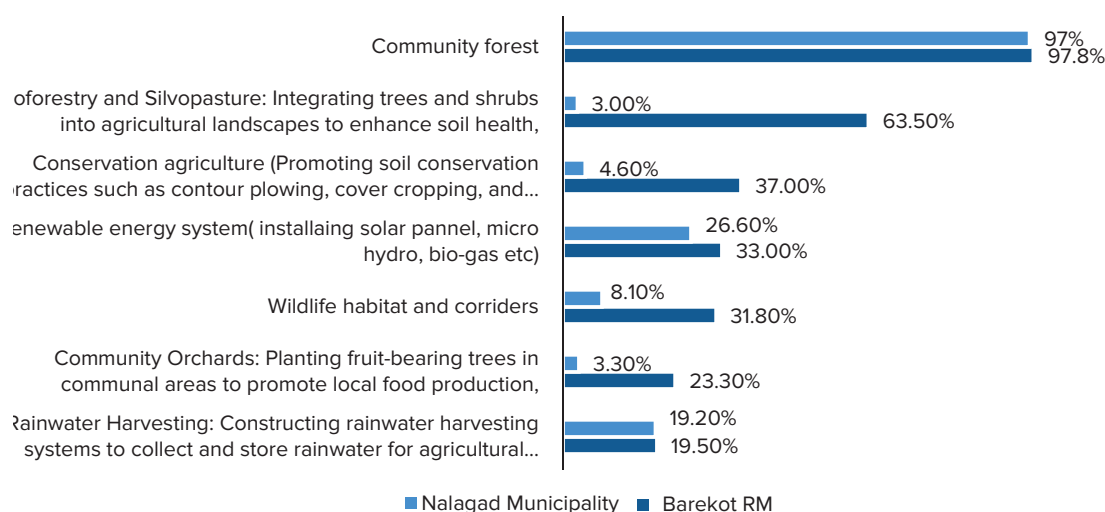### Types of Cliamte Adapative Infrastructure Prevalent in the Surveyed Areas

Figure 31: Types of green infrastructure prevalent in the surveyed areas

Community Engagement in Green Jobs

The International Labour Organization (ILO)[55], defines green jobs as decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. Among the total respondents only 1.3 percent are actively aware of the green job initiatives undertaken by the municipalities. These green job initiatives primarily involve developing and managing community forests and tree plantation efforts. Of the respondents who acknowledged the presence of green infrastructure projects initiated by the Municipality,

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[55] World Employment and Social Outlook- Greening with jobs, ILO, 2018

12.6 percent have actively become involved in green job activities. Upon closer examination, 11.5 percent of these individuals are from Barekot Rural Municipality, while a more significant proportion of 22 percent are affiliated with Nalgad Municipality. This observation potentially suggests a higher participation rate in Nalgad Municipality compared to Barekot Rural Municipality. Furthermore, looking at from the aspect of gender, it was found that males are slightly more actively involved in green job initiatives than their female counterparts.

Respondents engaged in green jobs created by the Municipality	Municipality		Gender		Total		
	Barekot Rural Municipality	Nalgad Municipality	Male	Female	Frequency	Percent (n=824)	Valid Percent (n=87)
Yes	11.5%	22.2%	14.0%	11.4%	11	1.3	12.6
No	88.5%	77.8%	86.0%	88.6%	76	9.2	87.4
Total	**78**	**9**	**43**	**44**	**87**	**10.6**	**100.0**

Table 10: Participants engaged in green jobs created by the municipality

Local Government Plans and Priorities to Strengthen Green Infrastructure

In both municipalities, a holistic approach to green infrastructure and the consideration of its potential benefits has still not been their main agenda. However, implementing nature-based solutions, such as afforestation and sustainable drainage systems, can mitigate the impacts of climate-related challenges. By reducing the risk of flooding, soil erosion, and other ecological disturbances, green infrastructure can safeguard local communities and strengthen their capacity to withstand environmental shocks. A balanced approach with an understanding of their current approach and the long-term benefits of green infrastructure can offer enhanced resilience, ecological benefits, and improved human security for residents in the face of evolving environmental challenges.

