Khumbu Pasanglhamu Rural Municipality

Local Adaptation Plans of Action (LAPA) June 2025

THE INTERDEPENDENT ECOSYSTEM

AND

WELLBEING OF ALL SENTIENT BEINGS

ཕུ་ལ་གངར་རྒྱི་དཀར་པོ་མ་ཆགས་ན། མདོ་ལ་གཡུ་མཚོ་སོན་མོ་ཁ་ལ་ཆ།
མདོ་ལ་གཡུ་མཚོ་སོན་མོ་མ་ཆགས་ན། ཆུ་ལ་གནས་པའྱི་ཉ་རྒྱུད་གུང་ལ་ཆགས།
གངར་རྒྱི་དཀར་པོ་ཤེལ་གྱི་མཆོད་རྟེན་འདྲ། ཛ་རྒྱི་སྨུག་པོ་གཡུ་ཡྱི་མན་ཏྲ་འདྲ།

Phu la gangri karpo macha na. Dola yumtsho ngonmo khala cha.
Dola yumtsho ngonmo ma cha na. Chhu la newi nyachun khala cha.
Ghangri karpo shegyi choten da. Dzaru mugpo yuyi mendal da.

“If the white mountains with snow does not form in the highlands, how will the green lakes form in the lowlands? If the green lakes do not form in the lowlands, how will the water dependent fishes exist. The white snow mountains are like crystal stupas. The dark-red glacial moraines are like a turquoise mandala.”

Sherpa song translated and edited by Dr. Lhakpa Norbu Sherpa, 2025

Khumbu Pasanglhamu Rural Municipality

Chaurikharka, Solukhumbu

2025

Prepared by: Pasang Yangjee Sherpa, the Sherpa Lab at the University of British Columbia
Prepared for: Khumbu Pasanglhamu Rural Municipality, Solukhumbu
Facilitated by: Himalayan Trust Nepal

Technical and Financial Support: UNDP

Remarks by Chair, KPLM

Remarks by Vice-Chair, KPLRM

Remarks by Chief Administrative Officer, KPLRM

Table of Contents

List of Tables

List of Figures

List of Maps

List of Satellite Images

Terms and Terminologies

Weather: Weather is the daily changes in the Earth's atmosphere, such as temperature, precipitation, air pressure, humidity, etc. It changes every day, week, and month.

Climate: The average weather conditions over a long period of time (about 30 years). Generally, the climate remains constant depending on the location, season, and weather. Its parameters are the same as those of the weather.

Climate Change: The average change in the composition of the air over a long period of time is called climate change. Humans have been experiencing and understanding change in climate following diverse knowledge systems.

Climate Justice: The impacts of climate change are being felt disproportionately. Countries and communities that contribute the least to global greenhouse gas emissions are the ones most affected by the impacts of climate change. They are also often the least resourced to adapt to climate change effects. The climate justice movement argues that the people, companies, and countries that have benefitted most from carbon emissions are the ones most responsible for climate change, and should therefore help the communities most affected.

Sensitivity: Sensitivity is the positive or negative impact that climate change may have on the economic, social, biological, and physical conditions of any individual or community.

Vulnerability: An individual or social group with relatively low capacity and insufficient resources to cope with, prevent, and recover from potential disasters is vulnerable. Vulnerability refers to elements of risk that make individuals, groups, or systems susceptible to the damaging effects of hazards.

Exposure: Exposure is the presence of people, property, systems, or other elements in an area where a disaster may occur.

Mitigation: Mitigation measures taken to reduce the proportion of greenhouse gases in the atmosphere that contribute to climate change are called climate change mitigation. Mitigation can be achieved by increasing the use of renewable energy sources compared to nonrenewable energy sources. Similarly, natural carbon sinks such as forests ecosystems can be improved.

Preparedness: is the process of reducing the damage caused by a disaster or dealing with it before it occurs. This can be achieved by taking steps such as early preparation, establishing early warning systems, and development planning based on disaster risk impact assessments.

Climate Change Adaptation: refers to the actions taken by people and governments to reduce the harmful impacts of global warming on the environment, society, public health and the economy. For adaptation to be meaningful, practical solutions need to be identified for each country, region and community.

Adaptive Capacity: The ability to adapt to a changing situation is called adaptive capacity.

Maladaptive Actions (Maladaptation): Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased vulnerability to climate change, or diminished welfare, now or in the future. Maladaptation is usually an unintended consequence.

Capacity: Capacity is the resources, means, qualities and strengths of any individual, organization or community that help them cope with disasters, prepare for them, prevent and mitigate disasters.

Resilience: Climate resilience is the ability of a community to recover from extreme weather events caused by climate change, including the ability to cope with the impacts of climate change. Whereas adaptation refers to the changes made to a system to 'adapt,' resilience refers to the ability to return to a 'normal' state after a disaster caused by climate change.

Climate Refugees: Climate refugees are a term used by some activists and analysts to describe people who have been forced to flee their homes due to climate-induced disasters.

Biodiversity: Group of different species of animals and plants found in a particular area is called biodiversity. Animals, plants, and microorganisms that interact with each other members of the ecosystems.

Ecosystem: An ecosystem is a group of biological communities that include animals, plants, and microorganisms as well as the physical materials such as water and soil that interact with each other. An ecosystem can be as large as an entire forest area or spread over many smaller areas.

Circular Economy: In a circular economy, resources are reused and recycled, minimizing waste and achieving high resource utilization. In a traditional economy, resources are discarded after extraction and use, but in a circular economy, resources that have been used are re-added to the production chain to maintain a continuous cycle of resource use and recycling.

Nature-Based Solutions: The International Union for Conservation of Nature (IUCN) defines nature-based solutions as "solutions that conserve, manage and restore natural or altered ecosystems with the aim of delivering human well-being and biodiversity benefits and addressing societal challenges in an effective and adaptive manner."

Early Warning System (EWS): A system that provides information to individuals or communities in risk areas to be prepared and take appropriate action in a timely manner to reduce potential damage.

Response: To ensure the safety of the general public and to provide emergency services and assistance during and immediately after a disaster to protect human life and minimize the impact to human health.

Recovery: Reestablishing and improving basic facilities and livelihoods of disaster-affected communities.

Risk: Risk is the potential for harm, loss, or damage due to potential disaster, or the potential for damage or disruption to a community structure or geographic area due to a disaster.

Disaster: A catastrophic situation in which lives of people are suddenly disrupted, often resulting in loss of life and requiring urgent attention to essential human needs, such as safety, food, shelter, clothing, medical treatment, and social services.

Hazard: An event that can occur due to an activity or natural cause within a specific period of time within a specific geographical area, which cause potential harm and can lead to disaster.

Geological Hazards: Geological hazards include disruptive and destructive events such as earthquakes, volcanoes, and tsunamis that occur less frequently but with high impact and events such as landslides and riverbank erosions that may occur more frequently but with comparatively less impact.

Disaster Risk Reduction: Risk reduction is the action taken to reduce the damage and risks that may be caused by climate change and weather-related extreme events (extreme weather events). The practice of reducing disaster risk through systematic efforts, including the intelligent management of land and the environment, disaster risk reduction, and preparedness for adverse events.

Loss and Damage: The impacts of climate change include more frequent severe floods, heat waves, and rising sea levels. In some cases, it is impossible to adapt to these changes. Lives are lost. Land becomes uncultivable. Habitats are permanently altered. The social and economic impacts of climate change that cannot be adapted to or avoided are called loss and damage. Loss and damage can be economic in nature. Loss and damage could also be non-economic such as cultural traditions, Indigenous Peoples' Knowledge, and biodiversity.

Green House Gases – GHGs: The gases in the atmosphere that are responsible for global warming and climate change are called greenhouse gases. According to Annex 1 of the Kyoto Protocol 1997, greenhouse gases include six types of gases: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2o), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF6). The Conference of the Parties (COP18) held in Doha, Qatar added nitrogen trifluoride (NF3), bringing the number of greenhouse gases to seven.

Climate Friendly Development: Development work that is carried out to reduce greenhouse gas emissions and mitigate climate change is called climate-friendly development.

Climate Finance: Climate finance is the flow of finance from developed countries to developing countries to address the impacts of climate change. It refers to local, national and international finance mobilized from developed countries through public, private or alternative sources to mitigate and adapt to the impacts of climate change in developing countries. Developing countries ensure that the available funds are used to build low-carbon and climate change adaptation.

United Nations Framework Convention on Climate Change (UNFCCC): It is a mechanism established during the Earth Summit held in Rio de Janeiro, Brazil in 1992. This convention was passed by various countries of the world to address the global climate change. It has been ratified by 196 countries and has been in effect since 1994. The main objective of this convention is to stabilize greenhouse gases in the atmosphere at the committed level within a certain period of time.

Intergovernmental Panel on Climate Change (IPCC): This is an international mechanism of scientists, volunteering from around the world, working in the field of climate change. It is an intergovernmental group or intergovernmental agency established in 1988 that assesses the impacts of human-made climate change.

Conference of Parties (COP): The Conference of the Parties (Member States) refers to the meeting of the Parties to the UNFCCC. It is the most powerful body of the UNFCCC and is held towards the end of each year in November or December. The COP3 conferences held in Kyoto, Japan in 1997, COP13 in Bali, Indonesia in 2007, COP 15 in Copenhagen, Denmark in 2009, and COP21 in Paris, France in 2015 were particularly important in making key international climate change agreements. COP24 was held in Poland in December of 2018, where important decisions were made regarding the Paris Agreement.

National Adaptation Program of Action: The National Adaptation Program (NAP) is a draft adaptation plan agreed upon at COP7 held in Marrakesh, Morocco in 2001. This NAP is a joint initiative of the least developed countries to address climate change. It is an action plan developed to address the principles adopted under the UNFCCC. It refers to the actions that need to be taken urgently to address the adverse effects of climate change. Nepal submitted a National Adaptation Program to the UNFCCC in 2010.

National Framework of Local Adaptations Plans of Action (National Framework of LAPA): The Ministry of Environment, Government of Nepal, has prepared a national framework for local adaptation plans of action to take the programs identifies by the National Adaptation Program of Action (NAPA) to the community level. This framework, which was approved and implemented in 2011, was reviewed and revised in 2019 to make it compatible with the existing governance structure. The local adaptation action plan prepared according to this framework is called LAPA.

National Adaptation Plan: National Adaptation Plans are prepared by developing country members to meet short-term and long-term needs in line with the objectives of the United Nations Framework Convention on Climate Change. Nepal has prepared a National Adaptation Plan for 2021 to 2050, which includes the development and implementation of strategies and plans to address climate change adaptation needs.

Sources:

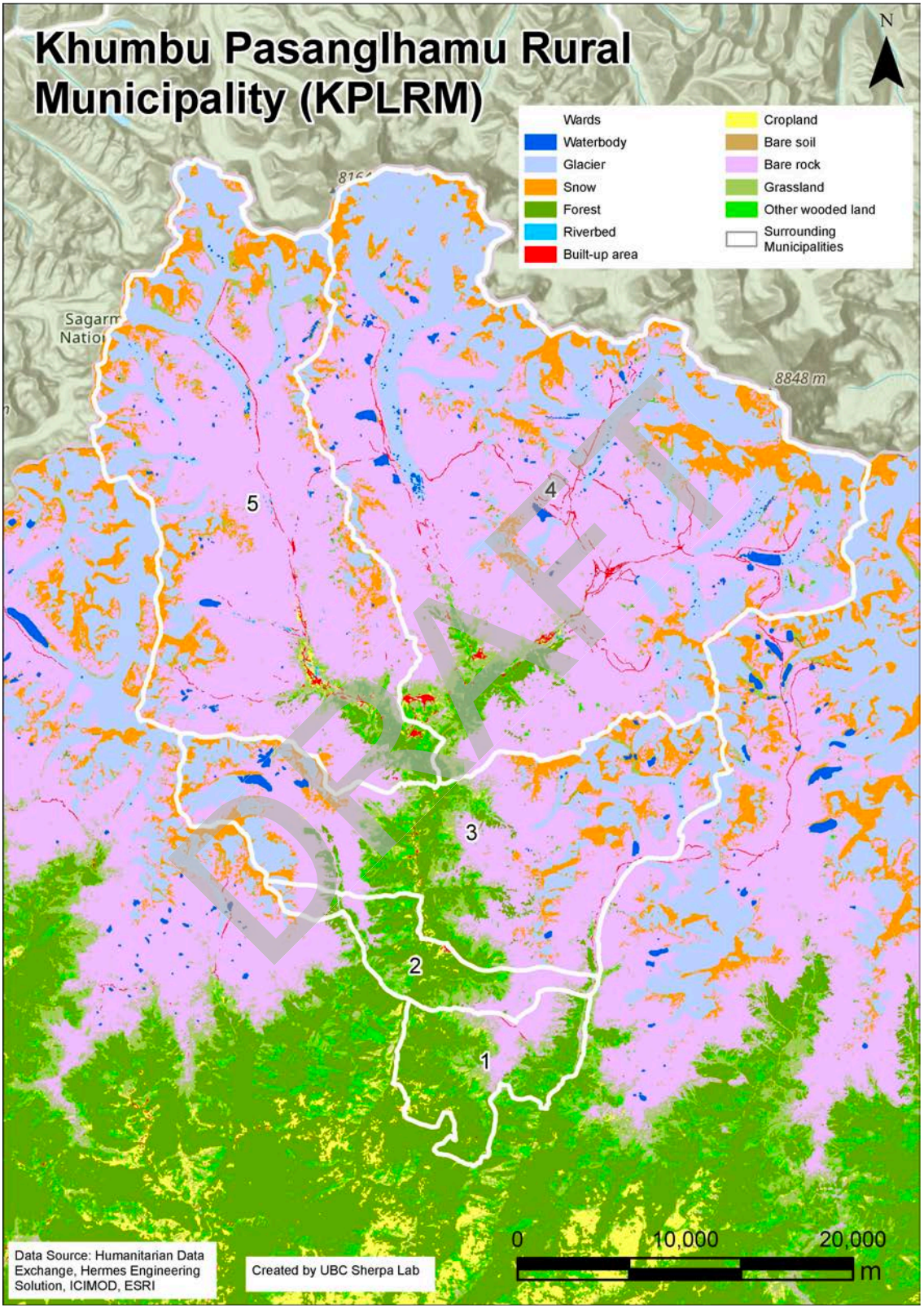
Chedagad Municipality, Ward 11, Jajarkot Local Adaptation Plans of Action (2076/77 – 78/79)

Helambu Rural Municipality Local Adaptation Plans of Action (2081/82 – 85/86)

IPCC, 2021: Annex VII: Glossary [Matthews, J.B.R., V. Möller, R. van Diemen, J.S. Fuglestvedt, V. Masson-Delmotte, C. Méndez, S. Semenov, A. Reisinger (eds.)]. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 2215–2256, doi:10.1017/9781009157896.022.

Acronyms

COP	Conference of the Parties
DRR	Disaster Risk Reduction
EWS	Early Warning System
GEDSI	Gender Equality and Social Inclusion
GHGs	Green House Gases
HTN	Himalayan Trust Nepal
IPCC	Intergovernmental Panel on Climate Change
LAPA	Local Adaptation Plans of Action
MRF	Materials Recovery Facility
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
SNP	Sagarmatha National Park
SNPBZ	Sagarmatha National Park Buffer Zone
SPCC	Sagarmatha Pollution Control Committee
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change



Map 1. Khumbu Pasanglhamu Rural Municipality (KPLRM) showing natural and built-up area

GEDSI-LAPA Summary

The Government of Nepal prioritizes climate change adaptation at the local level. It has prepared the Climate Change Policy 2076, the National Adaptation Programme of Action (NAPA) 2067, the National Framework for Local Adaptation Plans of Action (LAPA) 2076, the Environmental Protection Act 2076, the Environment Protection Regulations 2077, the National Adaptation Plan and the Third Nationally Determined Contribution (NDC 3.0) to address the growing challenges from adverse impacts of climate change on local communities. The recently approved NDC 3.0 re-emphasizes Nepal's commitment to reduce national GHG emission levels as mentioned in previous NDCs despite contributing negligible amount to global GHGs emission. It also emphasizes the promotion of adaptation actions and efforts to address loss and damage with expectations of international support on climate financing, technology transfer and capacity building.

The national Climate Change Policy 2076 has also been implemented with the aim to mainstream climate change issues in policies, strategies, development plans and programs of all levels and thematic sectors of the state. This policy envisions a resilient society. The policy states that the implementation of climate change related national policies, strategies and plans will be carried out at the local level. In order to assist newly formed local governments in developing climate change adaptation action plans, a revised version of Local Adaptation Action Plan (LAPA) 2076 has been produced.

The Khumbu Pasanglhamu Rural Municipality (KPLRM) has adopted and implemented various climate change and disaster risk reduction and management activities in order to ensure a climate resilient rural municipality with improved adaptive capacity. KPLRM's current policies and programs for fiscal year 2081/82 as well as the annual program and plans listed for FY 2080/81 highlight the rural municipality's commitment and ongoing efforts to ensure a climate-resilient community.

In the Hindu Kush Himalaya, scientific reports have concluded that: glaciers disappeared 65 % faster in the 2010s than in the previous decade; mountain communities are already experiencing major adverse impacts such as loss and damage to lives, property, heritage and infrastructure; and floods and landslides are projected to increase (ICIMOD 2023). The climate change sensitization was informed by the latest climate science in the Hindu Kush Himalaya. Visual climate storytelling incorporated GIS maps, satellites images, oral history, and Indigenous ecological knowledge for a historical timeline of climate change impact and natural disasters.

In this context, the current KPLRM GEDSI-LAPA has been prepared following the national guidelines, with special attention to the Climate Change Gender Equality and Social Inclusion Strategy and Action Plan (2077-2087) and the GEDSI-LAPA Guidelines 2076, prepared by the UNDP Nepal. This GEDSI-LAPA highlights wellbeing-focused community-centered approach to climate change adaptation that have emerged from community consultations. It incorporates local values and ethics that supports wellbeing of all beings, humans and non-humans, noting the GEDSI practice already embedded in Indigenous socio-cultural systems of KPLRM. This GEDSI-LAPA is based on the values of the KPLRM residents that recognize the ecosystem as an interdependent whole, and its maintenance as a requirement for the wellbeing of all sentient beings.

It is common practice, and an understandable one, to equate climate change to natural disaster, and understand climate change risks only through the lens of destruction and damage as communities continue to face unprecedented and unpredictable extreme events with serious consequences to lives and livelihood. It is also common to see extinction-oriented narratives of climate change circulating widely. However, these are not the only ways climate change could be understood or responded to. It is important to acknowledge the drastic socio-economic and ecological changes KPLRM residents have faced since the advent of the tourism industry in the 1950s and the gradual intensification of climate change impacts in recent decades. It is also important to remain aware of how KPLRM communities have continued to thrive under these circumstances. Furthermore, it is crucial that existing climate-friendly and resilient traditional lifeways are supported to further strengthen community's resiliency and increase adaptive capacity.

Khumbu Pasanglhamu Rural Municipality GEDSI-LAPA

Ward-level community consultations (5), stakeholder consultations (3), and a series of consultations with individuals and institutions from KPLRM were conducted to prepare this GEDSI-LAPA. Climate change sensitization was carried out throughout the preparation process, and participation was sought from all members of the society in accordance to GEDSI guidelines. Each of the consultation assessed climate change impacts and vulnerability followed by formulation and prioritization of locally appropriate adaptation plans.

The GEDSI-LAPA consultations were conducted between April and June of 2025. As such, the information presented here reflects the discussions that took place at this particular time. Climate change impact at the local level is an evolving phenomenon, just as the community itself is constantly changing in response to a variety of socio-economic, ecological, and political stimuli. Therefore, this document should be considered a reference document that paves the way forward to mainstreaming future GEDSI-climate change adaptation activities into policies, development plans and programs.

It should be noted that this report comes on the heels of the Ngole GLOF of 2024 that devastated the village of Thame and downstream communities, especially in Ward 3. Disaster risk reduction and management thus appears here as a salient theme in light of recent GLOF experience and the overall emphasis on melting of glaciers and GLOF risk when it comes to climate change discussions. This report, however, shows that climate change impact is widely distributed across the eight sectors: Agriculture and Food Security; Forest, Biodiversity and Watershed Conservation; Water Resources and Energy; Disaster Risk Reduction and Management; Health, Drinking Water and Sanitation; Rural and Urban Settlement; Industry, Transportation and Physical Infrastructure; and Tourism, Natural Heritage, and Cultural Heritage.

Table 1. Summary of Khumbu Pasanglhamu Rural Municipality GEDSI-LAPA

	Topic	Details
1	Rural Municipality Borders	To the east: Makalu Rural Municipality and Mahakulung Rural Municipality; Umakunda Rural Municipality and Gaurishankar Rural Municipality. Northern region borders the Tibetan Autonomous Region of China. To the south:

		Solududhkunda Municipality, Mapya Dudhkoshi and Sotang Rural Municipalities.
2	Number of Wards	5
3	Former Village Development Committees	Juving VDC wards 1,5,6, and 9; all wards of Chaurikharka VDC, Namche VDC, and Khumjung VDC
4	Area	1452.62 sq km
5	Total Population	8720 (2078 Census)
6	Climate	Temperate, sub-alpine and alpine zones
7	Main Ethnicities	Sherpa, Rai, Tamang
8	Highest Altitude	8848.86
9	Religions	Buddhism (72.5%), Hinduism (16%), Kirat (0.09%), Christianity (0.02%)
10	Main Languages	Sherpa, Tamang, Nepali, Magar Dhut, Kulung,
11	Main Occupation	Tourism and Mountaineering; Agriculture; Animal husbandry
12	Major Disasters	Glacial lake outburst floods (GLOF), snow avalanche, river bank erosion, earthquakes, landslides, human-wildlife conflict, windstorms, fires and epidemics
13	Climate Change Effects and Impacts	Frequency of climate-induced disasters such as GLOFs, and landslides have increased. Riverbank erosion and landslides are causing direct threat to settlements and agricultural fields. Unpredictable rainfall and snowfall patterns have impacted traditional farming methods, making it less profitable for farmers to continue. Additionally, warming temperature has made it possible for wildlife from lower altitude such as porcupine and monkeys to come to higher, colder villages and destroy crops and harm cattle. As a result, traditional farmers and herders are seeking alternative low-risk livelihood opportunities. Bacterial infection in yaks, which used to be found in lower altitude have been noted in KPLRM. This highly contagious infection has been reported to kill the animal within 24 hours. Proper investigation and prevention measures are urgently needed. Up to 17 yaks were reportedly killed by the disease within a week during community consultation visits in KPLRM. Mosquitoes are now seen more frequently in KPLRM wards 1-3. It was not possible to see mosquitoes 30 years ago.