Barekot Rural Municipality

There is currently no dedicated plan for implementing green infrastructure construction projects. Recognizing the significance of infrastructure development, the municipality has identified an urgent need to address road infrastructure issues. Now they are planning to invest in road construction initiatives prioritizing convenience and accessibility. Therefore, their current approach is mainly focusing on immediate infrastructure requirements, not green infrastructure.

Nalgad Municipality

In comparison, in Nalgad Municipality, the understanding of green infrastructure appears to be centered primarily on community forests. The municipality is now taking an approach toward public awareness and engagement, particularly in relation to the management and utilization of community forests, showcasing a strong foundation of local involvement in managing natural resources with a notable presence of 45 community forest user committees across various wards. While broader green infrastructure initiatives may not be explicitly outlined, the active participation of users in community forests suggests a potential avenue for integrating green infrastructure principles in the future.

3.3.3. Early Warning System (EWS)

Barekot Rural Municipality lacks a formal Early Warning System (EWS), weather/rainfall stations, and hydrological stations. Furthermore, the report considers that only the installation of EWS is insufficient unless the community members are able to receive timely and accurate information to help strengthen their security. The survey noted that access to information from various EWS mechanisms faces a substantial lag and the community members rely on alternate methods for obtaining weather and disaster-related information, such as radio and social media. This

suggests a need for more comprehensive and structured information sharing to improve disaster preparedness. Likewise, in Nalgad Municipality the lack of a formal EWS and limited access to timely information about weather and disasters and the community's access to timely information on disasters poses a risk to the comprehensive security needs of the community.

The reliance on ad hoc communication methods underscores the need for a more robust and integrated approach to disseminating information and coordinating disaster response efforts. Furthermore, clarifying the roles and responsibilities of relevant personnel can enhance the effectiveness of disaster management initiatives and ensure a more coordinated approach to enhancing human security in the face of climate-related risks.

Likewise, the report notes that knowledge about the EWS systems and their role in ensuring multi-faceted security needs of the community is crucial to enable effective implementation of EWS. Without adequate knowledge of these systems by the community, their effectiveness would be compromised.

The survey conducted toward both municipalities shows that approximately 22 percent of the total respondents recognized EWS. This underscores a parallel awareness campaign in the communities, particularly amongst the more vulnerable populations, about the purpose, use and access to EWS system so the community is able to utilize them for their security needs.

General awareness of Early warning system	Municipality		Gender		Total	
	Barekot Rural Municipality	Nalgad Municipality	Male	Female	Frequency	Percent
Yes	40.2%	3.8%	23.9%	19.6%	180	21.8
No	59.8%	96.2%	76.1%	80.4%	644	78.2
Total	408	416	426	398	824	100.0

Table 11: Percentage of respondents who have a general awareness about early warning system

Access to EWS

According to the survey, a mere 1.7 percent of the respondents are fully aware of the EWS and the mechanisms to access and avail its benefits.

A prevailing trend emerged during the consultation with community members through Focus Group Discussions (FGDs), indicating that most respondents were unaware of the installation of an Early Warning System (EWS) in their localities. This lack of awareness was notable in Barekot Rural Municipality, where many respondents expressed unfamiliarity with EWS. Besides, the understanding of EWS is nearly nonexistent in Nalgad Municipality, with very few respondents indicating some knowledge of its installation.

These findings from the FGDs underscore the overall low level of awareness about the presence of an Early Warning System among the community members in both Barekot Rural Municipality and Nalgad Municipality.

This lack of understanding highlights the need for more significant efforts in communicating and educating the community about the existence and benefits of such systems. At the same time, its installments need to be expanded in response to the urgent situations caused by climate change.