14	Main Prioritized Adaptation Action Plans	1. High cost, techno-managerial projects, usually connected to disaster risk reduction • Lake lowering project at Lumding Tsho and other critical glacial lakes based on field surveys 2. Protect and sustain existing high resilient practices • Install fire hydrants in all villages. Provide trainings and necessary equipment for fire risk management. GEDSI participants should be prioritized. • Activate disaster management committees at the tole level. Establish early warning system with regular updates and trainings to disaster management committees. Construct and maintain emergency shelters. • Provide materials and technical support to build gabion walls on eroding riverbanks and landslide prone areas. 3. Enhance climate resiliency and adaptive capacity of residents • Training on off-season commercial vegetable farming, maintaining organic quality of the crops, and increasing agricultural productivity. Open new market for farmers from ward 1, utilizing the new road connectivity. Construction of cold stores for food storage. • Reforestation of barren lands with altitude appropriate plants, and water storing plants around dying/dead streams. Creation of new nursery at higher altitudes. Provide fencing materials to protect young plants from grazing animals. 4. Maintain existing infrastructure, upgrade as needed • Construction and maintenance of footpath off the main trekking trails, drainage system inside settlements and on roadsides. 5. Research, monitoring and capacity building • Provide income generating, new skill development trainings regularly to GEDSI participants; provide climate change awareness trainings regularly in all wards.
15	Coordination, Mainstreaming, Monitoring and Evaluation of Local Adaptation Plans of Action	This adaptation action plans will be initiated by the tole level committees and approved by the ward level plan prioritization, budget and program formulation, and executive meetings. These action plans will be mainstreamed by adjusting it for implementation in the annual and periodic plans of relevant government and non-government agencies. The process of developing and implementing local adaptation action plans to address negative impacts on human and ecological systems will ensure access by women, children, elderly, people with disabilities, and

	those from socio-economically and culturally disadvantaged communities. The process and progress of the activities, including the process of selecting beneficiary groups, will be monitored and evaluated at all times at the tole and ward levels. The results and achievements based on GEDSI indicators will be evaluated and monitored at the rural municipality and district levels through semi-annual and annual reviews and field monitoring.

Estimated budget for implementing action plans based on sectors is presented below. Detailed description is presented in chapter 5.

Table 2. Estimate budget for eight sectors of Local Adaptation Plans of Action

	Eight Sectors	Amount
1	Agriculture and Food Security	2,64,00,000
2	Forest, Biodiversity and Watershed Conservation	1,11,00,000
3	Water Resources and Energy	5,60,50,000
4	Disaster Risk Reduction and Management	30,89,00,000
5	Health, Drinking Water and Sanitation	7,81,80,000
6	Rural and Urban Settlement	21,01,00,000
7	Industry, Transportation and Physical Infrastructure	9,68,00,000
8	Tourism, Natural Heritage, and Cultural Heritage	90,00,000
8	GEDSI	6,57,50,000
	Total	**86,22,80,000**


COMMUNITY CONSULTATION WORKSHOP


EVEREST
-70-
CELEBRATING A DEFINING
ACHIEVEMENT AND AN
ENDURING LEGACY

1. GEDSI-LAPA: An Introduction

1.1. Background

Anthropogenic climate change is causing irreversible and detrimental changes at the planetary scale threatening the health, wellbeing, and security of the people. At the global level, the Intergovernmental Panel on Climate Change (IPCC) synthesizes the science related to climate change and highlights how climate change is impacting different groups. The science is clear that climate change effects are becoming more severe than in the past decades due to ongoing rapid industrialization, deforestation and forest degradation, uncontrolled urbanization, increasing use of vehicles, and excessive emission of greenhouse gases. It is also known that not everyone in society is vulnerable to negative climate change effects or impacted by climate change in the same way.

As a Himalayan country, Nepal is facing some of the most serious consequences of climate change. Even as the world negotiates to lower the emission of greenhouse gases (GHG) as a mitigation measure, high-altitude Himalaya continues to witness rising temperature that is higher than the global average. In the mid-hills and terai regions of Nepal, climate change effects have caused increased frequency and intensity in extreme events. Excessive rainfall, drought, and hailstorms are becoming unpredictable and more frequent. Thus, climate change can be likened to a wicked problem since a linear problem-solution model is insufficient and inadequate to address the multidimensional nature of climate change. Business-as-usual development approach will not work when it comes to climate change adaptation. Increasing climate change adaptative capacity requires a broader, integrated approach that recognizes the differentiated vulnerabilities in a community, and does not leave behind the most marginalized.

The Government of Nepal prioritizes climate change adaptation at the local level. It has prepared the Climate Change Policy 2076, the National Adaptation Programme of Action (NAPA) 2067, the National Framework for Local Adaptation Plans of Action (LAPA) 2076, the Environmental Protection Act 2076, the Environment Protection Regulations 2077, the National Adaptation Plan and the Third Nationally Determined Contribution (NDC 3.0) to address the growing challenges from adverse impacts of climate change on local communities. The recently approved NDC 3.0 re-emphasizes Nepal's commitment to reduce national GHG emission levels as mentioned in previous NDCs despite contributing negligible amount to global GHGs emission. It also emphasizes its promotion of adaptation actions and efforts to address loss and damage with expectations of international support on climate financing, technology transfer and capacity building.

The national Climate Change Policy 2076 has also been implemented with the aim to mainstream climate change issues in policies, strategies, development plans and programs of all levels and thematic sectors of the state. This policy envisions a resilient society. The policy states that the implementation of climate change related national policies, strategies and plans will be carried out at the local level. In order to assist newly formed local governments in developing climate change adaptation action plans, a revised version of Local Adaptation Action Plan (LAPA) 2076 has been produced.

The Khumbu Pasanglhamu Rural Municipality (KPLRM) has adopted and implemented various climate change and disaster risk reduction and management activities in order to ensure a climate resilient rural municipality with improved adaptive capacity. KPLRM's current policies and programs for fiscal year 2081/82 as well as the annual program and plans listed for FY 2080/81 highlights the rural municipality's commitment and ongoing efforts to ensure a climate-resilient community.

In this context, the current KPLRM GEDSI-LAPA has been prepared following the national guidelines, with special attention to the Climate Change Gender Equality and Social Inclusion Strategy and Action Plan (2077-2087) and the GEDSI-LAPA Guidelines 2076, prepared by the UNDP Nepal. This GEDSI-LAPA highlights wellbeing-focused community-centered approach to climate change adaptation that have emerged from community consultations. It incorporates local values and ethics that supports wellbeing of all beings, humans and non-humans, as a GEDSI practice already embedded in the local socio-cultural systems.

1.1.1. GEDSI-LAPA framework, needs and area

The GEDSI-LAPA framework was designed to address social inequalities and ensure the participation to ensure benefits to all people. This framework recognizes the diverse risks, capacities, and needs of Indigenous Peoples, women, senior citizens, single women, gender minorities, people with disabilities, socially and economically marginalized communities, and other marginalized members of society. Integrating the Gender Equality and Social Inclusion (GEDSI) Strategy and Action Plan into LAPA and developing gender equality and social inclusion responsive targets at the local level is an important aspect of the GEDSI-LAPA framework. It highlights the need to build a gender-responsive strategy and take gender-responsive strategies in an integrated manner to build a climate-resilient and inclusive society. GEDSI-LAPA also contribute towards mitigating the impacts of climate change by implementing adaptation action plans in line with Nationally Determined Contributions (NDC 3.0).

Table 3. Vulnerability rating for Solukhumbu District and KPLRM

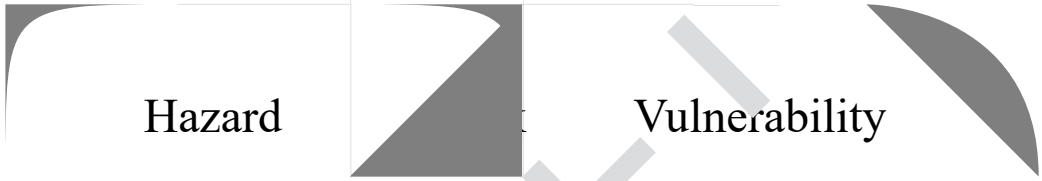
	Sensitivity	Exposure	Adaptive Capacity	Vulnerability
Solukhumbu District	Very high (0.914-1)	Low (0.335 – 0.472)	Moderate (0.486 – 0.586)	High (0.623 – 0.777)
KPLRM	0.395	0.366	0.581	0.473

MOFE, 2021

This GEDSI-LAPA covers the KPLRM area (Wards 1-5). This is also home to Sagarmatha National Park (SNP) and SNP Buffer Zone (SNPBZ), and 11 community forests. The Solukhumbu district where KPLRM is situated is listed as having very high sensitivity, high vulnerability, moderate adaptive capacity and low exposure, according to as assessment by the Ministry of Forests and Environment (2021). These numbers help planners understand the risks faced by rural municipalities and districts. Figure x. shows the relationship between hazards, exposure and vulnerability to produce risk. However, in order to understand climate change risks faced by KPLRM residents and to develop adaptation measures that are suitable to the communities, it is

important to consult with the communities to produce this GEDSI-LAPA. The KPLRM GEDSI-LAPA is produced with financial support from UNDP-Nepal and facilitation from HTN. It is produced in line with the programming need of the KPLRM as outlined in its annual plan FY 2080/81 and FY 2081/82.

Figure 1. Relationship between hazard, exposure and vulnerability to produce risk



1.1.2. Objectives, values and guiding principles

The national LAPA Framework facilitates formulation of the LAPA at local bodies such as the rural municipality. The aim of the LAPA is to integrate climate adaptation activities into local and national development planning processes and to create a climate resilient society.

This GEDSI-LAPA is based on the values of the KPLRM residents that recognize the ecosystem as an interdependent whole, and its maintenance as a requirement for the wellbeing of all sentient beings. This is highlighted in the form of a Sherpa song in the beginning of this report. This is also an Indigenous value that is found across all communities in KPLRM. The wellbeing of interdependent elements of an ecosystem as the foundation for a resilient society was echoed again and again during the consultations.

It is common practice, and an understandable one, to equate climate change to natural disaster, and understand climate change risks only through the lens of destruction and damage as communities continue to face unprecedented and unpredictable extreme events with serious consequences to lives and livelihood. It is also common to see extinction-oriented narratives of climate change circulating widely. However, these are not the only ways climate change could be understood or responded to. It is important to acknowledge the drastic socio-economic and ecological changes KPLRM residents have faced since the advent of the tourism industry in the 1950s and the gradual intensification of climate change impacts in recent decades. It is also important to remain aware of how KPLRM communities have continued to thrive under these circumstances. Furthermore, it is crucial that existing climate-friendly and resilient traditional lifeways are supported to further strengthen community's resiliency and increase adaptive capacity.

The National Framework for LAPA ensures that the process of integrating climate adaptation and resilience into local and national planning is **bottom-up, inclusive, responsive and flexible** as the four guiding principles.

- Bottom-up: ensures proper consideration of the needs and resources of the climate vulnerable people including knowledge, skill and practices of the local communities and stakeholders in adaptation planning.
- Inclusive: ensures identification and integration of the needs of households and communities at most risk to climate change, economically poor, deprived of public services and socially disadvantaged households and communities into development planning.
- Responsive: ensures immediate, efficient and effective delivery of adaptation services to climate vulnerable communities and households.
- Flexible: ensures immediate delivery of administrative, financial and institutional services to implement adaptation actions effectively.

Climate change impact varies from community to community, household to household, and family to family. Studies have shown that women, senior citizens, single women, gender minorities, and individuals with disabilities are more vulnerable than others within a family. Formulation and implementation of local adaptation plans of action should therefore take into consideration the different impacts and vulnerabilities of community members to be effective. The process of developing the current local adaptation action plans, including climate change awareness, impact analysis, selection and implementation of projects, and subsequent monitoring, thus integrates gender equality and social inclusion to ensure the meaningful participation of all members of the community, prioritizing their views, selecting projects, and implementing them.

1.2. Methodology: preparation steps and tools

1.2.1. LAPA steps and tools

The National Framework for LAPA identifies 7 steps, each with different purpose and related activities. These steps are circular in nature to represent the ongoing process of LAPA preparation. These seven preparation steps are shown in figure xx. Steps 1 involves sensitization and step 7 involves progress assessment. These two steps are to be carried out throughout the preparation process to address differing understandings of climate change and to ensure proper implementation of preparatory activities.

1. Sensitization
2. Vulnerability and Adaptation Assessment
3. Prioritization of Adaptation Options
4. Formulation of Adaptation Plan
5. Integration of Adaptation Plan into Planning Processes
6. Implementation of Adaptation Plan
7. Progress Assessment

The National Framework also identifies specific tools that serve a variety of purposes to aid LAPA preparation process. For KPLRM's GEDSI-LAPA, the following specific tools were identified to gain maximum engagement and involvement of the workshop participants in the allocated time.

Sensitization: Visuals and stories of climate change experiences; timeline history of environmental changes; crop calendar and disaster listing were used to discuss climate change and its impacts at the local level. These were supplemented with additional field-based observation and semi-structured interviews to facilitate sensitization.

Climate Vulnerability and Adaptation Assessment: Weather and hazard calendar; vulnerability mapping (including use of satellite images and GIS); hazard and impact risk analysis; mapping of service provider/institutional analysis; livelihoods impact analysis, and climate adaptation technology identification were used to gain an understanding of differentiated vulnerability and GEDSI-responsive adaptation.

Prioritization: Multi-criteria ranking and participatory cost-benefit analysis were conducted to prioritize action plans.

Formulation: Service provider analysis; information collection on what, when, how, who and where for plan formulation; and inclusion sensitive budgeting were employed to formulate plans and coordinate with collaborating agencies.

Integration: Policy and institutional analysis to identify entry points and/or adopt entry points for action plans was employed to mainstream LAPA. Sharing best practices and lessons learned with decision-makers is key to this mainstreaming process.

1.2.2. Sectoral Considerations

The National Framework for LAPA identifies eight sectors for LAPA formulation. These sectors, listed below, were used as leading topics for discussion during consultation workshops. The action plans presented here are also classified into these eight sectors.

1. Agriculture and Food Security
2. Forest, Biodiversity and Watershed Conservation
3. Water Resources and Energy
4. Disaster Risk Reduction and Management
5. Health, Drinking Water and Sanitation
6. Rural and Urban Settlement
7. Industry, Transportation and Physical Infrastructure
8. Tourism, Natural Heritage, and Cultural Heritage

1.2.3. Consultation workshops, interviews, observations, and training

The LAPA preparation activities were conducted following the four LAPA principles and the GEDSI-LAPA guidelines mentioned above. Table xx. shows the activities conducted as part of the LAPA preparation processes. Community consultations were at the core of the preparation process. This was supplemented by field observations and interviews with diverse members of the society

to assess differentiated vulnerabilities and diverse adaptation capacities. Prior to conducting the community consultations, interviews with Ward Chairs, literature review, and satellite image analysis were conducted to better understand the socio-economic, cultural and geographical context of each of the wards. Three separate stakeholder meetings were conducted before, during and after the community consultation process in KPLRM with relevant stakeholders and KPLRM representatives. Figure xx shows the preparation methodology.

Throughout the process, clear channels of communication were established with KPLRM to produce a locally meaningful and integrated GEDSI-LAPA. Field observations were key to supplementing the information gathered through the consultation workshops. Considering the limited period for field observation and consultations for this GEDSI-LAPA preparation, additional interviews and field visit in Nangpa Valley, particularly observation of local situation of yak herders, served to be crucial in understanding the climate change experiences, needs and concerns of the people. The preparation activities also served as climate change sensitization events and provided an opportunity for the residents to differentiate regular development projects or tourism projects from climate change action plans.

Figure 2. Local Adaptation Plan of Actions Preparation Steps

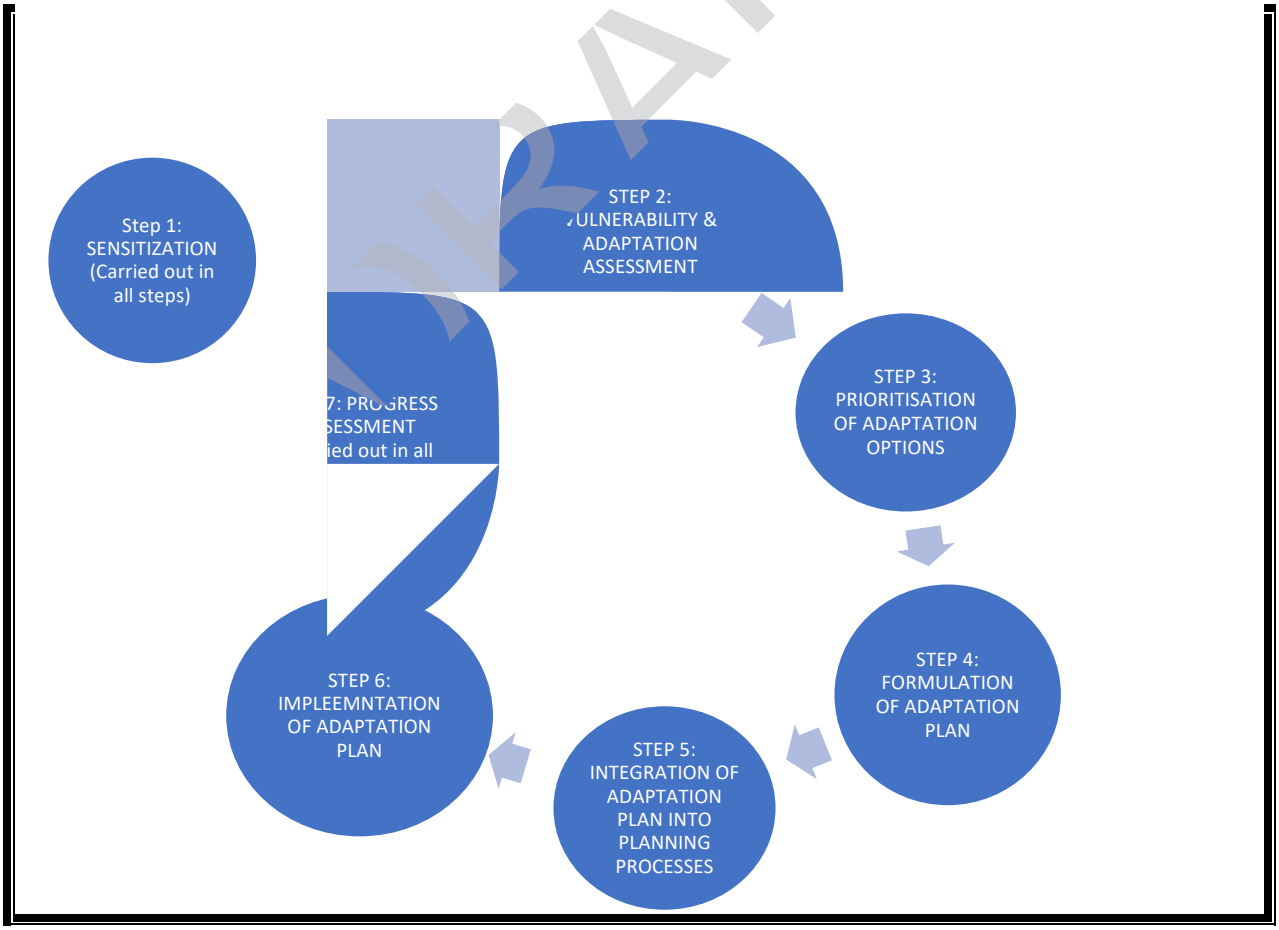
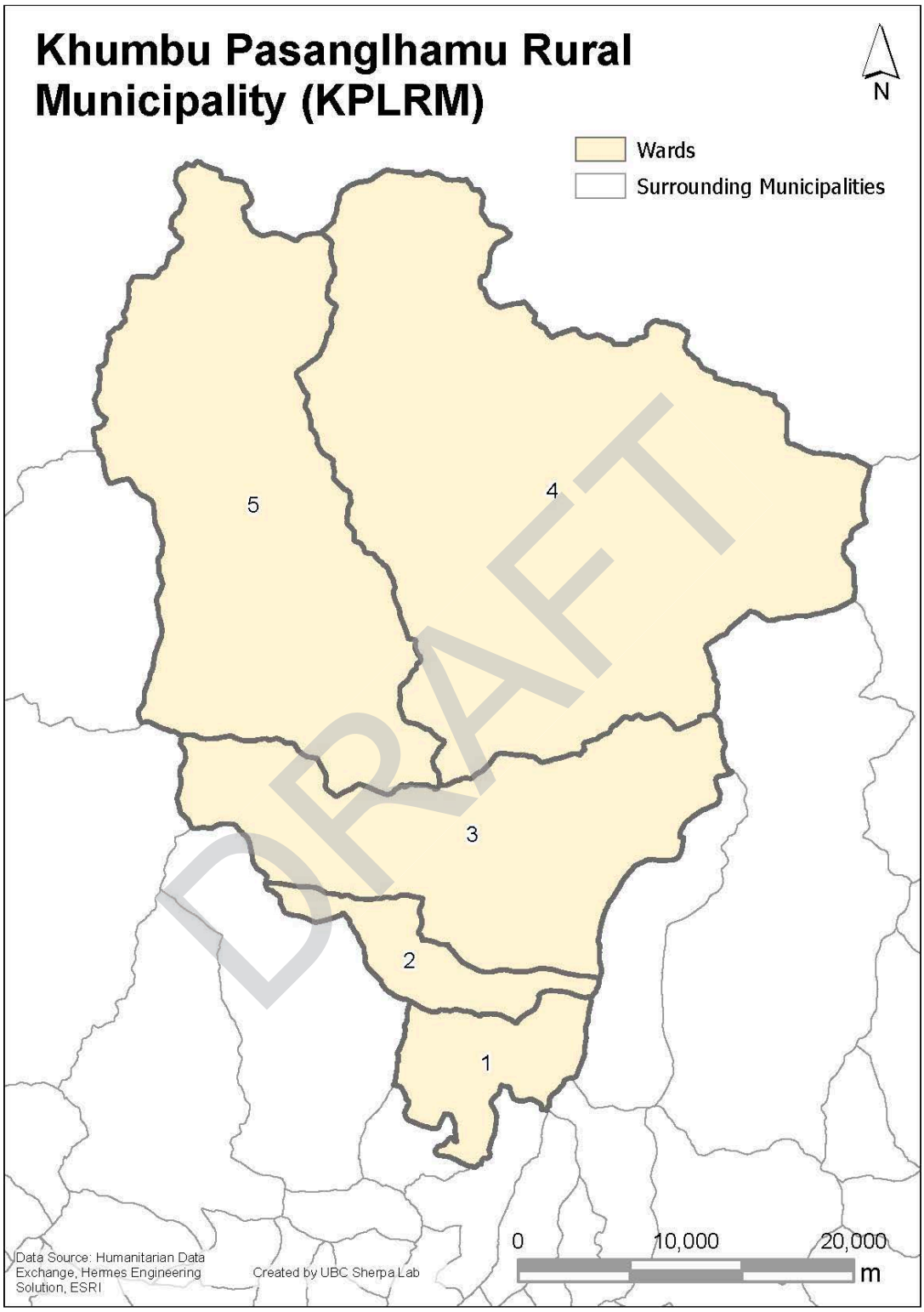


Figure 3. KPLRM's GEDSI-LAPA Preparation Methodology

Table 4. GEDSI-LAPA Preparation Process for KPLRM

Month	Task	Activities	Location
March- April	Initial Preparation and sensitization	1. HTN meeting 2. First Stakeholder Meeting 3. Five ward chair individual consultations 4. UNDP consultation	Virtual Kathmandu
May	1. Vulnerability and Adaptation Assessment 2. Prioritization of Adaptation Options 3. Formulation of Adaptation Plan 4. Integration of Adaptation Plan into Planning Processes	1. Ward level community consultation 2. Community Expert interviews 3. Focus Group Meetings 4. Second Stakeholder Meeting in Namche 5. 2-day capacity building training on climate change adaptation and disaster risk reduction	KPLRM
June	Validation and endorsement of GEDSI-LAPA	Final Stakeholder meeting	Kathmandu



Map 3. Khumbu Pasanglhamu Rural Municipality territory showing all 5 wards.