Any EWS installed in the community/ward	Municipality		Gender		Total	
	Barekot Rural Municipality	Nalgad Municipality	Male	Female	Frequency	Percent
Yes	2.7%	0.7%	1.4%	2.0%	14	1.7
No	26.0%	69.5%	48.1%	47.7%	395	47.9
Don't know	71.3%	29.8%	50.5%	50.3%	415	50.4
Total	408	416	426	398	824	100.0

Table 12: Awareness of respondents about EWS installations in the community ward

Sources of Rainfall and Weather Information

Through the survey, it has become apparent that around half of the respondents have access to rainfall and weather information.

Looking at the specific sources of rainfall and weather information, it was found that their main one is radio, followed by social media. Sharing information with acquaintances and television were also mentioned.
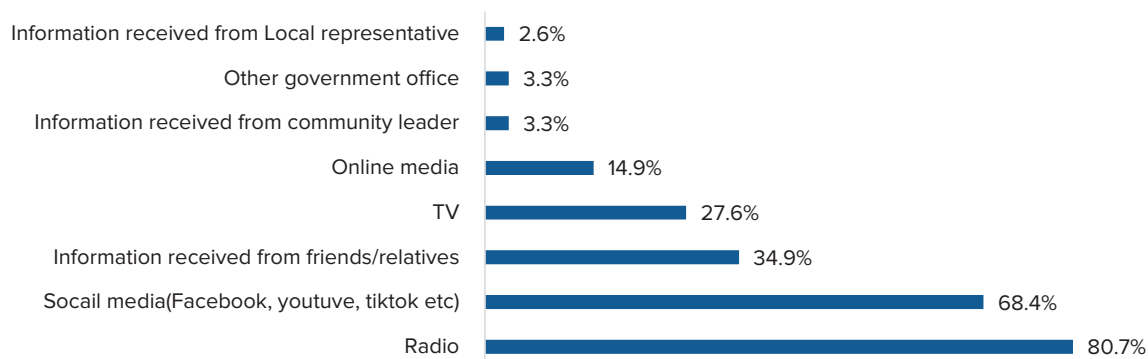
Sources of Information of Rainfall and Weather Information

Figure 32: Sources to get information about rainfall and weather by the respondents.

3.3.4 Energy

This section delves into the critical role of energy, particularly renewable energy sources, in mitigating risks and fostering resilience against potential disruptions caused by climate change. It examines how access to reliable and sustainable energy sources can contribute to enhancing human security for communities and individuals.

Training Experience

When assessing the extent of training in renewable energy technology, it turned out that only a few percentages of the participants had taken it.

Respondents who received renewable energy technology training	Municipality		Gender		Total	
	Barekot Rural Municipality	Nalgad Municipality	Male	Female	Frequency	Percent
Yes, I participate	25.2%	2.9%	14.6%	13.3%	115	14.0
Yes, but my other family member received	3.7%	0.0%	2.6%	1.0%	15	1.8
No	71.1%	97.1%	82.9%	85.7%	694	84.2
Total	**408**	**416**	**426**	**398**	**824**	**100.0**

Table 13: Percentage of respondents who received training on renewable energy

Using Tenewable Energy Technology

According to the survey conducted in both the municipalities, most of those who went through renewable energy training adopted renewable energy technology for their cooking stoves within their Municipality. This fact shows the effectiveness of the training and the necessity of expanding it.

Benefit for Women

When inquiring about the advantages utilizing renewable energy sources for women, it was revealed that an overwhelming majority of the respondents believe it benefits their health.

Additionally, some respondents pointed out that these sources were economically advantageous and environmentally friendly. This insight highlights the multifaceted benefits of renewable energy technologies for women, showcasing how they enhance their security including their health, economy and environment.