2. Introduction of Khumbu Pasanglhamu Rural Municipality

Khumbu Pasanglhamu Rural Municipality (KPLRM) is located in the northern part of Solukhumbu district with altitude ranging from 1900m to 8848.86m. Five mountains above 8000m lies in KPLRM, namely Mount Everest (8848.86m), Lhotse (8516m), Lhotse Middle (8416m), Lhotsesar (8404m), and Cho Oyu (8201m). The Sagarmatha National Park (SNP) lies within the KPLRM. SNP is listed as a World Heritage Site, and the sacred Gokyo Lake is listed as a World Ramsar Site. There are five wards in KPLRM. It is surrounded by Makalu Rural Municipality and Mahakulung Rural Municipality to the east. Umakunda Rural Municipality and Gaurishankar Rural Municipality lie to the east, and northern region borders the Tibetan Autonomous Region of China. Solududhkunda Municipality, Mapya Dudhkoshi and Sotang Rural Municipalities lie to the south. The satellite images 1,2,3 below show the geography of KPLRM featuring the Nangpa Valley. The two major glacial lake outburst floods (GLOFs) of the last 50 years (1985 Dig Tsho and 2024 Ngole Tsho) occurred in this side of the rural municipality. The total area of KPLRM is 1452.62sq km. It is the second largest rural municipality in Koshi Province and the fifth largest in Nepal in terms of area.

Table 5 Area Coverage of KPLRM Wards

Ward #	Area (sq km)	Description
1	74.14	Former Juving V.D.C. Ward No. 1,5,7,8,9
2	53.74	Former Chaurikharka V.D.C. Ward No. 4,7,8
3	282.55	Former Chaurikharka V.D.C. Ward No. 1,2,3,5,6,9
4	701.09	Former Khumjung V.D.C.
5	431.10	Former Namche V.D.C.
	1452.62	

According to the 2078 Census report, the population of this rural municipality from Ward 1 to Ward 5 is 8,720, of which 4,391 (50.4%) are male and 4,329 (49.6%) are female. Population breakdown by main language spoken, caste, religion and age group are presented from figure x-x. Ward-wise population distribution is presented in figure x. Major religions include Buddhism (6328), Hinduism (1396), Kirat (814), Christianity (180) and Animism (2). The overall literacy rate is 74.9%, with male literacy rate at 83.6% and female literacy rate at 66.2%. The number of households is 2489. 1695 families own their homes, 739 rent and 37 houses belong to institutions. Remaining 18 houses are used for other purposes.

2.1. Socio-cultural context

2.1.1 Beyul Khumbu

The northern part of KPLRM is considered a beyul. Beyul is translated as the “hidden valley” blessed by Guru Rinpoche (Padmasambhava). There are several beyuls across the Himalayas. Beyuls are considered to be places of refuge at times of distress for future generations. Therefore, Khumbu is also described as a sacred landscape, where the residents live with faith and respect for the spiritual beings of this place. Sacredness cannot be taken for granted. It is maintained through rituals. A sacred vessel known as “bumpa” have been placed throughout Khumbu under the guidance of the late Tengboche Rinpoche to protect the sanctity of this place. The maintenance of spirituality in KPLRM is crucial to ensure spiritual, emotional and psychological

wellbeing of the residents. For example, when lowering glacial lake water levels to reduce disaster risks, culturally appropriate measures should be followed seeking permissions of the spiritual beings of the place. This practice can be likened to the permission seeking rituals Sherpas perform before setting foot on the upper planks of Jomolangma (aka Mount Everest).

2.1.2. The Founding of three Monasteries in Khumbu

The founding of three monasteries in Khumbu is an important socio-religious event for the Sherpas that informs the community about the possibility of human settlements with warming temperature in the region following the Little Ice Age. Around 550 years ago, there were three brothers who came to different parts of Khumbu. The oldest brother, lama Sangwa Dorji, built the monastery in Pangboche; the middle brother, Lama Ralwa Dorji built his monastery in what is now Thame; and the youngest brother, Lama Khenpo Dorji, built his monastery near the village of Gyphede. The monastery of Lama Khenpo Dorji was later moved from Gyphede to Rimijung, which was a more suitable place for the monastery. These monasteries and the villages, where they are located are archives of knowledge on how the communities have lived with warming temperatures for several generations. They can provide guidance on further strengthening climate resiliency of KPLRM.

2.1.3. Cultural and religious heritage

As the majority of the population follows Buddhism, the primary religious sites in the municipality are Buddhist monasteries (gumbas). There are several monasteries in the municipality that are more than 100 years. They include Tengboche Monastery (Tengboche), Palaribu Monastery (Pangboche), Kemgun Monastery (Lukla), Dekshe Choling Monastery (Thame), Sanga Choling Monastery, (Kerok), Pema Choling Monastery, (Rimijung), Samden Choling Monastery (Khumjung), Tasi Sanga Choling Monastery (Panggom). Additionally, various shrines, temples, sacred lakes, meditation centers, and churches are also present throughout the rural municipality. Major cultural festivals celebrated include Lhosar, Mani Rimdu, Dumji, Faangi, Yarne, Chirim, Dashain, Tihar, Saune Sankranti, Maghe Sankranti, Ubhouli, and Udhouli.

2.2. Agriculture and Livestock

Agriculture and livestock farming are prominently practiced in all wards. Potato cultivation is considered the primary agricultural activity in the region (mostly to the north), while livestock farming primarily focuses on yaks, nak, zopkio, zom and chauri. As of the fiscal year 2079/80, a total of 20 agriculture and livestock groups have been registered, along with 55 private agriculture and livestock farms. The total arable land within the municipality is 675 hectares, of which 75% (506 hectares) is currently under cultivation. Among the wards, Ward No. 1 holds the highest proportion of arable land.

Although potato is the dominant crop in the municipality, wheat and uwaa (naked barley) are also cultivated. Additionally, seasonal and off-season vegetables such as tomatoes, cucumbers, and pumpkins are grown using plastic tunnel farming techniques. The municipality has two designated pocket areas for potato cultivation and one each for wheat and naked barley. There is also one designated pocket area for goat farming under livestock production. The use of organic

fertilizers is encouraged in place of chemical fertilizers. In terms of livestock, improved breeds such as Jersey cows are being raised. Furthermore, the highest-altitude kennel house in the world has been established in Namche for dog management. The Yak Genetic Resource Center under the federal government is located in Syangboche.

2.3. Industry, Transportation, and Physical Infrastructure

KPLRM relies heavily on tourism and mountaineering industries. The municipality includes 12 major trekking routes with a total length of 160 kilometers. There are various tourism-related businesses including tourist hotels, restaurants, lodges, and cafes. They generate various employment opportunities for trekking and mountaineering guides and other forms of labor in the tourism industry. Employment opportunities have also been created through the construction sector, retail and wholesale grocery shops, drinking water industries, agriculture and livestock farming, and furniture industries.

2.3.1. Road network

A major infrastructural achievement in KPLRM is the development of road networks, with a total of 39 kilometers of opened road track, comprising of 14 kilometers of main roads for tourism and 25 kilometers of branch roads for agriculture. Approximately 500 meters of these opened road tracks, include roadside drainage and other road related structures. With the initiative and investment of the rural municipality, a concrete bridge connecting the neighboring Mapya Dudhkoshi Rural Municipality at Arlang-ghat has been completed. This bridge was impacted by the Ngole GLOF of Shrawan 2081 B.S. (August 2024). Among the five wards of the rural municipality, Wards 1 and 2 are connected to the earthen road network up to Surke. The Nim Dorji Road from Thaam Danda to Surke was officially inaugurated in Magh 2081 B.S.

2.3.2. Water and Energy

Within the rural municipality, a total of 11 small and micro-hydropower projects are in operation, collectively generating 1.53 megawatts of electricity, which is being utilized at the local level. A KPLRM survey has been completed for the extension of electricity access through the central transmission line. Approximately 95% of households in the municipality have access to electricity. Around 30% of households still rely on firewood, 15% use electricity for cooking, while the remaining households use LPG gas as their main energy source[1].

2.4.3. Health, drinking water and sanitation

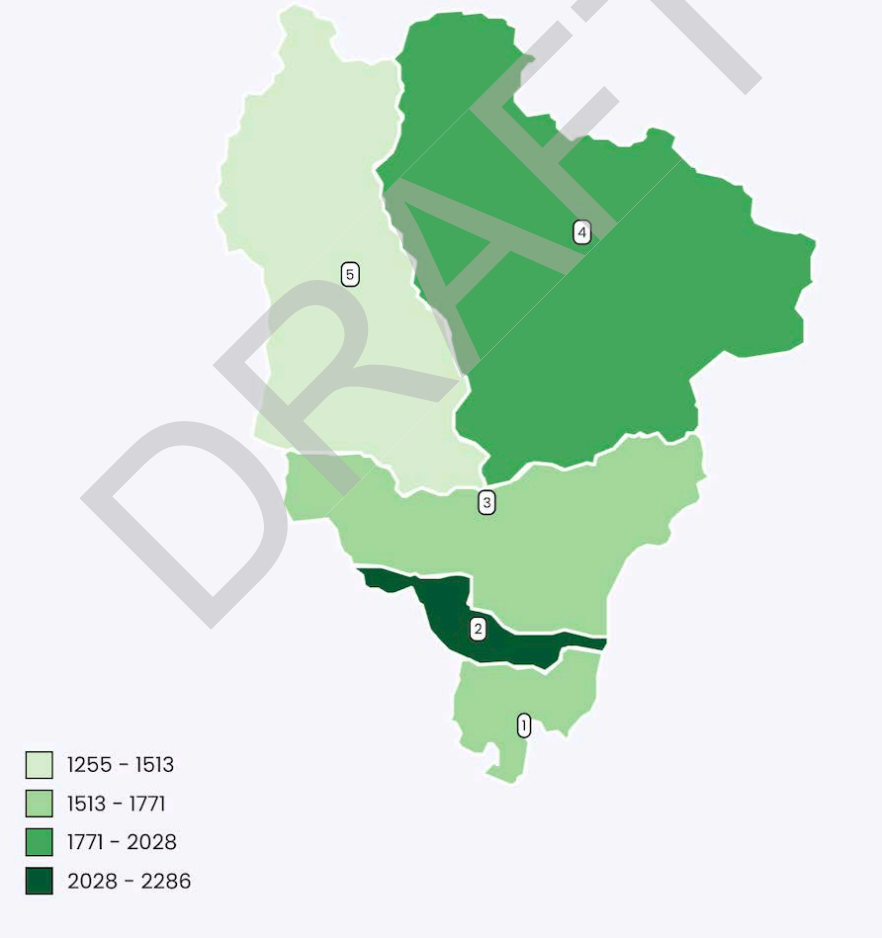
There are 4 community hospitals, 1 private hospital, 3 government health posts, 1 dental clinic, 4 community health units, 2 outreach immunization clinics, and 2 village clinics currently in operation in KPLRM. Government birthing centers are operational at Khari Khola Community Hospital, Chaurikharka Health Post, and Namche Health Post. A total of 33 Female Community Health Volunteers (FCHVs) are actively engaged in health services. The number of malnourished children is approaching zero, and 75% of households can reach a health post within 30 minutes

[1] KPLRM, 2023

or less from their residence. Both permanent and temporary residents of the municipality receive free rabies and tetanus vaccinations. About 80% of children under the age of five have received full immunization, and 100% of citizens have been vaccinated against COVID-19[2]. The rural municipality operates a Citizen Health Treatment Fund, through which up to NPR 1 million is made available for the treatment of critical illnesses.

About 85% of the citizens in the rural municipality use safe drinking water, and 61% of households have access to at least one tap. Since the formation of the local government, 7 drinking water projects have been completed. Toilets have been constructed in every household, and the practice of using toilets for defecation and urination has been developed. The entire rural municipality has been declared an Open Defecation Free (ODF) zone.

Figure 4. Ward-wise Population distribution in KPLRM



Source: Census 2021

[2] KPLRM, 2023

Figure 5. Population percentage based on Caste (Top 10 by size), 2021 Census

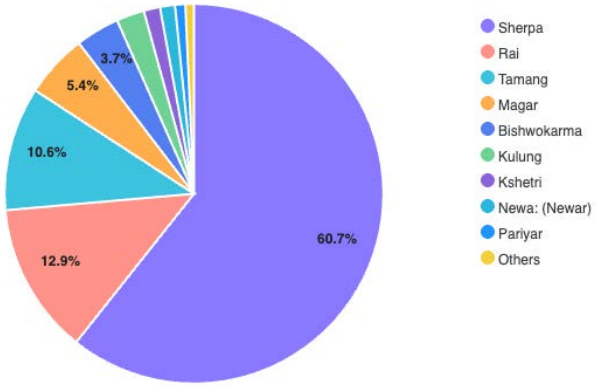


Figure 6. Population percentage based on Religion, 2021 Census

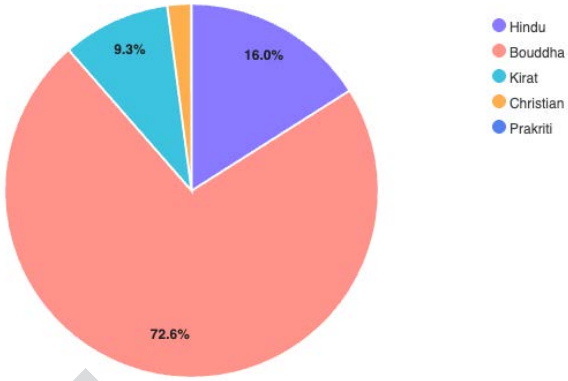
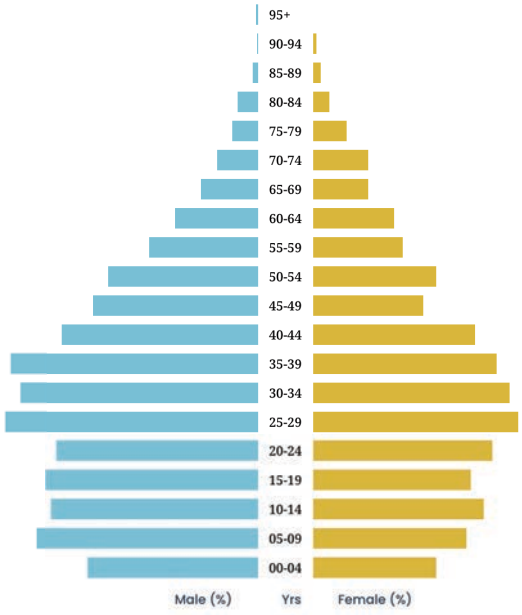


Figure 7. Status of widow and single woman by ward

Figure 8. Population by 5-year age group and sex



Source: Census 2021

Figure 9. Population by Ancestor's language (Top 10 by size), 2021 Census

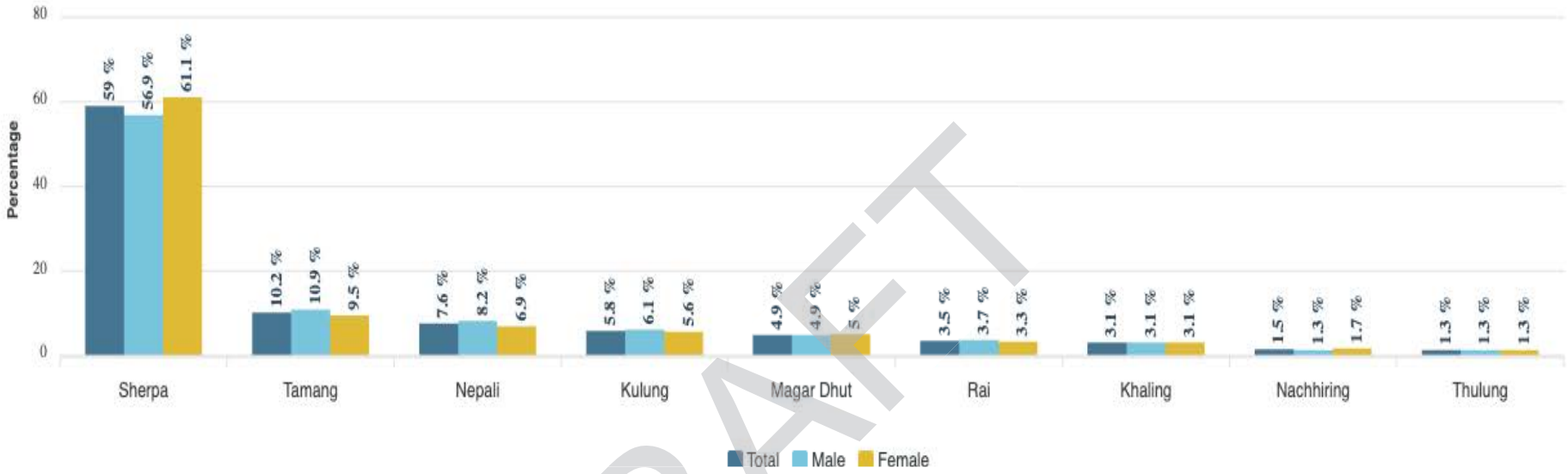
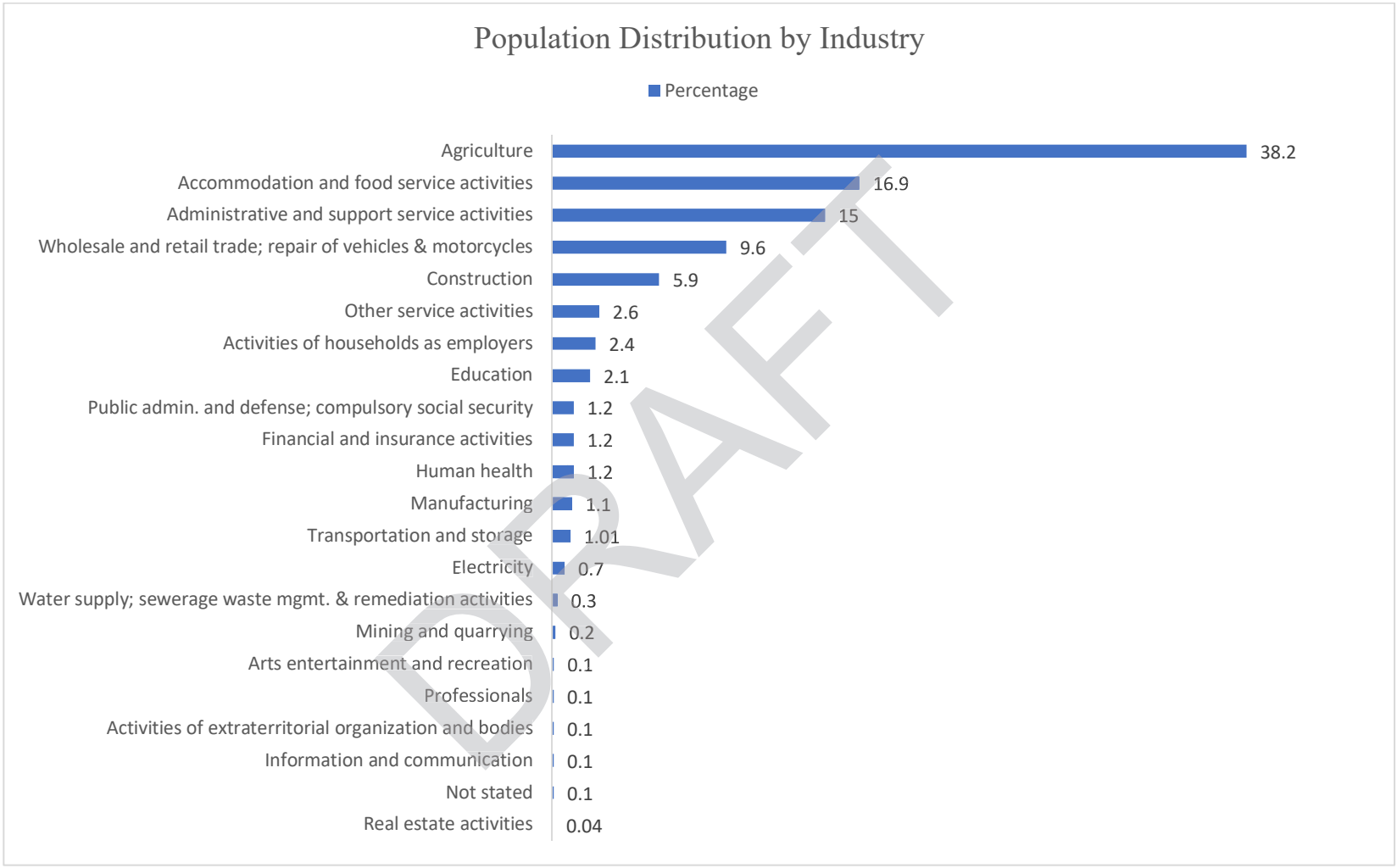


Figure 10. Population (%) Distribution by Industry (Census 2021)