How renewable energy sources are helping women at household levels	Municipality		Total	
	Barekot Rural Municipality	Nalgad Municipality	Count	Percent
Health (cook stove without foam)	98.8%	80.8%	739	89.7%
It is economical/cheaper than other	21.1%	25.2%	191	23.2%
It is environment friendly	27.9%	14.2%	173	21.0%
Don't Know	0.5%	0.5%	4	0.5%
Total number	**408**	**416**	**824**	

Table 14: How renewable energy sources are helping women at the household levels

Renewable Energy Initiatives in Local Municipalities

Although there is a gap between both municipalities, some projects such as trainings in the use of renewable energy adoption particularly with cooking stoves are being carried out to expand the use of renewable energy technology. The initiatives showcase a significant step toward sustainable energy utilization within the community and are expected to lead to sustainable practice and improved lives from the perspective of human security.

Conclusion: Improving Human Security Through Local Climate Actions

4.1. Key Findings on Human Security and Local Climate Actions Interface at the Municipalities

Both the municipalities face high levels of risks threatening their objective to improve climate resilience, well-being, and progress of their respective communities. The key drivers for these risks were observed to be climate change and social inequalities. Both drivers have a direct correlation wherein the heightening of one lead to an increase in the other. This reaffirms the need for a comprehensive approach that combines efforts to address both drivers simultaneously: reducing inequalities and building climate-change resilience through local actions.

The promotion of tailored awareness campaigns, inclusive training programmes, and improved access to information will enhance climate resilience of the communities in both municipalities and fortify human security. By enabling equitable participation of the marginalized sections of society to raise their concerns, these efforts towards local climate action will help strengthen social cohesiveness and promote equality.

Successful climate action requires multi-faceted efforts, including collaborative partnerships, effective monitoring and evaluation, knowledge sharing, risk mapping, and capacity development. These elements work in synergy to enhance community resilience, ensuring that communities are well-prepared to tackle the challenges posed by climate change and build a sustainable and resilient future.

Climate-induced Vulnerability and Disasters

Landslides and floods have emerged as the primary concerns in the study area over the last decade. Barekot Rural Municipality experienced higher disaster incidents than Nalgad Municipality, resulting in higher human and livestock loss. Vulnerable groups such as children, women, PWDs, and senior citizens were disproportionately affected, underscoring the need for tailored climate smart strategies that consider the unique needs and vulnerabilities of these communities.

Floods endanger multiple dimensions of human security of the community as more than 90 percent of the populations in both municipalities are agrarian, impacting economic, personal, health and community security directly and other forms of security indirectly.

It underscores the importance of tailored local risk reduction strategies such as climate smart infrastructure that consider the unique needs of these groups, in line with the principles of human security.

Insufficient Community Engagement in Climate Governance and Climate-smart Practices and Training

Only 2.4 percent of the respondents from Nalgad Municipality and 13.5 percent from Barekot Rural Municipality, actively participated in official meetings on climate governance and policies, majority of which were held at the ward offices.

Amongst these participants, female representation was lower than the male representation by 6.5 percent showing the need to address lack of female participation in policy-making meetings which discourages the feminist discourse and issues from taking ground in policy-making agenda, reducing their personal autonomy and human security.

A high level of participation by the respondents to the tune of 43.1 percent from both municipalities, taking an active part in the budgetary meetings for disaster management. However, the issues raised by the participants were restricted only to climate-induced risks of diseases, insects, crop issues, landslides, lightning, floods, and no issues regarding the inter-related nature of human security issues that stem from climate-induced risks and vulnerabilities like social security, food and nutritional subsidies, healthcare facilities particularly for the vulnerable groups, were raised.

Approximately 10 percent of respondents participated in climate adaptation and disaster training from both municipalities. The training components included climate-resilient crop selection, agroforestry, and improved animal housing, which have produced positive results in the participants progress towards knowledge about these subjects and adoption of climate smart practices. Barekot residents showed higher training participation and resultant adoption of climate-smart agricultural practices with more than 25 percent, in comparison to Nalgad Municiplaity where only 2.9 percent respondents had adopted climate-smart practices. This highlights the potential of targeted training programmes to enhance climate resilience at the community level.

Renewable Energy Adoption: A Key Driver of Local Climate Action

The respondents from both municipalities showed a high level of awareness about the importance of renewable energy adoption to mitigate the impact of climate change.

Despite the high level of awareness, only 12.5 percent of respondents have shifted to renewable energy means. The low tendency can be attributed to lack of training and resources to adopt renewable energy. Less than 10 percent of the respondents from both municipalities had access to renewable energy trainings. Despite low number of trainings organized in renewable energy and smart agriculture, there was a strong correlation between receiving training and the consequent adoption of renewable energy practices by the respondents, showing the effectiveness of training. 91.2 percent of respondents from Barekot Rural Municipality and 90 percent from Nalgad Municipality who received training in renewable energy adopted the practices in their daily lives.

The adoption of renewable energy was found to be driven by both particularly through the adoption of technologies like improved cooking stoves which had positive impacts on the health and personal security of women, considering their primary role as homemakers. This model of inclusive climate action suggests that reducing inequalities and building resilience to climate-induced risks can go together. This principle can guide other local climate actions, ensuring equitable participation, inclusiveness and mutual benefit sharing between all groups, leaving no one behind.

Inadequate Early Warning Systems and Information Accessibility

Out of the twenty-two percent of the respondents who are aware of the Early Warning System (EWS), only 1.7 percent are able to access and avail themselves of its benefits for access to timely and adequate information. This results in high dependence on informal sources of information like social media and friends and relatives. The reliance on informal sources of access to information is also due to lack of formal information dissemination networks, particularly in Nalgad Municipality. The access to weather and rainfall information was more prominent in Barekot Rural Municipality, possibly due to communication infrastructure and media consumption habits.

Limited Capacity at the Municipality

The municipal staff members who have the responsibility of addressing Disaster Risk Reduction (DRR) and Climate Change Adaptation have limited exposure to climate adaptation and lack the required technical skills. There is limited training to upskill these officials in terms of DRR and CAA to match the rapidly changing contours in the field which continue to pose new and emerging challenges in climate governance.

The municipalities face infrastructural and funding challenges during disaster response and relief, particularly road access which increases the vulnerabilities of the community to climate disasters. The level of preparedness for DRR and adoption of climate-smart agricultural practices and support for these from local government were found to be limited. The Municipality provided training and distributed seeds in order to support livelihoods. However, the support is limited, and implemented in pockets lacking a continuous initiation and long-term strategy.

Barekot Rural Municipality and Nalgad Municipality have the institutional and fund frameworks like the emergency operation centre and the disaster management. These centres are created on an ad hoc basis, lacking institutionalization. The process of availability of funds is insufficient to meet the constantly emerging and increasing needs of climate governance and environmental security in the community. The fund disbursement process lacks an effective SoPs to guide proportional and targeted relief distribution particularly considering the needs of the vulnerable populations.

4.2. Recommendations and Way Forward: Towards a Strengthened, Resilient and Secure Community

The recommendations aim to further empower the local communities in Barekot Rural Municipality and Nalgad Municipality by enhancing their climate resilience, thus promoting human security. Stakeholders at various levels are encouraged to collaborate, share knowledge, and build institutional capacity to strengthen resilience in the face of climate-induced challenges.

Increase Education and Awareness on Issues Related to Climate-induced Risks, Disasters and Vulnerabilities

Initiating comprehensive education campaigns on climate-related risks, vulnerabilities and disasters is crucial to create a deeper understanding of interrelated and complex nature of these phenomena which can have multifaceted results on the lives, livelihoods and infrastructure.

These campaigns should be disseminated through various media channels, including radio, television, and social media. More than 90 percent of the people from both municipalities actively engage through these channels.