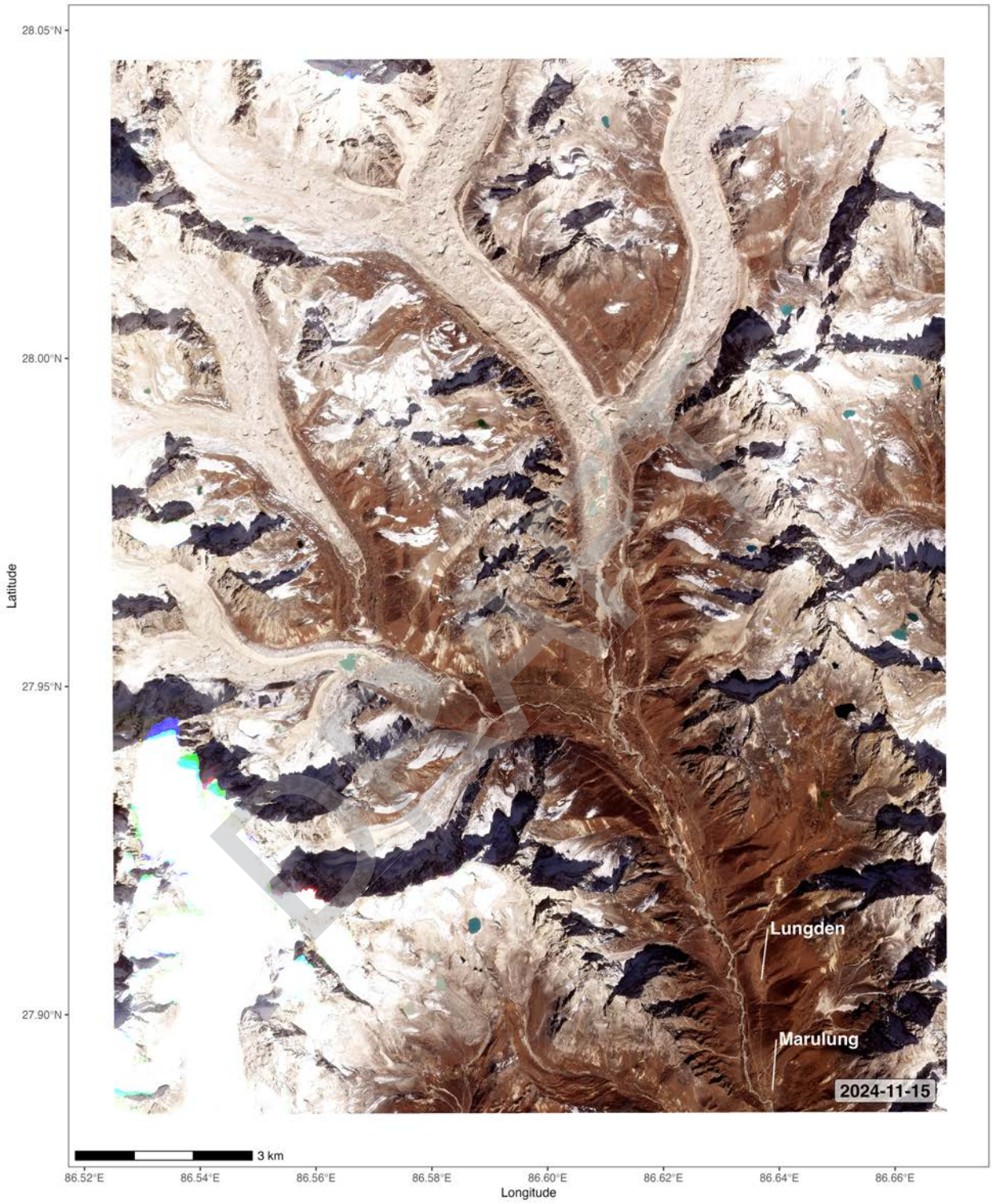


Image 1. Satellite image of Nangpa Valley

Image 2. Satellite image of mid-KPLRM showing Dig Tsho, Ngole Tsho and Lumding Tsho

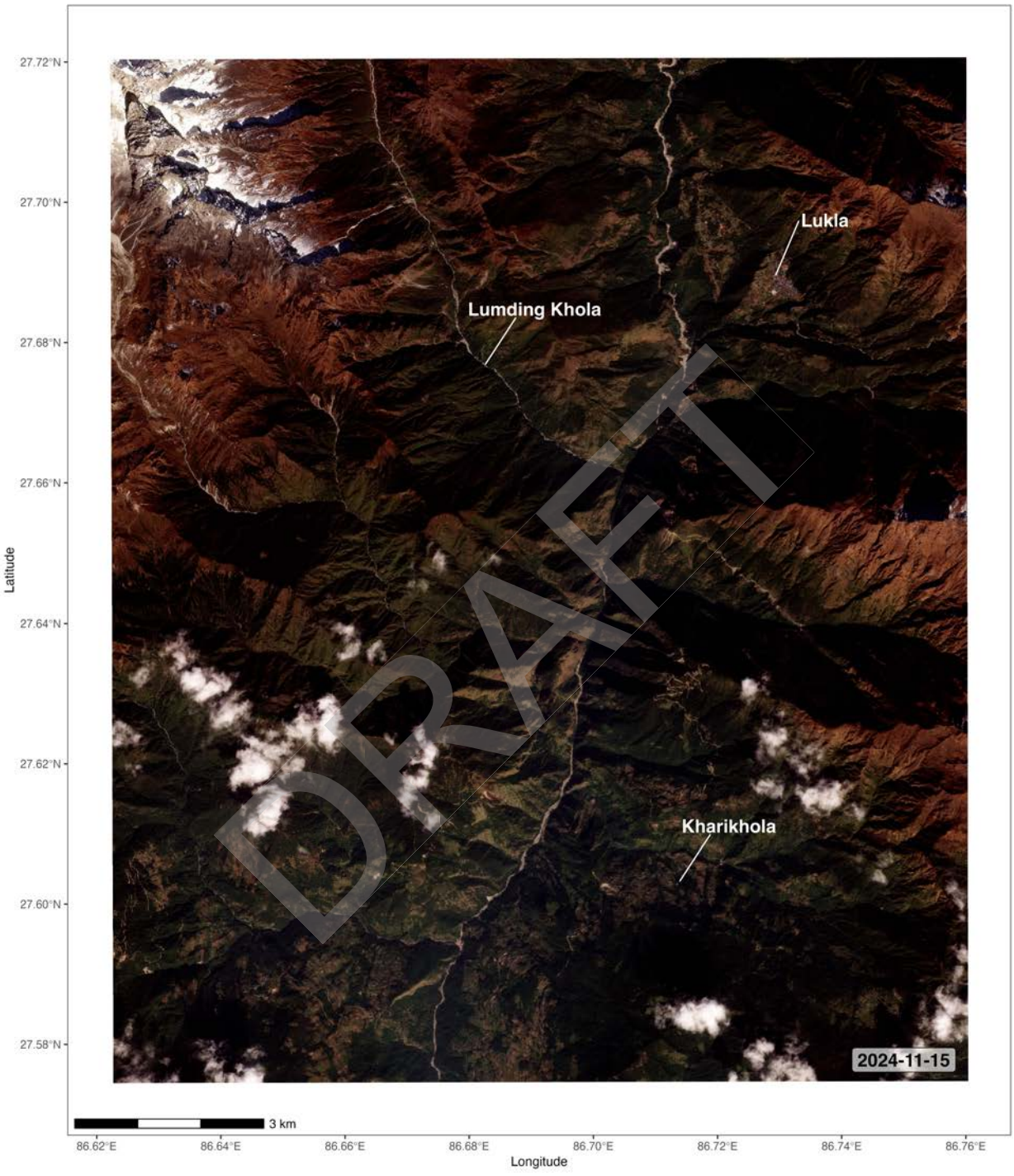


Image 3. Satellite image showing the southern part of KPLRM including Lumding Khola, Lukla and Kharikhola

3. State of Climate Change, Disaster and Risk in KPLRM

3.1. Climate Change in KPLRM

Climate change impacts local ecosystem and communities cannot be universalized. Climate change in KPLRM should be understood as a high Himalayan phenomenon. The impacts observed in other ecosystems cannot be assumed to hold true in the area covered by KPLRM. Figure 3.1. shows observed climate change trend of Nepal (1971-2014) to highlight the differences in temperature and precipitation data across ecological zones in Nepal. It can be seen that the maximum temperature rise per year is highest in high mountains in comparison to the plains and mid-hills. It should be noted that in high Himalaya (at about 3000m or above), data from only two stations (one in Simikot at 2993m and one in Pyramid, Lobuche at 5035m) were used in the DHM report on observed climate change trends (2017). Since Pyramid was established in 1993, no prior data are available from this station.

Scientific reports that have explored high altitude Himalayas such as the HI-WISE report produced by ICIMOD (2023) mention that: glaciers have disappeared 65 % faster in the 2010s than in the previous decade; on current emissions pathways 80% of glaciers' current volume will be gone by 2100; availability of water is expected to peak in mid-century and then decline; mountain communities are already experiencing major adverse impacts such as loss and damage to lives, property, heritage and infrastructure; floods and landslides are projected to increase; and impacts on fragile mountain habitats are particularly acute (ICIMOD, 2023). While these conclusions present a broad picture of how climate change is impacting high altitude Himalayas, a detailed exploration based on community observation at the local level is able to show how individuals, families, households and villages are living with climate change.

Table 6. Observed Climate Change Trend of Nepal (1971-2014) (DHM, 2017)[3]

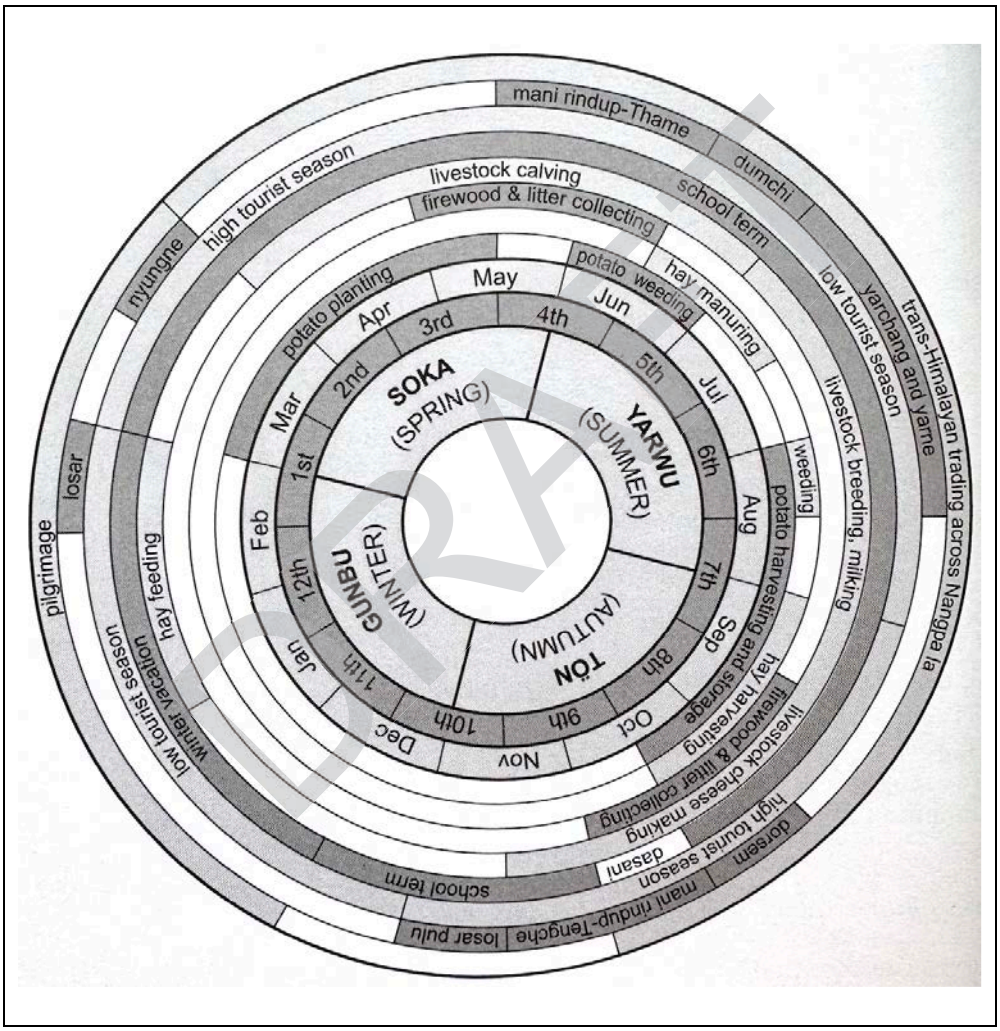
Geographic region	Precipitation Trend (mm/year)	Maximum Temperature Trend (^{0}C/year)	Minimum Temperature Trend (^{0}C/year)
Terai	0.49	0.021	0.018
Siwalik	-1.48	0.03	0.016
Mid mountains	-1.58	0.052	0.01
High Mountains	-3.17	0.068	-0.005
High Himalaya	-1.46	0.086	-0.015

In Khumbu, climate is strongly patterned by a South Asian subtropical monsoon climate with rainfall concentrated in the summer (Sherpa and Puschiasis, 2024). Available precipitation dataset from DHM and pyramid stations show that more than 80% of annual precipitation falls in

[3] DHM (2017) Observed Climate Trend Analysis in the Districts and Physiographic Regions of Nepal (1971-2014). Department of Hydrology and Meteorology, Government of Nepal, Kathmandu.

the four months between June and September. Major GLOF events, including the 1985 Dig Tsho and the 2024 Ngole Tsho GLOFs, have been recorded in the month of August. Winter (January-March) is typically cold and fairly dry. Spring and autumn are typically mild. In addition to inter-seasonal rainfall variations, precipitation also experiences strong spatial variations, characteristic of mountain areas (Bookhagen & Burbank, 2010). Traditional Sherpa lifeways followed these seasonal changes as shown in figure x. Sherpas followed the seasons to determine timing for all activities from farming to caring for livestock, collecting firewood, and observing festival as well as following the spring and autumn tourist seasons.

Figure 11. Seasonal Calendar of Khumbu Sherpa



Source: Sherpa, L.N. 2008

Climate change trend effects can be observed through an analysis of data gathered from automatic weather stations and through an analysis of observed and experienced changes by community members. These approaches to understanding climate change can lead to different climate emphases and priorities. Together, they present a more holistic view of how climate change is occurring and how communities are prioritizing their actions to adapt. For example, we may find an emphasis on the melting of snow or an emphasis on the flowering times as the barometer for climate change. Subsequently, we may find communities prioritizing early

warning system (EWS) or changing planting times according to when plants flower. Thus, this GEDSI-LAPA shows that a climate resilient community with increased capacity is not limited to one way of understanding and prioritizing adaptation to climate change. In the following pages, we find a description of the data collection centers in KPLRM and the data that currently exists for the region.

3.2. Automatic Weather Stations

The Department of Hydrology and Meteorology (DHM) and the Pyramid Meteorological Network have installed automatic weather stations in KPLRM. Both sets cover KPLRM Ward 2-5 along Khumbu Valley. There are no known stations in ward 1 and in Nangpa Valley.

3.2.1. Pyramid Meteorological Network

The seven stations installed by the Pyramid Meteorological Network collect the following variables on an hourly basis: air temperature, total precipitation, relative humidity, atmospheric pressure, and wind speed and direction. All meteorological data from these stations are freely accessible from https://geoportal.mountaingenius.org/portal/. Table x. show the list of the stations in the Pyramid Meteorological Network (Salerno et al., 2025).

Table 7. List of surface stations in Pyramid Meteorological Network (Salerno et al., 2025)

S.N.	Station ID	Location	Latitude ^{0}N	Longitude ^{0}E	Elevation m a.s.l.	Mean feature of the landscape
1	AWSSC	South Col	27.98	86.76	7986	Mountain peak
2	CNG_SNP	Changri Nup	27.96	86.93	5700	Glacier
3	AWS4	Kala Patthar	27.99	86.83	5600	Glacier surface
4	AWS0, AWS1	Pyramid	27.96	86.81	5035	Glacier front (off glacier)
5	AWS2	Pheriche	27.90	86.82	4260	Treeline
6	AWS5	Namche	27.80	86.71	3570	Forests
7	AWS3	Lukla	27.70	86.72	2660	Forests

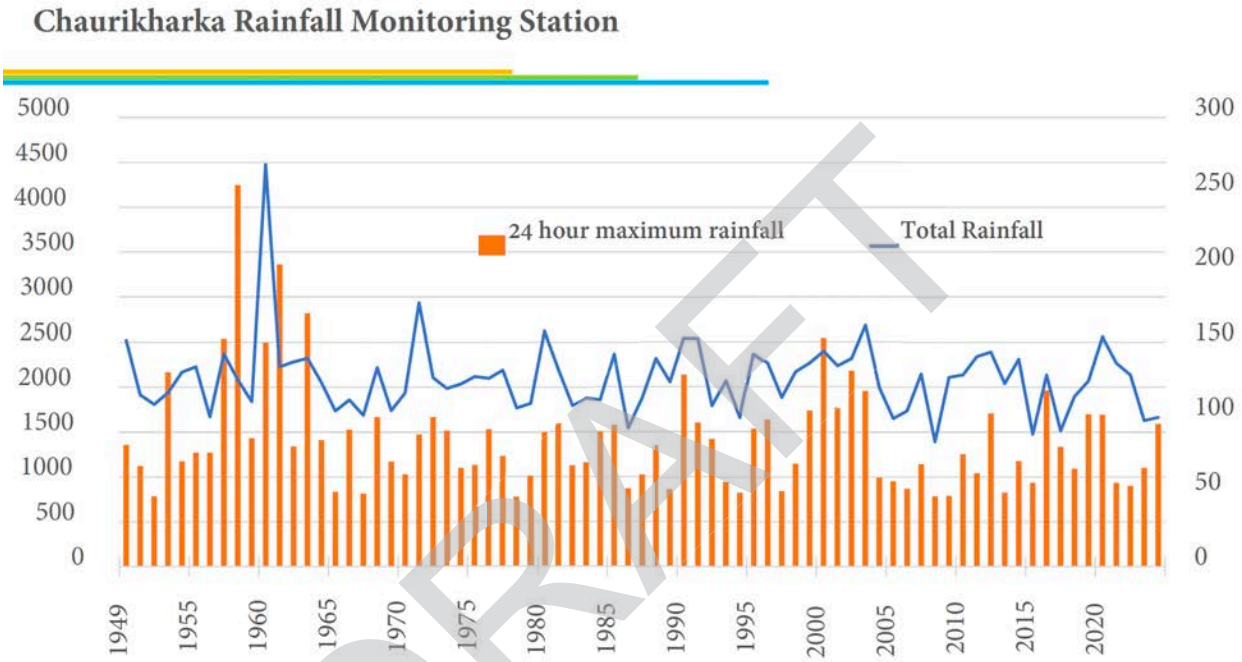
3.2.2. Department of Hydrology and Meteorology

The Department of Hydrology and Meteorology (DHM) stations are located in Imja Khola Dingboche, Imja Khola Pangboche, Dingboche, Syangboche Airport and Lukla Airport. Precipitation data shown in table x., collected by DHM from stations listed in table x., show that over the last 30 years the volume of rainwater received per year in Chaurikharka station has not changed drastically. However, based on local observations, it is known that the rainfall pattern has become unpredictable. Instead of seasonal rain with predictable pattern, villagers are noticing heavy rainfall in short period of time that can harm the crops or long stretches of dryness that also negatively impact the crops. Rainfall during off season such as in the winter or heavy rain before monsoon season were reported during community consultation.

Table 8. List of DHM stations in KPLRM

	Station Index	Name	Latitude	Longitude	Elevation
1	120201	Lukla Airport	27.68639	86.72817	2786
2	1225	Syangboche Airport	27.814942	86.71338	3831.67
3	1202	Chaurikharka	27.69653056	86.7167	2642

Figure 12. Precipitation Data from DHM



Source: Sudarshan Humagain

3.3. Observed and experienced climate change effects in KPLRM

Community members reported several climate change effects during consultation workshops. Table x, x, and x show the observed changed in weather and disaster pattern, changes in agricultural practice, sectoral impact and future project, and the impacts on different groups from natural disasters. Following are some of the salient experiences shared by participants.

3.3.1. Disappearing Ice and Snow

Mountains that used to be covered with snow all year round 30 years ago are now dark rock. Whereas snow cover on smaller mountains changed seasonally before and taller mountains had snow all-year round. Even taller mountains appear dark with less snow these days. Ice at the source of drinking water in Lukla disappeared in 2025 for the first time with the rising temperature. With the uncertain weather conditions from year to year, it is hard to say if the ice will return in Lukla in the coming winter season.

3.3.2. Expanding Glacial Lakes

Changes in glaciers along the trekking trails such as Khumbu glacier and Ngozumpa glacier are most noticeable to community members. Each trekking season, these changes are observed and shared with fellow villagers. Yak herders and pilgrims traveling to sacred glacial lakes also notice the changes in the size from melting of ice.

3.3.3. Unpredictable Weather Conditions

Unpredictable weather conditions have direct impact on the livelihoods of KPLRM residents. From tourist lodge operators to farmers and herders, each group of people are impacted by the changes. Earlier, weather during tourist seasons in the spring and autumn were reliable. Worsening weather condition during each tourist season has impacted the air traffic and flow of tourists into the region. Similarly, it is hard to predict if the crops will survive or not each year as rainfall patterns have become increasingly unpredictable over the past decades.

Table 9. Observed Changes in Weather Pattern

Weather Condition	Observed Changes
Hot days	Winter is warm like how summer used to be; Feels like Terai winter Temperature rise can be felt; tin roofs radiate more heat; Lack of snow causes reduced water availability;
Cold days	It is cold when it should not be. End of spring season is cooler than it used to be. Sometimes it snows in April.
Monsoon rain	Monsoon period extended; unusual rainfall; sometimes it rains a lot and sometime it doesn't rain for a long time.
Winter rain	Lack of snow; winter rain not too much

3.2.4. Changing Agricultural Practice

Traditional agricultural practice in KPLRM has been significantly reduced over the past several decades with the expansion of cash-based economy facilitated by tourism industry, increasingly unpredictable weather patterns and increased crop destruction by wildlife. Combined with climate change effects, the agricultural practice in KPLRM has changed significantly. For example, maize was not possible to grow in Lukla before but now it is, although the crop does not yield as abundantly as in lower altitudes. The use of greenhouses has also facilitated growth of vegetables in higher altitudes as temperature has risen. In ward 4 and 5, for example, green vegetables were extremely rare before but certain varieties can be grown with regular care. Table x. shown some of the observed changes in crop production in Ward 2.

Table 10. Observed Changes in Crop Production in Ward 2

Crops	Remarks

Potato	Not planted by everyone like it used to be. Before the plant used to grow slowly, now they grow fast but there are no potatoes; heavy rain causes the plants to fall and damage the potatoes.
Uwa	Low production now. Not much difference between now and before in terms of how the plants are doing, but the quantity planted has gone significantly down now. *khumla kira* is noticed in these crops.
Gahu	No farming now; during rainfall, plant gets damage; taste different
Makkai	Before it did not grow in Lukla. Now, it grows but it is only good to feed cattle.
Fapar	Low production. because it is easier to buy from the market; It is used for saag.
Simi	Low production now. Not much of a difference; lack of people to work in the field; stands for simi is hard to find. Crops destroyed by *kalij, mriga, dumsi* and "*jungle kira"*
Radish/ Carrot	Fruit sometimes big, sometimes small; before it used to be big
Cabbage	Roots used to be very big, now small; weak roots

3.3.2. Disasters and extreme events

The kinds of disaster experienced within KPLRM include heavy rain flooding, windstorm, landslides, fires, and glacial lake outburst floods. Some of the changes observed in weather and disaster patterns in KPLRM are listed in table x Since all members of the community are not impacted in the same way, table x shows how disaster impact some members more than others. Farmers from Bupsa (Ward 1) mentioned that they get worried for their safety and the crops during rainy season. They observed that there is increased frequency and intensity of natural disasters. They live with the fear from flood and potential landslides. This was a sentiment echoed in all five wards. The type of natural disaster might be different but the impact on emotional and psychological wellbeing of the community was similar. In ward 3-5, community has observed rapid melting of ice and snow in the glaciers. They have also witnessed more frequent GLOF incidents compared to the last generations.

Table 11. Observed Changes in Disaster Patterns

S.N.	Disaster	Observed Changes
1	Landslides	Landslides were seen as regular events although they have exacerbated in recent years during heavy rain; there seems to have been more landslides post-earthquake in 2015
2	Flood	Settlements near Dudh Koshi at risk and victims; continued GLOF risk

3	Fire	Forest fires and fire in the settlement are usually caused by different factors. LPG cylinders were identified as the source of majority of the fires in the settlements. In the forests, natural and human error were seen as the leading causes. The thickness of the forests and difficulty in accessing forested areas were seen as challenges to extinguish fire.
4	Windstorm	Windstorms are occurring in places where they did not occur previously. The intensity of wind is stronger than before in places where they occurred before.
5	Hailstorm	Hailstorm are occurring more now. They are destroying crops.
6	Snowstorm	The amount of snowfall has decreased significantly. There is less snow these days.
7	Diseases	Diseases that are associated with warmer temperature are seen in colder, higher altitudes of KPLRM.
8	Wildlife	Wildlife from warmer, lower altitudes are seen in more number. Newer animals are noticed higher up in colder regions.

Table 12. Impacts on different groups from Natural Disaster

S.N.	Natural Disaster	High Impact Group	Medium Impact Group	Low Impact Group
1	Flood	People with disabilities; elderly; children; families living close to the river	Temporary residents and families who live nearby (not too close) the river	Women, youth, families, and individuals who do not live close to the river
2	Landslide	People with disabilities; elderly; children; families living in landslide prone zone	Temporary residents and families who live not too close to landslide prone zone	Youth; families who do not have house in landslide prone zone
3	Windstorm	People living in mountainous area; those involved in farming; those living in densely populated areas.	Temporary residents; those individuals and families who are not involved in farming	Wealthy families; and those who are living is lower altitudes
4	Fire in settlement	Individuals, families, people with disabilities, elderly and children living in densely populated areas	Temporary resident individuals and families	Families who are outside densely populated area
5	Forest fire	Wild animals; Individuals, families, people with	Individuals and settlements near forest fire	Families living outside densely

		disabilities, elderly and children living near dense forest		forested area; temporary residents
6	Frost/ Hailstorm	Individuals, and families involved in farming and animal husbandry	Temporary resident individuals and families	Those not involved in farming or animal husbandry
7	Snowstorm	People involved in animal husbandry; Individuals and families residing in mountainous area	Temporary resident individuals and families; those residing between Namche and Lukla	Those not involved in animal husbandry; those residing in lower altitudes below Lukla
8	Riverbank erosion	People with disabilities; elderly; children; families living close to the river	Temporary residents	Youth; individuals and families not residing near the river
9	Disease in Animals	Individuals and families involved in agriculture and animal husbandry	--	Those not involved in agriculture and animal husbandry
10	Diseases transmitted by insects	Individuals and families involved in agriculture and animal husbandry	Temporary residents; those not involved in agriculture and animal husbandry	Those not involved in agriculture and animal husbandry
11	Wildlife Attacks	Individuals and families involved in agriculture and animal husbandry	Temporary residents; those not involved in agriculture and animal husbandry	Those not involved in agriculture and animal husbandry
12	Epidemics	Elderly, children and people with illness who are prone to infection	--	Youth and healthy individuals

Table 13.Impact and Future Projection by Sector

Situation 30 years ago	Impact Felt So Far	Future projection	Potential Impact on Vulnerable Groups
Agriculture and Food Security			
Everyone in the village was involved in agriculture. Most agricultural products were grown and consumed locally. Animal husbandry was done alongside farming.	Lack of interest in agriculture and animal husbandry since many people are engaged in tourism industry and other cash-based economic activities. Migration out of KPLRM has reduced the number of people who can continue agro-pastoralism. Food is largely imported instead of grown these days.	Number of farmers and herders will decrease. Reduction in the availability of arable land from urbanization. Necessary food will have to be imported from other places. There will be an increase in the consumption of processed food. Food crisis is a likely possibility if arable land becomes barren in the next 15 years and if remittance flowing into KPLRM is cut off.	There will be a lack of nutrients in food. Traditional foods will disappear. Women's occupations will change, such as agriculture and construction. Malnutrition will be seen in children.
All food grown was organic. Traditional farming methods were used.	There is increased use of medicines to protect plants and chemical fertilizers to reduce crop failures from pests or unpredictable weather patterns. Newer irrigation systems and machinery is being used.	Production will increase with more varieties of seeds, supported by warmer temperature even in higher altitudes using newer technologies.	The use of chemical fertilizers can have an impact on women, children, senior citizens, and the disabled. Insufficient intake of organic foods could lead to health concerns including prone to diseases, infertility and malnutrition.
Although everyone was involved in agriculture food was not always enough for everyone. Some families	Although more varieties of food are available in the market, it has become harder to find nutritious organic food these days. Access to food is not the same for everyone.	Availability of food would go high but who can purchase and consume healthy, organic food will be different for members of the society. Increase	The food crisis is causing children and senior citizens to lose their lives prematurely due to malnutrition and hunger.

were able to produce enough but some were not.		consumption of cheaper, processed foods is likely.	
Plants would ripen when it was harvesting season and naturally rot.	Planting and harvesting seasons have changed. Due to seasonal changes, crops tend to ripen unevenly and unseasonably and rot quickly before it can be consumed. For example, if the temperature rises fast, crops tend to grow and ripen when they shouldn't be. This affects the quality of the crop produced. Similarly, when it rains a lot, the crops rot even before they could be consumed. Lack of rain on the other hand kills the crops.	Reduction in Indigenous crops, more food will grow with the use of chemicals, and soil fertility will decrease.	Food availability will increase and be accessible to all, but lack of nutritious food will have negative impact on vulnerable groups.
There used to be fewer insects, including grasshoppers, and less disturbance from wild animals.	Crops are prone to newer diseases and pests. There is an increase in the pest attack.	Crops will be produced less. Plants will dry out. Crops will be damaged more. Irrigation will be disrupted due to drying up of water sources, resulting in reduced production. Pesticides will be used.	Suffering from various diseases caused by nutritional deficiencies, food insecurity.
Depending on the location, a variety of traditional crops were grown: maize, millet, rice, wheat, soybeans, potatoes, naked barley, buckwheat, green beans, spinach, radish.	Diverse crops and vegetables are growing, facilitated by the use of greenhouses/tunnel farming. Crops grown these days include: tomato, cauliflower, cabbage, Kiwi, chili, banana, green peas, carrot	Newer practice of growing more diverse crop, use of newer fertilizers available in the market, continued adoption of greenhouse farming.	More food varieties will be available but they will be less nutritious than before directly impacting the health of vulnerable groups.
Forest, Biodiversity and Watershed Conservation			

Forest, wildlife, birds and water sources were healthy. Risk of flooding and landslides were present but not too frequent.	Forest destruction is evident. Habitats of wild animals and birds are being destroyed. Species of plants and wild animals are changing. Underground water resources are drying up.	Forest conditions will improve, but native species will likely disappear. Underground water sources will disappear. Glaciers will dry up.	There will be an increase in diseases such as skin diseases and lack of clean drinking water.
Widespread forest clearing to build tourist lodges throughout KPLRM.	Mobile in every hand The forest has been protected.	Meeting the increasing demand for water may pose a problem. It will be difficult for children, the elderly, and the young to concentrate on their work.	
Lack of proper management of forests, biodiversity and watershed.	Water sources are drying up, biodiversity is decreasing, deforestation due to population growth, etc., wildlife is becoming less visible.	With increased use, it can have an impact on every area and be better protected and managed properly.	There may be a lack of clean air.
Water availability was reliable and predictable.	Due to population growth, forests have been destroyed, but in the current situation, even though there are plants on the land that is not under cultivation, water sources are drying up.	Planting and protecting plants will not cause problems with water resources, but global climate change could cause problems.	Lack of oxygen in water causes skin diseases and reduces the use of forests and streams.
Herbs were healthy and widely available.	Due to the dense forest, herbs are not abundant.	All these things will increase	Availability of fresh water and herbs
Wildlife included: Deer, Goral, Danphe, Kalij pheasant, Munal, Sparrow, Himalayan Tahr, pigeon	Most common wildlife include: Deer, *Goral*, Monkey	Wildlife control will become a major issue, especially as crops are threatened by animal attacks.	Problems in agricultural crops
Water Resources and Energy			

Energy was drawn from forest products. Population was less and therefore the demand for energy was also less. Wild animals were abundant in the forest.	Water resources are drying up, unseasonal snowfall and rain are occurring. Construction of small hydropower plants.	Water resources will dry up. Glaciers and lakes will dry up. Hydropower plants will be replaced by solar and wind energy.	Diseases will increase, such as skin and stomach diseases, and there will be a lack of clean drinking water.
The water resources were plenty. Vegetation was abundant.	Increasing deforestation is causing floods and landslides due to lack of rain and snowfall. The presence of Uttis trees throughout the village has led to a decline in the production of other plant species.	If government and non-government organizations do not implement a management policy as soon as possible, huge losses will be incurred in a timely manner.	Floods and landslides cause premature deaths of children and senior citizens.
There was seasonal rainfall in summer and winter. Plants were green. There were fewer floods and landslides. Snowfall was regular although it became gradually less. There was snow in the mountains. Mosquitoes were around in ward 1 but they did not bite before.	The water source dried up according to the season, with no rain in the winter and very hot in the summer. Even in the winter, there was no snow in the mountains surrounding Kharikhola village. Due to heavy rainfall, floods and landslides caused great loss of life and property. Gradually, the plants began to dry up, and new types of creatures began to appear. Mosquitoes began to bite in the summer.	Water sources dry up, and all the mountains and hills that do not rain at the right time will appear black. Animals that are now found in the Terai region will also appear in this region. Rivers that flow throughout the year may dry up, making irrigation a problem. Various types of plants and animals will die out, and new species will appear.	Due to the lack of sufficient water supply, various diseases can occur, natural disasters such as floods and landslides can suddenly occur, making it difficult to stay safe, making it difficult to find shelter, and not having the immune physical body of a human being like we have today.
Health, Drinking Water and Sanitation			

Health, drinking water and sanitation, reproductive health was good, as was the average, such as longevity, where people lived to be 100 years old.	Various diseases are spreading, there is a shortage of drinking water, the fertility rate is decreasing, and the average life expectancy is decreasing.	Various diseases will increase. There will be a shortage of drinking water. Air pollution will occur.	Lack of fertility, suffering from various diseases, and shortage of drinking water.
Lack of modern health facilities. Due to the lack of good physical infrastructure, sometimes patients died prematurely.	Along with the facilities of health institutions, various diseases have emerged relatively recently. For example, the COVID pandemic has led to chronic diseases that are difficult to deliver.	Eating junk food can lead to not only chronic diseases, but also an increase in non-communicable diseases, which could lead to further problems in the future.	The health of women, children, and the elderly will be affected.
The concept of the waste pit was introduced.	The concept of alternative waste disposal has evolved as landfills become full.	Hoping to get organized	With increased awareness about waste, it will be easier for women to become proactive themselves.
Water mills were in use. Earlier, due to the lack of electricity, people used mules, carts, etc. to transport all the goods and household goods.	Decrease in the use of water mills and mills. Decrease in the use of sawdust due to lack of coal.	If policies and regulations are not implemented and plans are not made on time, the use of organic products will decrease in the coming days.	The decrease in the use of organic products will lead to an increase in diseases such as stillbirth, malnutrition, and diabetes.
The water from each water source would keep the boilers running for 12 months. There was less load shedding of electricity.	It seems that when water sources dry up, water tanks are not working for 12 months, resulting in load shedding of electricity.	It seems that in the next 25 years, as the snow melts in the mountains, the entire country will suffer huge losses as the rivers and streams dry up.	Due to lack of water and lack of agriculture, entire communities are facing problems like hunger and malnutrition.
There was no health post, lack of knowledge about reproductive health, and poor women's health.	There are health posts and awareness of health and cleanliness has increased.	With everyone's cooperation in the future, reproductive health awareness will increase and people's lives will be easier.	Women, children, the elderly, and the disabled would benefit from easier access to facilities.

Water was available in sufficient quantities, but energy resources such as electricity were lacking.	Currently, there are taps and water systems in every household, and energy is available, but water sources are drying up.	Water shortages can increase energy, but water shortages can also affect energy.	There may not be clean drinking water, but energy development can make things a little easier.
No drinking water, water needed to be carried from wells,	Safe drinking water, mills, electricity, community hall, schools	If there is cooperation between all stakeholders, then future looks good	More accessible
Rural and Urban Settlement			
The living conditions in the rural local settlements were good. Migration was low. Even in popular villages connected to the outside world like Lukla, where the airport is, migration was lower.	The local community living in the village seems to have decreased now. The number of people migrating is high. The number of people migrating to the market seems to be even higher than in the village.	The number of people engaged in agriculture in rural areas is expected to decrease significantly. In the coming days, the settlement of villages is expected to remain stable or even decrease. However, in areas like the market, the settlement is likely to increase significantly.	As the settlement and population in rural areas decline, women, children, and senior citizens may face problems, such as illness.
Settlements were sparsely populated and there were had poor electricity and water facilities.	Due to internal migration, settlements have become denser. Although electricity and water facilities are good, they are not sufficient during peak seasons.	Possibility of unplanned settlement growth. Old Sherpa-designed houses will be disappearing. National grade lighting will come. Possibility of drinking water problems.	Lack of open space will make it difficult to do the necessary exercise. Lack of a solid house can lead to health problems in hot weather and cold weather. Housewives will find it easier to work, but it will be difficult to manage the water load for household chores.
Disaster Risk Reduction and Management			

Climate change was not a familiar phrase. Climate induced disasters was not felt at the local level. Disaster preparedness plans and program were not in place.	We have been hearing that some programs are being launched to mitigate climate change. Efforts are being made to reduce erosion from the Chiluk River by creating a corridor through the rural municipality, and the entire corridor is yet to be constructed. Disaster and risk reduction as well as preparedness is a priority for KPLRM	Climate change is likely to cause more incidents such as fires in the future, mainly due to the depletion of water resources and extreme droughts, as the availability of water will also decrease at the same time. Settlements at risk due to potential for flooding and landslides	Living in a state of complete fear
Weather patterns were stable and predictable. There were lesser disasters and risks.	Untimely snowfalls, excessive or insufficient rain or snow	More floods and landslides No snow during the melting season. Excessive increase in wind and dryness on the ground increases	Problems in migration management that cause various diseases, problems with pasture and cotton
Less risk in higher altitudes. (4-5000 meters above sea level)	Increase in Rain water	Ever increasing risk, so risk reduction steps are required	Differently abled groups and children
Industry, Transportation and Physical Infrastructure			
Limited air flights Practice of using flushable toilets were not as popular as today.	Air transport is unlimited, many helicopter flights, toilets are very few. Every house has a toilet.	There is a risk that the Himalayan snowpack will no longer be a source of water due to noise pollution.	
There was no large-scale industry, transportation, or physical infrastructure.	Vehicles are now operating as soon as the road is operational. The various physical infrastructures connected by roads are becoming stronger.	There will be a possibility of a cable car coming, with paved roads leading to all homes. Industry, transportation, and	Bringing convenience to all group categories Air pollution, water pollution, and land pollution caused by industry

	Panighatta Modern Ghatta Mill All industries run on electricity Road construction Central power transmission line connection is in short supply	physical infrastructure can be better managed. Possibility of opening many industries, factories, electric vehicles, blacktopping of roads	and transportation can cause various types of diseases. Human efficiency will decrease
There was no industry, only Lukla Airport was available as transportation.	Currently, there is regular air traffic through Lukla Airport and a dirt road to Surke, so there are some nights.	There will be paved roads for air transport as well as vehicles.	Women, children, and senior citizens may have more facilities in 30 years than they do now.
Tourism, Natural Heritage, and Cultural Heritage			
Cultural and religious communities were not mixed.	Currently, due to high migration, cultures seem to be very mixed.	There may be mixed cultures in the future as well.	Mixed cultures can have some impact on children
Cultural artifacts were largely original, produced by local artisans.	After the great earthquake of 12 April 2072, many heritage sites were built with a strong focus on modernity, or original heritage sites were built quickly.	Without a detailed study of heritage and understanding its importance, it seems likely that most heritage sites will lose their originality and remain as mere physical structures, or even disappear altogether.	If we fail to teach children the importance of heritage, such as our original religious traditions, then everything will surely disappear very quickly.
In ward 1, Buddha Jayantis, where a large fair was held at places like Chilluk Devi Yana, were celebrated with great pomp and show with the attendance of 3-400 people throughout the night.	Currently, due to increasing migration, it has become difficult for 20 or 25 people to attend the Chhulukdevi Thana. The attendance at the Buddha Jayanti celebrations seems to be low, indicating a lack of hope among the youth towards their religion.	If policies and regulations are not put in place as soon as possible, all religions and cultures will be destroyed within the next 10 years.	The impact of this on children seems to be increasing, with the possibility of them becoming religiously incompetent within 30 years.

Places of worship and sites of reverence such as mane, stupas were established and important festivals were celebrated.	Lenji Kharka Gumba Charcha Gumba has developed into a concrete monastery and the teaching and worship is ongoing. Syapra Nitreya is performed. Buddhism is celebrated. Buddha Jayanti is celebrated. Maina Puja is celebrated. Buddhist stupas and pillars were preserved by painting, adding more mane, and cementing them.	Moreover, this Lenji Monastery will continue to develop over time. All the rituals and cultures related to Buddhism will be celebrated. Build more Manne Stupa temples	All group categories will have the opportunity to learn the culture of their own caste. Positive influence of protection related to religion and culture. Providing religious information to children, senior citizens, and people with disabilities
Caste, ethnicity and cultural identity. Monasteries, festivals, cultural practices, dance, Maaney	Caste, ethnicity and cultural identity. Monasteries, Church, festivals, cultural practices, dance, Maaney Chhorten	More betterment is expected if all ward office provides support	If flourished, then good for all

4. GEDSI, Climate Change Adaptation and Disaster Risk Reduction (DRR) in KPLRM

The Khumbu Pasanglhamu Rural Municipality (KPLRM) has set specific goals in its Annual Plan to address climate change adaptation and disaster risk reduction with a GEDSI approach. KPLRM has an operational motto of keeping Khumbu safe and resilient to climate change and natural disasters. The KPLRM activities that are already underway or are planned for coming days as mentioned in the policies and programs for fiscal year 2081/82 as well as the annual program and plans listed for FY 2080/81 are presented below. The climate change adaptation action plans should therefore be considered in light of existing and planned KPLRM activities.

4.1. Climate Change Adaptation

KPLRM has plans to support community-based climate adaptation and disaster risk reduction plan formulation and implementation, using traditional skills and knowledge, and technology. This LAPA is a step towards that goal. Similarly, the rural municipality prioritizes disaster risk assessment to ensure effective implementation of disaster preparedness programs and projects. As such, disaster risk mapping has been identified as an important component of this goal. Advance information, technology and equipment as part of the Early Warning System and Emergency Preparedness is emphasized in KPLRM annual plans and policies, alongside capacity building and public awareness about climate change and disaster risk reduction and preparedness.

Furthermore, coordination and collaboration with relevant agencies to prepare for emergency rescue, relief, reconstruction and rehabilitation is an ongoing approach of KPLRM. Nepal Army, Armed Police Force, Nepal Police, Nepal Red Cross Society, Himalayan Trust, and Pyramid Research Center, National Geographic, World Wildlife Fund, Civil Aviation Authority, and Department of Hydrology and Meteorology are some of the organizations KPLRM has collaborated with for disaster and climate related fields. Under the current situation, post-Ngole GLOF, KPLRM is also working with SNP, SNP Buffer Zone, and SPCC on climate change adaptation and disaster risk reduction and management measures. Climate change impact in KPLRM has led to a situation where institutions have had to reimagine their traditional institutional mandates and activities to respond to the ecological necessities. Organizations like SPCC is now prioritizing climate change adaptation actions as a major working area in addition to their long-established area of waste management in KPLRM.

Other KPLRM plans and policies also relate to the current GEDSI-LAPA. These include provisions for grants, relief, crop protection, and surveillance systems to conserve wildlife and birds as well as reduce human-wildlife conflict, and to demarcate forest and populated areas through installing fences and nets. Reforestation and soil conservation is a priority area for the rural municipality. The rural municipality has adopted a policy of promoting ecotourism with biological and ecological diversity, and one ward, one park policy has been adopted thus far. These plans overlap with climate change adaption action plans listed in this GEDSI-LAPA.

Long term waste management program has been implemented in partnership with SPCC and Sagarmatha Next. Collected waste is classified for re-use from Camp 2 on Mount Everest and

Namche Bazar. 'Carry Me Back' Program for waste management is currently underway to reduce waste from tourists. More than 100 waste collection sites have been constructed in the market area and trekking route. Sewage construction has begun in Lukla and Khumjung areas.

A total of 1.53 megawatts of hydropower is being generated from a total of 11 micro- and small-hydropower projects in the rural municipality area. Survey work has also been completed for the expansion of the national electricity grid to connect with KPLRM through transmission lines. Preparations are currently underway for this expansion. Electricity facility is available to about 95 percent of the households in the rural municipality area. The number of households using firewood is 30 percent, the population using electricity for cooking is 15 percent, and others are using LPG gas as their primary source of energy.

4.3. Disaster Risk Reduction

The main disasters identified in KPLRM are glacial lake outburst floods (GLOF), snowfall, lake erosion, earthquakes, landslides, human-wildlife conflict, windstorms, fires and epidemics. These disasters are described above in tables x and x. KPLRM has formulated a Disaster Management Act and has been providing relief and rescue in the event of damage caused by disasters. KPLRM has been actively engaged in providing relief and recovery to individuals and villages affected by the 2024 Ngole GLOF. National and international dialogues on climate change have been conducted with the aim of minimizing climate change impact on mountains and glaciers. Awareness programs at the local level are also conducted to build adaptive capacity to climate change. There are currently 87 fire hydrants installed, 13 automatic weather stations are in place, and early warning systems have been installed at five locations in this rural municipality. Regular maintenance and monitoring of these technologies is necessary for them to be effective. A disaster management fund has been established to protect communities, settlements affected by climate change and disaster risks and at high risk. Formation and institutionalization of rescue teams to provide support in case of emergency in high mountainous areas is a priority for KPLRM.