Collaboration with schools and educational institutions is essential to ensure that the younger generation is well-informed and actively engaged in climate education. By educating the community about the complexities of climate change, we can lay the groundwork for long-term human security.

Tailor Disaster Preparedness and Response to Address the Needs of the Vulnerable Sections

The vulnerable sections of society like women, expecting mothers, children, the PWD and elderly have different needs which are not mainstreamed into the municipality's disaster management plans and funds. Tailoring disaster preparedness plans to address the specific vulnerabilities of these groups is important to ensure human security of every individual and the community. An

SoP should be developed for the disaster management fund which recognizes and allocates relief and response funds to meet the special needs of the vulnerable groups such as access to medicines for the elderly, special equipment for the PWD, nutritional requirements for mothers etc.

It is important to establish community-based early warning systems using disability-friendly and accessible technologies like images and audio messages for better inclusivity.

Regularize Targeted and Needs-based Climate-adaptive Training

The field study finds that climate-adaptive training is directly correlated to a higher level of climate smart agricultural action on the part of the participants. Currently, the trainings are restricted to certain areas, address the needs of mostly male participants and the agricultural profession, and happen irregularly without any institutionalized mandate. There is a requirement of more trainings which are targeted to suit the profiles of the participants like mothers, farmers, livestock farmers, school children, youth etc. The trainings should also be consistent and held regularly to accelerate climate action and produce impactful results. It should be address timely, regular and inclusive mechanisms of building the capacity of the community to address climate risk and vulnerabilities.

These programmes should emphasize practical skills, such as climate-resilient crop selection, agroforestry, and improved animal housing. Collaborating with local agricultural extension services to provide hands-on training, workshops, and demonstrations on climate-adaptive farming practices empowers communities to safeguard their livelihoods.

Institutionalize Inter-municipality Collaboration: Sharing Good Practices for Accelerated Climate Action and Community Resilience

Building on the findings that highlighted differences in climate change awareness, disaster incidence, and access to resources between Barekot Rural Municipality and Nalgad Municipality, fostering inter-municipality collaboration is important. For example, Barekot Rurual Municipality has a better information dissemination network and people of the municipality were more engaged and aware of the various risks of climate-induced disasters.

The municipality governance officials can share good practices, learn from each other's experiences, and collectively address climate challenges.

To facilitate this, initiatives such as institutionalized knowledge exchange programmes, joint disaster preparedness drills, and collaborative resource sharing can be instrumental. Moreover, this approach can enhance the inclusivity of climate actions, ensuring that no community is left behind in the pursuit of human security.

Promote Gender-responsive and Disability-inclusive Local Climate Actions

Renewable energy adoption in the two municipalities is promoting gender-equality through participation and mutual benefit sharing between men and women. The study from the field shows that adoption of renewable energy for cooking has improved the health of women. This example could lead the way forward for similar interventions in other local climate actions like green jobs and community infrastructure where women are yet to play an equal role. The PWD population, a minority in both municipalities, require special efforts for their integration into local climate actions. It can be done by designing disability-friendly information, education, and communication materials for greater participation of the PWDs and awareness about their unique needs. Improving access to disability-friendly designed facilities can enable them to play a greater role in decision-making and climate governance.

Foster Collaboration Between Communities and Governance Mechanisms

Fostering community engagement through regular consultations, focus group discussions, and participatory workshops empowers individuals and allows them to actively contribute to decision-making processes including decision-making related to climate action and development interventions.

Encouraging the establishment of local committees or forums dedicated to climate change ensures that diverse perspectives are represented and enhances the inclusivity of all dimensions of human well-being. Enhancing access to weather and rainfall information is important for achieving environmental security, and the establishment of weather monitoring stations and collaboration with local media outlets is a key enabler.

These recommendations aim to empower communities, strengthen their resilience, and promote community engagement in decision-making processes related to climate action and human security.

For more information on the project **"Enhancing Human Security through Local Climate Actions"** please scan

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