4.4. Waste Management[4]

KPLRM is currently planning to upgrade and operationalize the existing Material Recovery Facility (MRF) in Namche, and a new MRF has already been agreed upon for construction in Lukla. These initiatives are expected to significantly enhance solid waste management in the region. Furthermore, SPCC has also started integrating climate change-related initiatives into its work, aiming to raise awareness and implement actions at the local level. These efforts are anticipated to contribute positively to environmental sustainability and community engagement in the Khumbu region. Human waste (urine and feces) is another major issue along the Khumbu trekking route. In the high Himalayan trails and Everest Base Camp area, temporary toilets are constructed to collect waste from climbers, which is then emptied at designated locations. However, from Camp 1 upward on Mount Everest, there is no institutional system for waste collection. Some expedition teams have begun using personal waste bags (commonly known as poop bags), and their usage is gradually increasing. These bags are carried back to base camp by the climbers themselves for proper disposal.

[4] (Source: Environmental pollution and establishing sustainable, long-term waste management guidelines, 2079)

Observed Climate change impacts and overall wellbeing of the community

Various climate change impacts were highlighted by participants during each of the community consultations. The following section discusses a selection of climate change impact and high priority action plans from each ward. They show how increasing temperature and melting of ice and snow is disrupting lives and livelihoods in a variety of ways in each ward.

Ward 1: Underground River and Shifting Land

In Ward 1, residents of Kharikhola Bazar area have seen a significant shift in their land. Over the course of 3 decades, stone walls have moved approximately 1 meter and land, where people grow their crops have split. A detailed survey of the risk is needed urgently, followed by corridor construction for the river that is flowing underground. The pictures below show the river that is continuing to grow in size, which enters the ground just above Kharikhola Bazar. By the time the water reaches the tail, most of it disappears as it gets soaked into the soil causing the land to shift. Without immediate attention, several houses and land in the area are at risk of sliding at any given time, considering the unpredictably of the rain and the river currently showing no signs of decreasing in size above the settlement. This may also affect the newly built road through Kharikhola. Previously, a corridor was built but the amount of budget allocated was insufficient for the length of corridor that was needed. This high priority action plan from ward 1 needs immediate attention and budget allocation should be based on the need of the project.

Ward 2: Depleting Water Source and Increasing Water Demand

The village of Lukla is situated in ward 2. This is where the Tenzing Hillary airport is located. Hence, tens of thousands of tourists fly here every year along with goods from Kathmandu and Ramechhap for trekking. Often described as the gateway to Everest Base Camp. Lukla is one of the most densely populated villages in KPLRM. The population of Lukla has continuously increased in the last 50 years with the growth of the tourism industry. Traditional lifestyle and architecture have transformed significantly in KPLRM, driven by the growth of tourism industry. For example, the use of flushable toilets has replaced compostable toilets. As a result, there is an increasing demand for water. The main water tank and the subsidiary tanks in the village is proving to be insufficient especially during peak seasons as water availability becomes uncertain. In 2025, the seasonally formed ice chunk above the main water tank that gradually melted throughout the year disappeared for the first time in living memory of Lukla residents. There is increased demand for water typically during spring and fall tourist seasons. But the tourist seasons themselves have stretched by a month and the flow of tourists' arrival has not been steady. For example: there were tourists even in December of 2024, which was supposed to the end of tourist season; and unpredictable weather conditions in Lukla have caused flight cancellations followed by an influx of tourists on days suitable for flights. The arrival of road to Surkhe, which will soon reach Chaurikharka, will increase the arrival of more people in the region. The demand for water is expected to continue.

The increased demand for water, expanding village and unreliable water availability from existing source in Lukla is putting pressure on the local community to find alternative sources of water and increase use of less water intensive practice. Whereas water sources in nearby

villages can serve as one way to address this issue, it would also be necessary to find different techniques such as rainwater harvesting for non-drinking purposes.

Addressing this issue of water security is a long-term project that requires a multi-pronged approach. It would be necessary to construct the infrastructure. Simultaneously, there needs to be training and support provided for less water-intensive every day household practices and mechanisms to collect water.

Ward 3. Gabion Walls for Eroding Riverbanks

The close proximity of many settlements to Dudh Koshi in ward 3 exposes them to greater risk from floods and subsequent land erosion. The Ngole GLOF of August 2024 and the heavy rain a month later (locally referred to as the 3-day-3-nights of rain) have exposed several river banks to further erosion. Community members in ward 3 recognize the construction of gabion walls as the immediate need to protect the settlements as flood risks from glacial lakes to the north and heavy rain continue to rise. KPLRM has already begun the process of constructing gabion walls at various sites following a prioritization process to protect the most vulnerable and highest impact zone first. Considering the amount of work involved throughout KPLRM (in all five wards to a varying degree) and the high cost, KPLRM would need to coordinate and collaborate with other agencies to ensure safety in the KPLRM region.

Ward 4. Access to Clean Water and Community Governance Practice

Access to clean drinking water was identified as a high priority issue during community consultation workshop in ward 4. Access to clean drinking water in seasonal tourist settlements, and access to water for livestock were mentioned during consultation.

In Khumjung and Khunde, villagers reported that their drinking water contains silt, making it hard to use for daily activities or for drinking. Formulated action plan included protecting the water source from contamination and installing filtration technology at the source to ensure the quality of water. In seasonal tourist settlements, the lack of access to clean water creates a health hazard for the residents, the visiting tourists and livestock. In Ward 4, yaks and naks are left to graze at higher altitudes near these seasonal settlements, and suffer from lack of water when sources are limited.

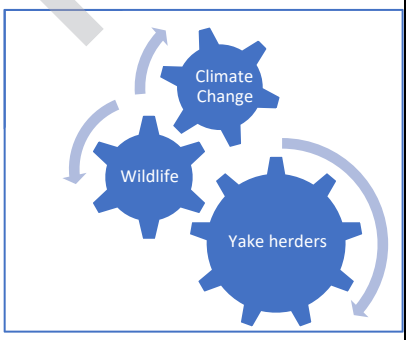
In ward 4, the customary governance practice of *Di* is still practiced. Since time immemorial, Khumbu residents have made customary laws to ensure that their crops, cattle and forests are left undisturbed for a period of time to encourage regeneration and restoration. The locally selected authorities, known as Nawa, take turns to enforce the law. Depending on what the Nawas are protecting, there can be custodian of wood/forest, and crop and pasture land. Nawas regulate tree cutting and deadwood use, while imposing fines on violators. New crops are protected from damage by managing grazing schedules and enforcing seasonal restrictions on bringing fresh leaves. Ban on livestock to enter the villages and nearby areas or prohibition on grazing during sensitive growth periods of the crops are strictly enforced. This customary practice has a built-in feature of strengthening resiliency of farmers from crop failure from human-animal disturbance. Continuation of such practice with additional adaptation action plans can further support communities while living with climate change.

Ward 5. Central Role of Yaks in Maintaining Local Ecosystem

The Nangpa Valley beyond Thame is home to many residents who continue their ancestral yak herding practice. This area of Ward 5 falls within Sagarmatha National Park.

Yaks play a central role in maintaining the local ecosystem. Yaks provide dung for fuel and fertilizer. Milk from naks provide nutrition to the villagers. Over the past three decades, yak herding has declined sharply as younger generation are unable to continue to the practice and the older generation is aging and as yak herders face multiple challenges.

The main source of income for yak herders is carrying loads for expedition groups to Everest Base Camp during climbing seasons, mostly in the spring. The use of helicopters has reduced the amount of work available for the herders. Furthermore, wolf attacks are causing serious threat to the yak herds. A new deadly infection, typically seen in warmer weather, has also been observed in Khumbu making it economically risky for the herders to continue their yak-based livelihood.



In the absence of yaks or reduction of yaks in the region, the need for fuel and fertilizer would have to be met through market. Such a situation replaces existing climate-friendly lifestyle with higher carbon footprint market. It puts further economic pressure on the yak herders to leave yak herding in search of higher-paying jobs elsewhere.

In the context of climate change, yak herders in Nangpa Valley are at the frontlines of potential GLOF occurrences. They are one of the most vulnerable groups to climate change in KPLRM. The impending disaster poses multiple risks to yak herders, from losing their ancestral livelihood practice to losing their land, assuming people are able to protect themselves. There is currently no bridge above Marlung, where most of the yak herders stay. In case of an emergency, there are no ways for the communities to cross the river to safety.

Two action plans are considered high priority here. Building a bridge around Arya, following a consultation with the community on its location, and regular monitoring of glaciers on foot in Nangpa Valley are identified as immediate action plans. At present, most glacial lake monitoring is happening based on satellite images. Assessments based on these images by experts outside the region have thus far focused on larger glacial lakes with virtually no attention paid to smaller ponds and new glacial lakes. On-foot monitoring, especially around settlements, where communities are already alert should be prioritized as a climate change adaptation and disaster risk reduction activity.

Figure 13. Pictures showing before and after the river goes underground in Kharikhola Bazaar

A. River above Kharikhola Bazar before going underground 	B. River above Kharikhola Bazar 	C. The tail of the river 
D. The tail of the river 	E. Incomplete Corridor in Kharikhola 	F. Unless managed, the underground river may affect the newly built road 

Figure 14. Main water tank in Lukla and the filtration system

A. Main water tank in Lukla showing the area where ice used to form

Water filtration system at the main wat tank in Lukla

C. The main water tank in Lukla

Water filtrat mechanism

Figure 15. Riverbank erosion along Dudh Koshi in Ward 3

A. Landslide in Phakding 	B. Trail Protection in Fangorok (Benkar) 
C. Slope washed away from the 2024 GLOF in Toktok 	D. Damaged trails above Thumbuk (Jorsalle) on the way to Namche 

Figure 16. Village of Khumjung on the lap of Mount Khumbiyullha

Figure 17. Yak herders in Nangpa Valley

A. Yak Herding Village showing rock walls to keep yaks together

B. Dzibko Glacier monitored by the community

C. Yaks in Arya return home in the evening

D. Yak dung as a reliable, traditional source of energy

5. Climate Change Adaptation Action Plans

The climate change adaptation action plans have been prepared following climate change impact, risk and vulnerability assessment at the community level. Implementation of these action plans are expected to strengthen resiliency and increase adaptive capacity of the community to respond to climate change effects at the local level. GEDSI-LAPA should be treated as any significant planning document when incorporating into existing and planned KPLRM policies and programs. The cost estimates presented here for each action plan should be treated as a reference. They are subject to change based on the market and unforeseen circumstances. Therefore, a detailed cost estimation should be conducted before implementation. KPLRM may coordinate and collaborate with institutional stakeholders and donor agencies to carry out the action plans. The action plans are different from other KPLRM development activities that are intended to uplift socio-economic and cultural wellbeing of the community. The GEDSI-LAPA responds directly to climate change effects and has the goal of strengthening resiliency and increasing adaptive capacity of KPLRM residents. There may be overlaps between KPLRM's development programs and GEDSI-LAPA plans but they are not the same. The adaptation action plans can be classified into five groups based on how they increase resiliency and adaptive capacity of the KPLRM.

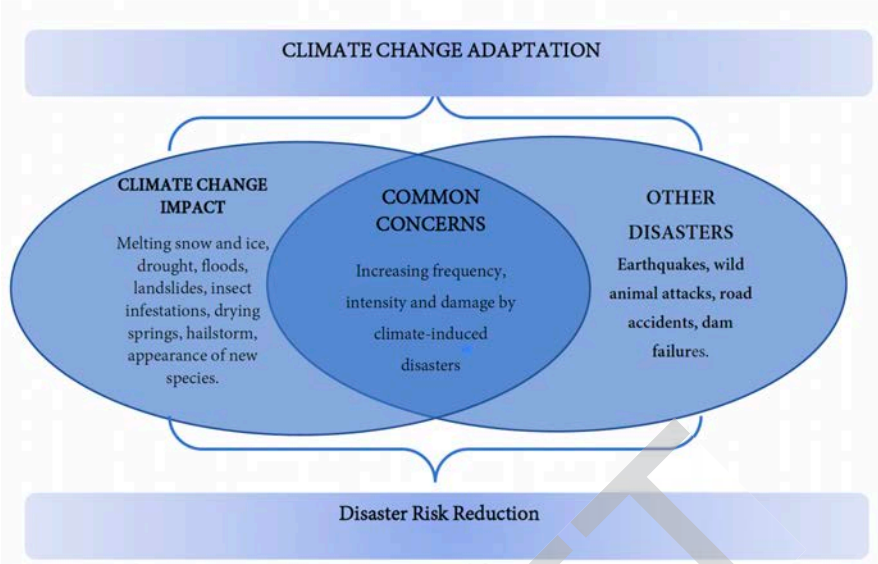
Table 14. Five categories of action plans

	Categories	Examples
1	High cost, techno-managerial projects, usually connected to disaster risk reduction	Lumding Tsho Lake lowering project.
2	Protect and sustain existing high resilient practices	Support to yak herders and promotion of yak products; support and promotion for environmentally friendly traditional organic farming practices.
3	Enhance climate resiliency and adaptive capacity of residents	Provide training and equipment to farmers to grow newer variety of climate change resilient crops.
4	Maintain existing infrastructure, upgrade as needed	Maintenance of trails to emergency shelters that may be used less; upgrade or build new bridges in places that are prone to climate induced risks.
5	Research, monitoring and capacity building	Regular monitoring of glacial lakes

5.3. Some considerations for KPLRM GEDSI-LAPA

This GEDSI-LAPA report comes on the heels of the Ngole GLOF of 2024 that devastated the village of Thame and downstream communities, especially in Ward 3. Disaster risk reduction and management thus appears here as a salient theme in light of recent GLOF experience and the overall emphasis on melting of glaciers and GLOF risk when it comes to climate change discussions. This report, however, shows that climate change impact is widely distributed across the eight sectors: Agriculture and Food Security; Forest, Biodiversity and Watershed Conservation; Water Resources and Energy; Disaster Risk Reduction and Management; Health, Drinking Water and Sanitation; Rural and Urban Settlement; Industry, Transportation and Physical Infrastructure; and Tourism, Natural Heritage, and Cultural Heritage.

Figure 18. Interrelationship between climate change and disaster risk management



Source: Patarashi Rural Municipality LAPA

It should also be noted that the report contains action plans primarily based on consultations conducted between April and June of 2025 in Kharikhola, Lukla, Yulning (Ghat), Khumjung, and Thame. Therefore, the information presented here reflects the discussions that took place at this particular time in these villages. They are supplemented with information gathered from consultations with stakeholders and interviews with individuals from different villages. Climate change impact at the local level is an evolving phenomenon, just as the community itself is constantly changing in response to a variety of socio-economic, ecological, and political stimuli. Therefore, this document should be considered to be a reference document that paves the way forward to mainstreaming more robust GEDSI-climate change adaptation activities into policies, development plans and programs in the future.

The action plans listed here includes some activities that are already underway or are currently planned by various stakeholders. In such cases, the activities should be considered as reaffirming climate change adaptation goals of those action plans. There might be duplication in action plans at the municipality and ward levels. These should be seen as areas of overlapping concerns.

5.4. Prioritization of climate change adaptation action plans

Climate change adaptation action plans have been prioritized based on five factors. Effectiveness, feasibility, utility, economical, and GEDSI-sensitivity were given 1-3 points. Most effective, feasible, useful and economical action plans were given 3 and the least were given 1. Most expensive were given 1 point and the least expensive were given 3 points. Action plans that were neutral to GEDSI were given 2. Action plans with no relevance to GEDSI were given 1.

Table 15. Prioritization of Adaptation Measures

Sector	Adaptation Measures	Effectiveness	Feasibility	Utility	Economic	GEDSI Sensitive	Total	Rank	Necessity
Agriculture and Food Security	Support market creation for agricultural products from Ward 1 in upper KPLRM through cost subsidy and low-cost transportation services.	3	2	2	2	3	12	Fourth	High need
	Promote organic agricultural products in restaurants and lodges through subsidies. Support advertisements of local organic products.	2	2	2	2	2	10	Sixth	Necessary
	Promote yak/nak milk and wool products as high-quality items from the region through advertisements. Support placement of these items in stores in key tourist villages such as Lukla and Namche.	3	3	3	3	3	15	First	Immediate
	Organize annual KPLRM farm fair to showcase products from KPLRM and to award the best farmers and herders.	3	1	1	2	3	10	Sixth	Necessary
	Organize public recognition programs of traditional climate-friendly resilient livelihood practices to highlight their significance to climate change adaptation. Create policies to certify locally produced, organic items and assist in marketing them.	3	3	3	3	3	15	First	Immediate
	Explore possibilities of cooperative farming on barren lands at the tole level as a way to strengthen resiliency of the communities and promote climate resilient traditional crops.	3	3	3	3	3	15	First	Immediate
	If it is suitable, provide trainings and equipment to support cooperative farming on barren lands to women, gender minorities, people with disabilities, economically marginalized and those most vulnerable.	2	1	1	2	3	9	Seventh	Necessary

	Publicly recognize and certify Indigenous crops from KPLRM such as potatoes from Tarnga or naked barley from Dingboche to promote these products in the market and incentivize traditional farming.	3	2	3	2	3	13	Third	High need
	Introduce alternative crops that are easier and locally suitable to grow. Provide trainings and distribute equipment to support these new crops.	3	3	3	2	3	14	Second	Immediate
	Setup agricultural grant to incentivize and support farmers, with special attention to GEDSI.	3	3	3	2	3	14	Second	Immediate
	Collect and preserve Indigenous seeds to ensure that they do not disappear completely.	3	3	2	2	2	12	Fourth	High need
	Create mechanisms to control food price and the quality of food products in the market	3	3	3	3	3	15	First	Immediate
	Establish cold store as a food security measure in highly populated villages such as Kharikhola, Lukla, Phakding, Namche.	3	2	3	2	2	12	Fourth	High need
	Regularly check for diseases in animals and plants, and implement control measures including awareness raising programs and medicine distribution.	3	3	3	2	2	13	Third	High need
	Conduct regular tests to determine the quality of the soil and the feasibility of new climate-resilient crops.	3	2	2	2	2	11	Fifth	Necessary
	Use uniform measurements for food items produced locally and imported from elsewhere.	3	1	3	3	2	12	Fourth	High need
	Provide financial and material assistance for fencing to farmers to protect their crops from wild animals.	3	2	3	2	3	13	Third	High need
Forest, Biodiversity and Watershed Conservation	Support the formation and operation of school level eco clubs to provide educational training on conserving local flora and fauna.	2	3	3	3	3	14	Second	Immediate
	Establish multi-purpose nursery in high altitude villages like Thame to support reforestation program in KPLRM in collaboration with organizations like Himalayan Trust Nepal, SNP, SNPBZ and SPCC.	3	3	3	2	2	13	Third	High need

	Conduct regular awareness raising events and trainings to control forest fire throughout KPLRM in collaboration with interested groups such as the Everest Fire and Rescue and tole development committees.	3	3	3	2	3	14	Second	Immediate
	Conduct interaction programs at the ward level to identify reforestation sites and suitable plants that support local ecosystem. For example, plants that are capable of storing water could be planted in areas with dried up streams, or plant aesthetically beautiful Indigenous trees or erosion-resistant plants.	3	3	3	3	3	15	First	Immediate
	Conduct regular reforestation programs with ecologically suitable plants in sites identified by community members at the ward level.	3	2	3	2	3	13	Third	High need
	Protect ecologically important forest sites around settlements that support forest, biodiversity and watershed conservation through awareness raising programs and policies to prohibit harmful activities.	3	3	3	3	3	15	First	Immediate
	Continue to support habitat protection and food items of endangered animals such as Red Panda in collaboration with community forestry user groups, SNPBZ and SNP.	3	3	2	3	1	12	Fourth	High need
	Identify and implement appropriate measures to control wildlife (wolves, wild dogs, *Danfe, Jharal*) population to avoid harm to residents in coordination with the SNP and SNPBZ.	3	1	3	2	3	12	Fourth	High need
	Conduct regular interaction programs at the tole level to assess situation and identify measures to protect of forest, biodiversity and watershed.	3	3	3	3	3	15	First	High need
	Increase compensation for economic loss from wildlife attacks. Ensure on time payment of compensation.	2	2	3	2	3	12	Fourth	High need
	Stop illegal wildlife hunting in collaboration with SNP.	2	2	2	2	1	9	Seventh	Necessary
	Study anthropogenic impact on Khumbu glacier from the Everest expedition industry.	3	2	3	2	1	11	Fifth	Necessary

	Place fence around key watershed area to protect them from contamination.	1	2	3	2	2	10	Sixth	Necessary
Water Resources and Energy	Mapping of natural springs at tole level to identify existing and potential water resources to secure water availability. Survey dead water sources.	3	3	3	3	3	15	First	Immediate
	Identify ways to protect water resources at tole level for increased water security.	3	3	3	3	3	15	First	Immediate
	Prohibit waste disposal in rivers and streams through mobilization of village level committees to avoid polluting water resources. Implement other identifed measures to protect water resources.	3	3	3	3	3	15	First	Immediate
	Expedite National Electricity Grid connectivity through lobbying at the national level.	3	3	3	3	3	15	First	Immediate
	Provide incentives and subsidies to promote the use of climate friendly energy sources and energy efficient equipment. (Provide 1.5kw solar to vulnerable households.)	3	3	3	2	3	14	Second	Immediate
	Support the maintenance of existing energy sources and explore other possibilities in collaboration with organizations like the Khumbu Bijuli Company.	2	2	3	2	3	12	Fourth	High need
	Increase capacity of small hydropower (need for 3 megawatt).	2	1	3	1	2	9	Seventh	Necessary
Disaster Risk Reduction and Management	Activate disaster risk reduction and management committee at the tole, ward and municipal levels.	3	3	3	3	3	15	First	Immediate
	Conduct regular monitoring and management of risk and hazard zones throughout KPLRM in collaboration with interested research institutions, SNP, SNPBZ, Nepal Army and Armed Police Force.	3	3	3	3	3	15	First	Immediate
	Lower water level of Lumding Tsho to reduce GLOF risks.	3	2	3	1	3	12	Fourth	High need
	Lower water level from the lakes above Thame to reduce GLOF risks.	3	1	3	1	3	11	Fifth	Necessary

	Regularly monitor critical glacial lakes and conduct regular assessment of GLOF risks with support from ward level disaster risk reduction committees.	3	3	3	3	3	15	First	Immediate
	Construct emergency shelter and provide necessary equipment at the tole level after surveying the needs of the community. Provide first aid facility for post-disaster relief.	3	3	3	1	3	13	Third	High need
	Establish Automatic Weather Monitoring System in ward 1 and 5.	3	3	2	1	2	11	Fifth	Necessary
	Install and conduct regular maintenance of Early Warning System in KPLRM.	3	3	3	1	3	13	Third	High need
	Construct gabion walls for protection from landslides and flood induced riverbank erosion.	3	3	3	1	3	13	Third	High need
	Construction of dams and canals for rainwater control around trails and roads to avoid erosion and further damage.	3	2	3	1	3	12	Fourth	Necessary
	Construction of (approx. 280m) of corridor in Kharikhola to avoid further landslide and land sinking.	3	3	3	3	3	15	First	Immediate
	Establish Fire Hydrant Facility in villages that do not have them. Provide regular maintenance of established fire hydrants in collaboration with Everest Fire and Rescue.	3	3	3	2	3	14	Second	Immediate
	Establish natural disaster response and rescue emergency fund (enough to cover helicopter rescue of patients).	3	3	3	2	3	14	Second	Immediate
	River Diversion in Thame with JCB dozer (annual maintenance)	3	3	3	1	3	13	Third	High need
	Provide regular disaster risk reduction and emergency response trainings at the ward level.	3	3	3	2	3	14	Second	Immediate
	Provide regular public awareness programs about climate change induced natural disasters. Conduct interaction programs at the tole level to identify and implement risk reduction measures. Support educational programs at the school level eco clubs.	3	3	3	2	3	14	Second	Immediate
Health, Drinking	Upgrade existing hospitals to provide critical disease treatment to KPLRM residents and visitors.	2	2	3	1	3	11	Fifth	Necessary

	Provide financial and logistical support to retain healthcare professionals in local hospitals.	2	2	3	2	3	12	Fourth	High need
	Provide awareness programs about balanced diet at tole levels and reduce the use of junk food, especially in schools.	3	3	3	2	3	14	Second	Immediate
	Provide necessary materials to increase access to clean drinking water in toles that need them. Provide financial and technical support to access clean drinking water in Thame.	3	3	3	2	3	14	Second	Immediate
	Create ponds for yaks and other domestic animals to drink water in areas that are sparsely populated.	2	3	2	2	3	12	Fourth	High need
	Explore and implement filtration system at drinking water sources to ensure access to clean drinking water. For example, filtration system at Gyezo source.	2	2	3	2	3	12	Fourth	High need
	Conduct a detailed study and implement protective measures to keep yaks safe from new climate-induced diseases.	2	2	3	2	3	12	Fourth	High need
	Provide awareness raising programs to improve child and women's health at tole level.	3	3	3	3	3	15	First	Immediate
	Create children park at ward level to promote healthy living.	3	3	3	2	3	14	Second	Immediate
	Establish ambulance service to provide timely care for patients.	2	2	3	1	3	11	Fifth	Necessary
	Establish municipality level health insurance to support health treatment of KPLRM patients.	2	2	3	2	3	12	Fourth	High need
	Support regular facility maintenance of drinking water facilities in collaboration with tole development committees.	3	3	3	2	3	14	Second	Immediate
	Establish and proper management of veterinary clinic.	2	2	3	1	2	10	Sixth	Necessary
	Conduct regular lab test of drinking water throughout KPLRM to maintain health standard.	3	3	3	2	3	14	Second	Immediate
Rural and Urban Settlement	Lobby and incentivize communication networks to provide reliable service throughout KPLRM.	3	2	3	2	3	13	Third	High need
	Construct Materials Recovery Facility (MRF) in major KPLRM settlements such as Lukla in alignment with existing plans.	3	2	3	1	3	12	Fourth	High need

	Establish 50 environment stations in all major KPLRM villages (approx.15 lakhs each)	3	2	3	1	3	12	Fourth	Necessary
	Regularly maintain existing waste management centers in collaboration with SPCC.	3	3	3	2	3	14	Second	Immediate
	Distribute waste segregation bins at ward level; 2 dustbins in each household for rubbish segreation in collaboation with tole development committee.	2	3	2	2	3	12	Fourth	High need
	Regularly maintain existing sewage system in densely populated villages to ensure health and safety of the community.	3	3	3	2	2	13	Third	High need
	Construct public toilets along the trail to Everest Basecamp to maintain defecation free zone status and keep the environment clean.	3	2	3	2	2	12	Fourth	High need
	Build and maintain smaller roads within villages that are connected to the main road in ward 1 for smaller vehicles including ambulance.	2	2	3	2	3	12	Fourth	High need
	Create improved and updated town planning to ensure resilient settlements. Implement checks on new building designs to reduce haphazard construction.	3	2	3	3	2	13	Third	High need
	Discourage use of outhouse in the middle of the village in warmer regions to avoid spread of communicable diseases.	3	2	3	3	1	12	Fourth	High need
	Conduct awareness programs about the health impact of plastic use and provide incentives to discourage the use of single use plastic bags and household items.	3	2	3	3	2	13	Third	High need
	Provide trainings and seminars on circular economy (reuse and recycle) and proper waste management.	3	3	3	3	3	15	First	Immediate
Industry, Transportation and Physical Infrastructure	Create hotel association at the tole level, where there is none, and make it active at the municipal level to regulate uniform policies across tourism businesses to encourage climate friendly practices.	3	2	3	3	2	13	Third	High need
	Regularly upgrade and maintain existing road network in ward 1 up to Surkhe (and to Chaurikharka when opened).	3	3	3	2	2	13	Third	High need

	Explore the possibility of a two-way trail system in KPLRM to avoid traffic jams during peak tourist season and to distribute tourism benefits on both sides of Dudhkoshi.	3	2	3	2	3	13	Third	High need
	Construct swing bridges in places currently not connected by bridge at the tole level. Two bridges to cross Thame Khola, and at least one bridge north of Marulung.	3	3	3	1	3	13	Third	High need
	Explore the possibilities of ropeway between Lukla and Namche for transportation of goods only.	2	2	3	1	2	10	Sixth	Necessary
	Regularly maintain electricity infrastructure and upgrade as necessary. Manage currently unmanaged wires (need for earthing wires).	3	3	3	3	3	15	First	Immediate
	Create policies that discourage vehicles fueled by petrol and diesel at KPLRM entrance gate in ward 1, encourage electric vehicles, and set time for when vehicles can operate. Implement these policies in coordination with concerned authorities at the local and province levels.	2	1	2	3	2	10	Sixth	Necessary
	Construct safe trails in low-traffic areas that could be used for emergency shelters during disasters, in collaboration with tole development committees.	3	3	3	3	3	15	First	Immediate
	Maintain trails inside Thame that were destroyed from 2024 GLOF, especially the trail from the bridge to Thame and Thameteng.	3	3	3	2	3	14	Second	Immediate
	Install solar powered lights on high traffic foot trails in ward 3 and 4.	3	3	3	2	3	14	Second	Immediate
	Construct new trail for mules, maintain existing ones.	3	3	3	3	3	15	First	Immediate
Tourism, Natural Heritage, and Cultural	Advertise religious and cultural heritage tourism in KPLRM to promote them on social media.	3	3	2	3	2	13	Third	High need
	Provide subsidies to KPLRM residents to use biodegradable *lungtas* (prayer flags). Provide biodegradable prayer flag making trainings to GEDSI participants. Organize clean up campaigns to clean old, synthetic *lungtas.*	3	3	3	3	3	15	First	Immediate

	Create a user-friendly digital app, sutiable for residents and tourists to access weather and climate information and cultural and religious heritage information.	3	3	3	2	1	12	Fourth	High need
	Provide financial assistance to tole development committees to preserve existing religious and cultural monuments and artifacts, including kani and chorten. Create policies on building new religious and cultural monuments such as kani and chorten.	3	3	3	3	3	15	First	Immediate
	Provide financial support to cultural dances, songs and language preservation projects in collaboration with the women's group in each ward.	3	3	3	3	3	15	First	Immediate
GEDSI	Provide trainings on climate-resilient new income generation skills to GEDSI participants in all wards.	3	3	3	3	3	15	First	Immediate
	Establish social security fund for mountaineers and guides to support them, when they cannot continue their employment on mountains.	3	3	3	2	3	14	Second	Immediate
	Construct museum to represent all ethnic groups in the ward as a measure to preserve culture from loss. (GEDSI)	2	2	2	2	3	11	Fifth	Necessary
	Provide trainings on climate change and disaster awareness programs to women’s groups in all wards.	3	3	3	3	3	15	First	Immediate

Table 16. Agriculture and Food Security Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	Agriculture and Food Security						
1	Support market creation for agricultural products from Ward 1 in upper KPLRM through cost subsidy.	**1**	**400**	**1**	**1**	**10,00,000**	**1000000**
2	Provide low-cost transportation services for farmers to take their agricultural products to market.	**1**	**400**	**1 vehicle**	**2**	**50,00,000**	**10000000**
3	Promote organic agricultural products in restaurants and lodges through subsidies. Advertise local organic products.	**All**	**2000**	**continuous**	**1**	**1,00,000**	**100000**
4	Promote yak/nak milk and wool products as high-quality items from the region through advertisements. Support placement of these items in stores in key tourist villages such as Lukla and Namche.	**4,5**	**500**	**continuous**	**1**	**1,00,000**	**100000**
5	Organize annual KPLRM farm fair to showcase products from KPLRM and to award the best farmers and herders.	**ALL**	**1000**	**1**	**1**	**5,00,000**	**500000**
6	Organize public recognition programs of traditional climate-friendly resilient livelihood practices to highlight their significance to climate change adaptation. Create policies to certify locally produced, organic items and assist in marketing them.	**ALL**	**1000**	**1**	**1**	**100000**	**100000**
7	Explore possibilities of cooperative farming on barren lands at the tole level as a way to strengthen resiliency of the communities and promote climate resilient traditional crops.	**ALL**	**500**	**ward**	**5**	**50,000**	**250000**
8	Provide trainings and equipment to support cooperative farming on barren lands to women, gender minorities, people with disabilities, economically marginalized and those most vulnerable.	**ALL**	**1500**	**ward**	**5**	**500,000**	**2500000**

9	Publicly recognize and certify Indigenous crops from KPLRM such as potatoes from Tarnga or naked barley from Dingboche to promote these products in the market and incentivize traditional farming.	**ALL**	**1000**	**ward**	**5**	**50,000**	**250000**
10	Introduce alternative crops that are easier and locally suitable to grow. Provide trainings and distribute equipment to support these new crops.	**ALL**	**1000**	**ward**	**5**	**200,000**	**1000000**
11	Setup agricultural grant to incentivize and support farmers, with special attention to GEDSI.	**ALL**	**1000**	**Municipality**	**1**	**1,00,00,000**	**10000000**
12	Collect and preserve Indigenous seeds to ensure that they do not disappear completely.	**ALL**	**1000**	**Municipality**	**1**	**5,00,000**	**500000**
13	Create policies and implement food price and the quality of food products in the market	**ALL**	**2489**	**Municipality**	**1**	**50,000**	**50000**
14	Establish cold store as a food security measure in highly populated villages such as Kharikhola, Lukla, Phakding, Namche.	**ALL**	**2000**	**Ward**	**5**	**10,00,000**	**5000000**
15	Regularly check for diseases in animals and plants, and implement control measures including awareness raising programs and medicine distribution.	**ALL**	**1000**	**ward**	**5**	**1,00,000**	**500000**
16	Conduct regular tests to determine the quality of the soil and the feasibility of new climate-resilient crops.	**ALL**	**1000**	**ward**	**5**	**1,00,000**	**500000**
17	Use uniform measurements for food items produced locally and imported from elsewhere.	**ALL**	**2489**	**Municipality**	**1**	**50,000**	**50000**
18	Provide financial and material assistance for fencing to farmers to protect their crops from wild animals.	**ALL**	**1000**	**ward**	**5**	**10,00,000**	**5000000**
						Total	**26400000**

Table 17. Forest, Biodiversity and Watershed Conservation Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	Forest, Biodiversity and Watershed Conservation						
1	Support the formation and operation of school level eco clubs to provide educational training on conserving local flora and fauna.	**ALL**	**1500**	**1 school**	**10**	**1,00,000**	**1000000**
2	Establish multi-purpose nursery in high altitude villages like Thame to support reforestation program in KPLRM in collaboration with organizations like Himalayan Trust Nepal, SNP, SNPBZ and SPCC.	**4,5**	**1001**	**1 nursery**	**2**	**5,00,000**	**1000000**
3	Conduct regular awareness raising events and trainings to control forest fire throughout KPLRM in collaboration with interested groups such as the Everest Fire and Rescue and tole development committees.	**ALL**	**2489**	**ward**	**5**	**2,50,000**	**1250000**
4	Conduct interaction programs at the ward level to identify reforestation sites and suitable plants that support local ecosystem. For example, plants that are capable of storing water could be planted in areas with dried up streams, or plant aesthetically beautiful Indigenous trees or erosion-resistant plants.	**ALL**	**2000**	**ward**	**5**	**50,000**	**250000**
5	Conduct regular reforestation programs with ecologically suitable plants in sites identified by community members at the ward level. (unit cost depending on the program)	**ALL**	**2000**	**ward**	**5**		**500000**
6	Protect ecologically important forest sites around settlements that support forest, biodiversity and	**ALL**	**2000**	**ward**	**5**	**1,00,000**	**500000**

	watershed conservation through awareness raising programs and policies to prohibit harmful activities.						
7	Continue to support habitat protection and food items of endangered animals such as Red Panda in collaboration with community forestry user groups, SNPBZ and SNP.	**ALL**	**1000**	**ward**	**5**	**1,00,000**	**500000**
8	Identify and implement appropriate measures to control wildlife (wolves, wild dogs, *Danfe, Jharal*) population to avoid harm to residents in coordination with the SNP and SNPBZ.	**ALL**	**2000**	**ward**	**5**	**1,00,000**	**500000**
9	Conduct regular interaction programs at the tole level to assess continuous situation and identify measures to protect of forest, biodiversity and watershed.	**ALL**	**2489**	**ward**	**5**	**100000**	**500000**
10	Increase compensation for economic loss from wildlife attacks in coordination with concerned authorities. Ensure on time payment of compensation.	**3,4,5**	**1500**	**continuous**		**10,00,000**	**1000000**
11	Stop illegal wildlife hunting in collaboration with SNP.	**3,4,5**	**1500**	**continuous**		**1,00,000**	**100000**
12	Study anthropogenic impact on Khumbu glacier from the Everest expedition industry.	**4**	**500**	**1 time**			
13	Place fence around key watershed area to protect them from contamination.	**ALL**	**2489**	**ward**	**5**	**10,00,000**	**5000000**
						Total	**1,11,00,000**

Table 18. Water Resources and Energy Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	Water Resources and Energy						
1	Mapping of natural springs at tole level to identify existing and potential water resources to secure water availability. Survey dead water sources.	**ALL**	**2489**	**ward**	**5**	**1,00,000**	**500000**
2	Identify ways to protect water resources at tole level for increased water security.	**ALL**	**2489**	**ward**	**5**	**50,000**	**250000**
3	Prohibit waste disposal in rivers and streams through mobilization of village level committees to avoid polluting water resources. Implement other identifed measures to protect water resources.	**ALL**	**2000**	**ward**	**5**	**50,000**	**250000**
4	Expedite National Electricity Grid connectivity through lobbying at the national level.	**ALL**	**2489**	**continuous**		**50,000**	**50000**
5	Provide incentives and subsidies to promote the use of climate friendly energy sources and energy efficient equipment. (Provide 1.5kw solar to vulnerable households.)	**ALL**	**2489**	**ward**	**5**	**40,00,000**	**20000000**
6	Support the maintenance of existing energy sources and explore other possibilities in collaboration with organizations like the Khumbu Bijuli Company.	**5**	**1001**	**1**	**1**	**1,00,00,000**	**10000000**
7	Increase capacity of small hydropower. (unit cost depending on the need of each ward)	**ALL**	**2000**	**ward**	**5**	**50,00,000**	**25000000**
						Total	**5,60,50,000**

Table 19. Disaster Risk Reduction and Management Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	Disaster Risk Reduction and Management						
1	Activate disaster risk reduction and management committee at the tole, ward and municipal levels.	**ALL**	**2489**	**ward**	**5**		
2	Conduct regular monitoring of risk and hazard zones throughout KPLRM in collaboration with interested research institutions, SNP, SNPBZ, Nepal Army and Armed Police Force to assist with risk reduction planning and preparedness.	**ALL**	**2489**	**ward**	**5**	**2,00,000**	**1000000**
3	Lower water level of Lumding Tsho to reduce GLOF risks.	**2**		**1 time**	**1**	**10,00,00,000**	**100000000**
4	Lower water level from the lakes above Thame to reduce GLOF risks.	**5**	**1500**	**1 time**	**1**	**10,00,00,000**	**100000000**
5	Regularly monitor critical glacial lakes and conduct regular assessment of GLOF risks with support from ward level disaster risk reduction committees.	**2,3,4,5**	**2100**	**ward**	**4**	**1,00,000**	**400000**
6	Construct emergency shelter and provide necessary equipment at the tole level after surveying the needs of the community. Provide first aid facility for post-disaster relief.	**ALL**	**2489**	**ward**	**5**	**10000000**	**50000000**
7	Establish Automatic Weather Monitoring System in ward 1 and 5.	**1,5**					
8	Install and conduct regular maintenance of Early Warning System in KPLRM.	**2,3,4,5**	**2100**	**1 EWS**	**7**	**10,00,000**	**7000000**
9	Construct gabion walls for protection from landslides and flood induced riverbank erosion. (unit cost depends on the hazard)	**ALL**	**2100**	**ward**	**5**		**10000000**

10	Construction of dams and canals for rainwater control around trails and roads to avoid erosion and further damage.	**ALL**	**2000**	**ward**	**5**	**30,00,000**	**15000000**
11	Construction of (approx. 280m) of corridor in Kharikhola to avoid further landslide and land sinking.	**1**	**200**	**1 corridor**	**1**	**40,00,000**	**4000000**
12	Establish Fire Hydrant Facility in villages that do not have them. Provide regular maintenance of established fire hydrants in collaboration with Everest Fire and Rescue.	**ALL**	**2000**	**ward**	**5**	**1,00,000**	**500000**
13	Establish natural disaster response and rescue emergency fund (enough to cover helicopter rescue of patients).	**ALL**	**2489**	**municipality**	**1**	**1,00,00,000**	**10000000**
14	River Diversion in Thame with JCB dozer (annual maintenance).	**5**	**300**	**1**	**1**	**1,00,00,000**	**10000000**
15	Provide regular disaster risk reduction and emergency reponse trainings at the ward level.	**ALL**	**2489**	**ward**	**5**	**200000**	**1000000**
						Total	**30,89,00,000**

Table 20. Health, Drinking Water and Sanitation Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
Health, Drinking Water and Sanitation							
1	Upgrade existing hospitals to provive critical disease treatment to KPLRM residents and visitors.	**4**	**1000**	**1 hospital**	**1**	**1,00,00,000**	**10000000**
2	Provide financial and logistical support to retain healthcare professionals in local hospitals.	**ALL**	**2000**	**ward**	**5**	**5,00,000**	**2500000**
3	Provide awareness programs about balanced diet at tole levels and reduce the use of junk food, especially in schools.	**ALL**	**2000**	**ward**	**5**	**1,00,000**	**500000**
4	Provide necessary materials to increase access to clean drinking water.	**ALL**	**2000**	**ward**	**5**	**2,00,000**	**1000000**
5	Provide financial and technical support to access clean drinking water in Thame.	**5**	**300**	**1 time**	**1**	**2,00,000**	**200000**
6	Create ponds for yaks and other domestic animals to drink water in areas that are sparsely populated.	**4,5**	**200**	**1 pond**	**4**	**70,000**	**280000**
7	Explore and implement filtration system at drinking water sources to ensure access to clean drinking water. For example, filtration system at Gyezo source.	**ALL**	**1500**	**ward**	**5**	**10,00,000**	**25000000**
8	Conduct detailed study and implement protective measures to keep yaks safe from new climate-induced diseases.	**4,5**	**1001**	**each disease**		**2,00,000**	**200000**
9	Provide awareness raising programs to improve child and women's health at tole level.	**ALL**	**2000**	**ward**	**5**	**2,00,000**	**1000000**
10	Create children park at ward level to promote healthy living.	**ALL**	**2489**	**ward**	**5**	**200000**	**1000000**

11	Establish ambulance service to provide timely care for patients.	**1**	**425**	**1 time**	**1**	**50,00,000**	**5000000**
12	Establish municipality level health insurance to support health treatment of KPLRM patients.	**ALL**	**2489**	**municipality**	**1**	**1,00,00,000**	**10000000**
13	Support regular maintenance of drinking water facilities in collaboration with tole development committees.	**ALL**	**2000**	**ward**	**5**	**2,00,000**	**1000000**
14	Establish and manage veterinary clinic, including veterinary doctor.	**4,5**	**1001**	**1 clinic**	**2**	**1,00,00,000**	**20000000**
15	Conduct regular lab test of drinking water throughout KPLRM to maintain health standard.	**ALL**	**2489**	**ward**	**5**	**1,00,000**	**500000**
						Total	**7,81,80,000**

Table 21. Rural and Urban Settlement Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	Rural and Urban Settlement						
1	Lobby and incentivize communication network companies to provide reliable service throughout KPLRM.	**ALL**	**2489**	**Continuous**	**1**	**50,00,000**	**5000000**
2	Construct Materials Recovery Facility (MRF) in major KPLRM settlements such as Lukla in alignment with existing plans.	**2,5**	**2489**	**MRF**	**2**	**1,00,00,000**	**20000000**
3	Establish 50 environment stations in all major KPLRM villages (approx.15 lakhs each)	**ALL**	**2000**	**station**	**50**	**15,00,000**	**75000000**
4	Regularly maintain existing waste management centers in collaboration with SPCC.	**ALL**	**1000**	**ward**	**5**	**5,00,000**	**2500000**
5	Distribute waste segregation bins at ward level; 2 dustbins in each household for rubbish segregation in collaboration with tole development committee.	**ALL**	**2000**	**Household**	**2**	**1,000**	**4000000**
6	Regularly maintain existing sewage system in densely populated villages to ensure health and safety of the community.	**ALL**	**2000**	**ward**	**5**	**2,00,000**	**1000000**
7	Construct public toilets along the trail to Everest Basecamp to maintain defecation free zone status and keep the environment clean.	**4**	**583**	**1 toilet**	**3**	**1,00,000**	**300,000**
8	Build and maintain smaller roads within villages that are connected to the main road in ward 1 for smaller vehicles including ambulance.	**1**	**425**	**Continuous**	**10**	**1,00,00,000**	**100000000**

9	Create improved and updated town planning to ensure resilient settlements. Implement checks on new building designs to reduce haphazard construction.	**ALL**	**2489**	**1 time**	**1**	**5,00,000**	**500000**
10	Provide incentive for proper management of outhouse in the middle of densely populated villages to avoid spread of communicable diseases.	**2**	**200**	**1 time**	**3**	**1,00,000**	**300000**
11	Conduct awareness programs about the health impact of plastic use and provide incentives to discourage the use of single use plastic bags and household items.	**ALL**	**2000**	**ward**	**5**	**100000**	**500000**
12	Provide trainings and seminars on circular economy (reuse and recycle) and proper waste management.	**ALL**	**2000**	**ward**	**5**	**200,000**	**1000000**
						Total	**21,01,00,000**

Table 22. Industry, Transportation and Physical Infrastructure Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	Industry, Transportation and Physical Infrastructure						
1	Create hotel association at the tole level, where there is none, and make it active at the municipal level to regulate uniform policies across tourism businesses to encourage climate friendly practices.	**All**	**2000**	**1 time**	**5**	**2,50,000**	**1250000**
2	Regularly upgrade and maintain existing road network in ward 1 up to Surkhe (and to Chaurikharka when opened).	**1, 2**	**600**	**Annual**	**1**	**5,00,00,000**	**50000000**
3	Explore the possibility of a two-way trail system in KPLRM to avoid traffic jam during peak tourist season and to distribute tourism benefits on both sides of Dudhkoshi.	**2,3,4,5**	**2064**	**1 time**		**5,00,000**	**500000**
4	Construct swing bridges in places currently not connected by bridge at the tole level. Two bridges to cross Thame Khola, and at least one bridge north of Marulung.	**5**	**300**	**1 bridge**	**3**	**50,00,000**	**15000000**
5	Explore the possibilities of ropeway between Lukla and Namche for transportation of goods only.	**2,3,4,5**	**2064**	**1 time**	**1**	**50,000**	**50000**
6	Regularly maintain electricity infrastructure and upgrade as necessary. Manage currently unmanaged wires (need for earthing wires).	**All**	**2489**	**Annual**	**5**	**10,00,000**	**5000000**
7	Create policies that discourage vehicles fueled by petrol and diesel at KPLRM entrance gate in ward 1, encourage electric vehicles, and set road opening and closing hours. Implement these policies in coordination with concerned authorities at the local and province levels.	**1,2**	**980**	**Continue as needed**	**1**	**10,00,000**	**1000000**

8	Construct and maintain safe trails in low-traffic areas that could be used for emergency shelters during disasters, in collaboration with tole development committees.	**All**	**2000**	**Annual**	**5**	**20,00,000**	**10000000**
9	Maintain trails inside Thame that were destroyed from 2024 GLOF, especially the trail from the bridge to Thame and Thameteng.	**4**	**300**	**1 trail**	**1**	**1,00,00,000**	**10000000**
10	Install solar powered lights on high traffic foot trails in ward 3 and 4.	**3,4**	**1091**	**1 pole**	**20**	**200,000**	**4000000**
11	Construct new trail for mules, maintain existing ones.	**2,3,4,5**	**2064**				
						Total	**9,68,00,000**

Table 23. Tourism, Natural Heritage, and Cultural Heritage Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	Tourism, Natural Heritage, and Cultural Heritage						
1	Advertise religious and cultural heritage tourism in KPLRM to promote them on social media.	**ALL**	**1245**	**Annual**	**1**	**500000**	**500000**
2	Provide subsidies to KPLRM residents to use biodegradable *lungtas* (prayer flags).	**ALL**	**2000**	**Annual**	**1**	**10,00,000**	**1000000**
3	Organize clean up campaigns to clean old, synthetic lungtas in collaboration with Tole development committees and SPCC.	**ALL**	**1500**	**Annual**	**5**	**5,00,000**	**2500000**
4	Create a user-friendly digital app, sutiable for residents and tourists to access weather and climate information and cultural and religious heritage information.	**ALL**	**2489**	**1**	**1**	**15,00,000**	**1500000**
5	Provide financial assistance to tole development committees to preserve existing religious and cultural monuments and artifacts, including kani and chorten.	**ALL**	**1245**	**Annual**	**5**	**5,00,000**	**2500000**
6	Create policies on building new religious and cultural monuments such as kani and chorten.	**ALL**	**2489**	**1**	**1**		
7	Provide financial support to cultural dances, songs and language preservation projects in collaboration with the women's group in each ward.	**ALL**	**250**	**Annual**	**5**	**2,00,000**	**1000000**
						Total	**90,00,000**

Table 24. GEDSI Related Climate Change Adaptation Action Plans

	Activities	Ward	Target Household	Unit	Quantity	Unit Cost	Budget (NRs.)
	GEDSI						
1	Provide trainings on climate-resilient new income generation skills to GEDSI participants in all wards.	**ALL**	**248**	**Annual**	**5**	**5,00,000**	**2,500,000**
2	Establish social security fund for mountaineers and guides to support them, when they cannot continue their employment on mountains.	**ALL**		**1**	**1**	**1,00,00,000**	**10000000**
3	Construct museum to represent all ethnic groups in the ward as a measure to preserve culture from loss. (GEDSI)	**ALL**	**2489**	**1**	**5**	**1,00,00,000**	**50000000**
4	Provide biodegradable prayer flag making trainings to GEDSI participants.	**ALL**	**50**	**1**	**3**	**250,000**	**750000**
5	Provide trainings on climate change and disaster awareness programs to women's groups in all wards.	**ALL**	**248**	**Annual**	**5**	**5,00,000**	**2500000**
						Total	**65,750,000**

6. Action Plan Implementation, Monitoring and Evaluation

6.1. Mainstreaming in periodic plans and development policies

The main objective of mainstreaming climate change adaptation and disaster risk reduction and management strategies into local periodic plans and development policies is to institutionalize climate change responses that is informed by climate change risks and resource needs at the local level. An understanding of the availability, quality and access to resources by different members of the society is crucial to effective implementation of climate change adaptation and disaster risk reduction. Mainstreaming climate change adaptation and disaster risk reduction ensures a pathway for individuals, families, communities, and wards at risk to express their adaptation priorities and monitor for effective implementation.

Climate change analysis, adaptation and risk reduction strategies will be included in the local periodic plan and long-term plans. The long-term goals and ideas of climate resilience will be adjusted in the periodic plan on the basis of federal and provincial planning commissions. The periodic development plan will be a starting point. Adaptation plans that are technically difficult to implement and require a lot of resources will be adjusted in multi-year, long-term and periodic plans and implemented accordingly.

Climate change adaptation projects that need to be implemented in coordination between local levels, or with local levels and provinces and the federation will be integrated into the periodic plan and facilitated in their implementation. A roadmap will be prepared to mobilize resources from government agencies, non-governmental organizations, development partners and the private sector for effective implementation of local adaptation plans. A policy and climate-friendly infrastructure development directive should be prepared according to the needs of the municipality to mainstream climate change adaptation and disaster risk reduction and management into local periodic plans and development policies. KPLRM will also prepare working procedures and directives on various sectors.

If multi-year plans are selected in the local planning process but cannot move ahead, climate and disaster-related action plans will receive priority even at the settlement or ward level.

6.2. Mainstreaming in local level annual planning, budget formulation, and monitoring and evaluation processes

Several rounds of consultation were held with KPLRM and institutional stakeholders in order to integrate the adaptation plan into development and sectoral plans as well as their planning process for KPLRM. Similarly at the municipal level, presentations were made regarding the adaptation plan and process. The adaptation action plan has been prepared after detailed discussions with local communities and stakeholders. This adaptation plan will be adjusted with high priority in the periodic and annual plans and strategies to be prepared by the rural municipality in the future. More details on monitoring and evaluation process are presented below.

6.3. Monitoring and evaluation process

Monitoring and evaluation provide opportunities for learning, reflection and feedback to support the adaptation action plan. During the implementation of action plans, suggestions from relevant beneficiary groups and institutional stakeholders will be addressed to ensure that the programs meet the objectives and the quality is maintained.

The implementation of the adaptation action plan will be monitored semi-annually with direct participation of all villages and stakeholders included in the KPLRM adaptation action plan alongside the guidance of existing Disaster Management Committee and executive members of the rural municipality.

A monitoring plan will be prepared and the monitoring committees will get oriented in the plan before beginning their work. Annual evaluation will be carried out for longer action plans, followed by a final evaluation at the end of the plan.

Regular self-monitoring and evaluation by the KPLRM will also be conducted at the tole, ward and municipality level in collaboration with supporting agencies. After the program is implemented, a public audit of the relevant activities will be conducted. Table 6.1. presents the monitoring process.

6.4. Sectoral indicators for GEDSI monitoring and evaluation

Sectoral Indicators to ensure benefits to children, youth, senior citizens, women, gender minorities, ethnic minorities, persons with disabilities, economically marginalized and vulnerable communities are presented in table x. These indicators should be emphasized in LAPA implementation, monitoring and evaluation.

Table 25. Evaluation and Monitoring Plan

Levels	Why	Who	When	How
Tole Level	Effective implementation of Adaptation Plans	Tole level committees (Women's group, Youth group, Everest Fire and Rescue group etc.)	Before the program starts, during the implementation, and within one month of completion	Public account audit, self-monitoring and audit
Ward Level	Effective implementation of Adaptation Plans	Ward Committees	Before the program starts, during the implementation, and within one month of completion	Public account audit, self-monitoring and audit
	To maintain transparency	Ward level Monitoring committees		
Municipality	To maintain the quality of the program	Executive Members and supporting agencies	Annually	Review and planning meetings and seminars Annual Progress Statement
	To assess the progress of the plan	Municipal level monitoring committee	Monthly	Field monitoring
	To increase effectiveness of the program	Disaster Management Committee	regular	Discussion with vulnerable groups
District	To enhance transparency and effectiveness by sharing learning and best practices in inter-municipal coordination and adaptation	Officers of the coordinating committee	Yearly	Direct monitoring
Province	To enhance transparency and effectiveness, highlight the need for effective program management.	Related Ministries at the Province (Social Development, Industry, Tourism, Forestry, Environment and others)	Yearly	Direct Monitoring

Table 26. Adaptation Activities Monitoring Framework

Monitored by						**Date**			
Phone				Email				Signature	
Sectors									
S.N.	Activities	Unit	Target	Quantity	Priority	Target household	Ward	Tole	Collaborating Agencies
1									
2									
3									

Table 27. Adaptation Activities Evaluation Framework

Sector			
Activity		Unit	
Activity Status			
Start Date		End Date (if completed)	
Activity Led by		Involved Institutions	
Contact			
Email			

Activity Summary			
Activity Results			
Target		Quantity	
Project benefits (Increase in income, education, health and decision-making capacity of men, women and gender minorities)			
Number of Beneficiaries			
Beneficiary Areas			
Utilized Budget			
Evaluator			
Signature		Evaluation Date	

Table. 28. Sectoral Indicators of GEDSI monitoring and evaluation

	Sectors	Indicators
1	Agriculture and Food Security	• Increase in the involvement of women and marginalized groups in decision-making processes related to agricultural planning and resource allocation. • Improved access to agricultural resources and technologies for women and socially marginalized groups.
2	Forest, Biodiversity and Watershed Conservation	• Representation of GEDSI-groups in the development and implementation of forests, wildlife and climate-vulnerable ecosystem management plans.
3	Water and Energy	• Improved access of GEDSI-groups to water and energy • Reduced vulnerability of GEDSI-groups through efficient access and equitable distribution of resources at the local level. • Ensuring access and representation of GEDSI-community in the adoption of clean energy technologies such as small hydropower, solar power, biogas, water infiltration, and improved stoves. • Monitoring and evaluation to ensure that the benefits from water infrastructure are distributed equitably across different gender, ethnic and socioeconomic groups.
4	Disaster Risk Reduction and Management	• Increased access, participation and benefit of GEDSI groups in early warning system and DRR trainings and activities. •
5	Health, Drinking Water and Sanitation	• Improved availability and accessibility of clean drinking water and sanitation facilities for women and marginalized communities. • Ensure access and awareness of the community through the use and promotion of technologies, such as improved stoves.
6	Rural and Urban Settlements	• Increased representation of women, minorities and marginalized groups in local governance and decision-making processes related to rural and urban development. • Improved access to employment, entrepreneurship, professional training, basic services and infrastructure for marginalized communities in both rural and urban areas.

7	Industry, Transportation and Physical Infrastructure	• Physical infrastructure construction and settlement development, promoting public transportation and GEDSI-friendly bioenergy-based transportation • Increasing representation of women and marginalized groups in decision-making bodies related to industry, transport and infrastructure.
8	Tourism, Natural and Cultural Heritage	• Development and implementation of tourism guidelines and livelihoods that respect the rights and cultural values of women and marginalized communities. • Increased participation of women, ethnic minorities, persons with disabilities, poor and marginalized communities in decision-making processes at the local level for development and management of tourism activities, including formulation and implementation of action plans. • Ensuring employment programs in tourism sector for climate-vulnerable individuals and families, attention paid to ensuring employment is available to GEDSI-groups.
9	Gender Equality and Social Inclusion, Livelihood and Good Governance	• Ensuring the participation of GEDSI-groups • Implement climate-resilient livelihood and employment programs for GEDSI-groups • Increased access to climate-friendly technology, knowledge, and information for vulnerable groups and marginalized groups at risk from adverse effects of climate change.
10	Awareness and Capacity Building	• Climate change impacts, risk reduction and adaptation measures disseminated to all at the local level, and included in formal and informal educational curricula to increase access to knowledge by all. • Production and distribution of informal materials, including statistics, information, and good practices, tailored to specific groups. • Conduct skill-based trainings for GEDSI-groups • Increased participation of GEDSI-groups in decision-making processes related to risk reduction and adaptation strategies. • Audits of budget allocated for GEDSI-groups take into account transparency of expenditure, regional equity, and adherence to policies. • Effectiveness of GEDSI-activities is evaluated. • Effective implementation of GEDSI activities is ensured through proper identification of target groups, prioritization of programs, budget assurance, geographical Equality and regular audits and reviews.

References

Bookhagen, B., & Burbank, D. W. (2010). Toward a complete Himalayan hydrological budget: Spatiotemporal distribution of snowmelt and rainfall and their impact on river dis charge. Journal of Geophysical Research: Earth Surface, 115(F3).

Government of Nepal (2021) National Population and Housing Census 2021.National Statistical Office, Government of Nepal, Kathmandu, Nepal

ICIMOD. (2023). Water, ice, society, and ecosystems in the Hindu Kush Himalaya: An outlook. (P. Wester, S. Chaudhary, N. Chettri, M. Jackson, A. Maharjan, S. Nepal, & J. F. Steiner [Eds.]). ICIMOD. https://doi.org/10.53055/ICIMOD.1028

KPLRM. (2023). First Periodic Plan (Fiscal Year 2080/81 – 2084/85). Khumbu Pasanglhamu Rural Municipality, Nepal.

MOFE (2021) Vulnerability and Risk Assessment and Identifying Adaptation Options: Summary for Policy Makers. Ministry of Forests and Environment, Government of Nepal, Kathmandu, Nepal.

Salerno, F., Guyennon, N., Colombo, N., Melis, M. T., Dessi, F. G., Verza, G., Bista, K., Sheharyar, A., and Tartari, G.: What is climate change doing in Himalaya? Thirty years of the Pyramid Meteorological Network (Nepal), Earth Syst. Sci. Data Discuss. [preprint], https://doi.org/10.5194/essd-2024-591, in review, 2025.

Sherpa, P. Y., & Puschiasis, O. (2023). A Reflexive Approach to Climate Change Engagement with Sherpas from Khumbu and Pharak in Northeastern Nepal (Mount Everest Region). In Anthropology and Climate Change (pp. 224-241). Routledge.

Relevant Documents

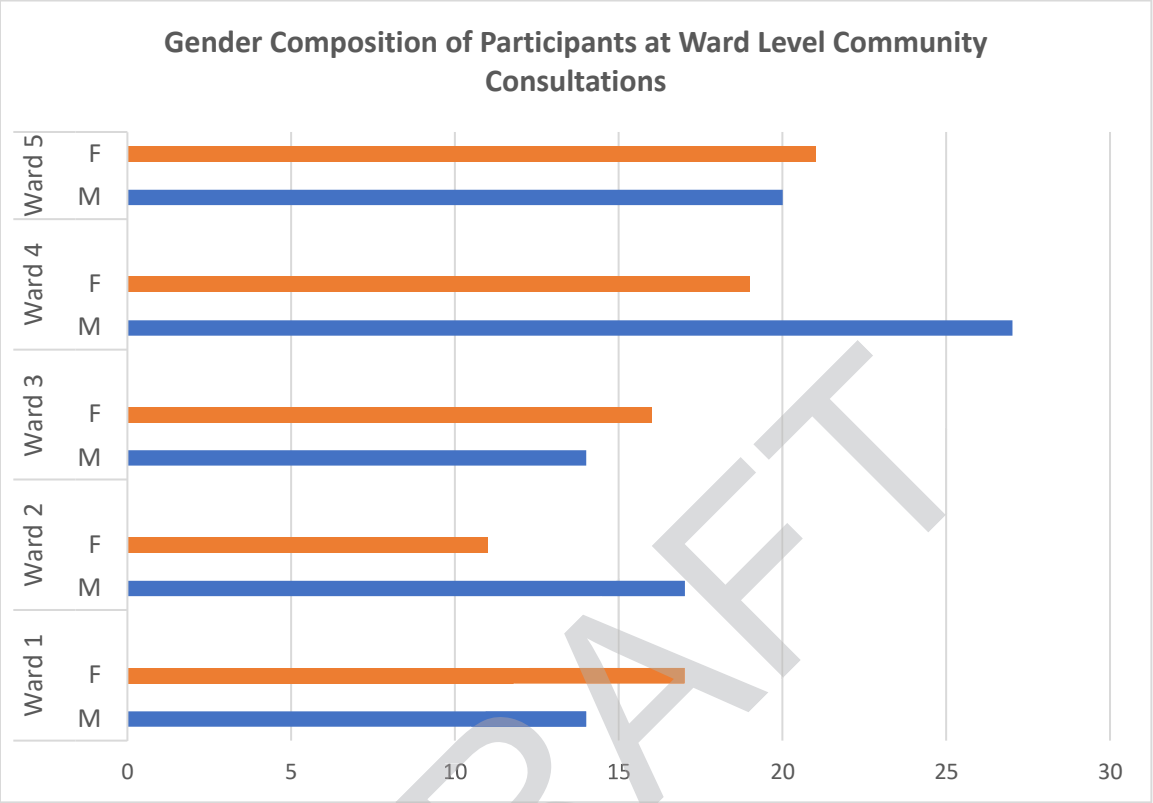
1. Climate Change Policy 2019
2. National Adaptation Programme of Action (NAPA) 2010
3. National Framework for Local Adaptation Plan of Action (2011, revised 2019)
4. National Adaptation Plan
5. Second Nationally Determined Contribution (NDC)
6. Strategy and Action Plans for GEDSI-Climate Change 2021
7. Gender Equality and Social Inclusion (GEDSI) Strategy (2021)

Additional relevant policy documents reviewed in preparation for GEDSI-LAPA:

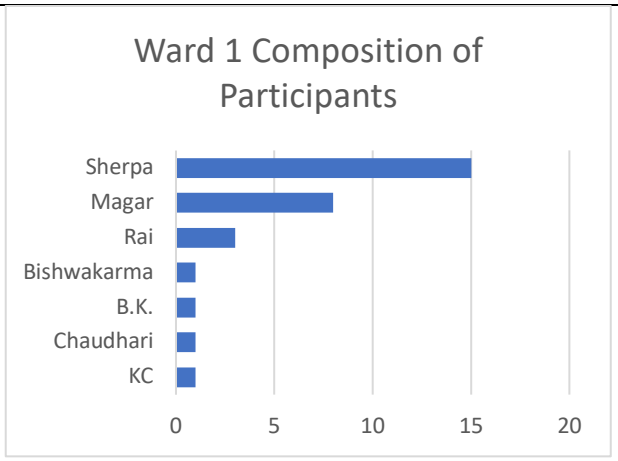
8. Environment Protection Act 2019
9. Environment Protection Regulations 2020
10. Disaster Risk Reduction and Management Act, 2074 BS

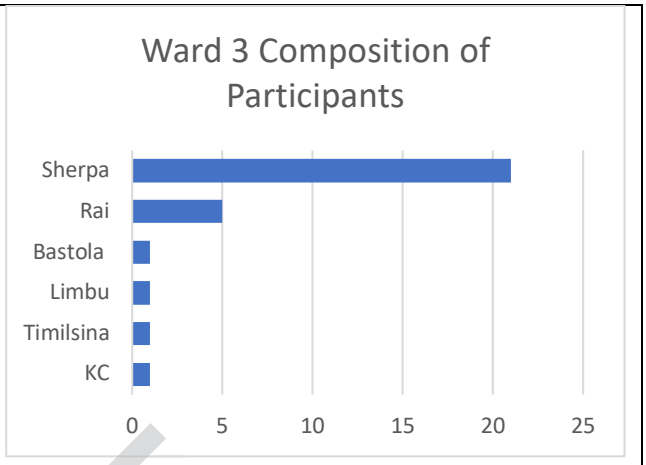
Annex 1. Consultation Participants' Composition

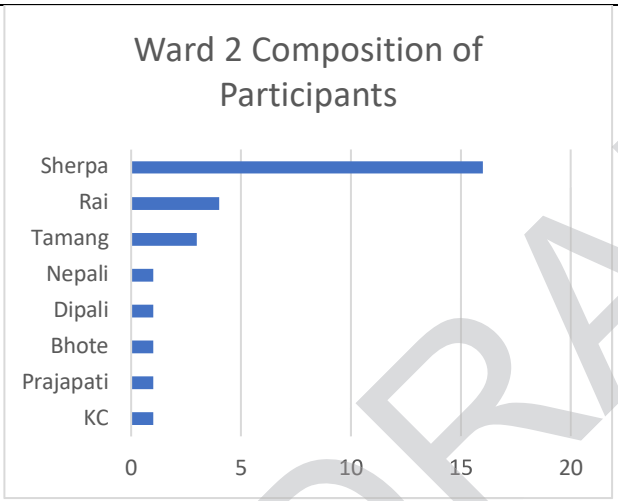
A. Community Consultation Participants' Composition by Gender

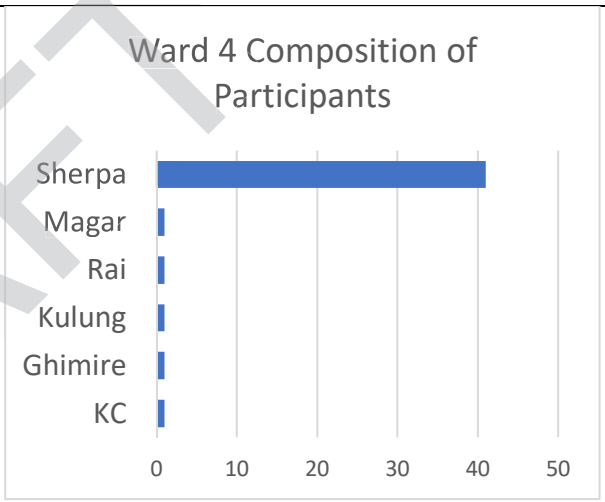


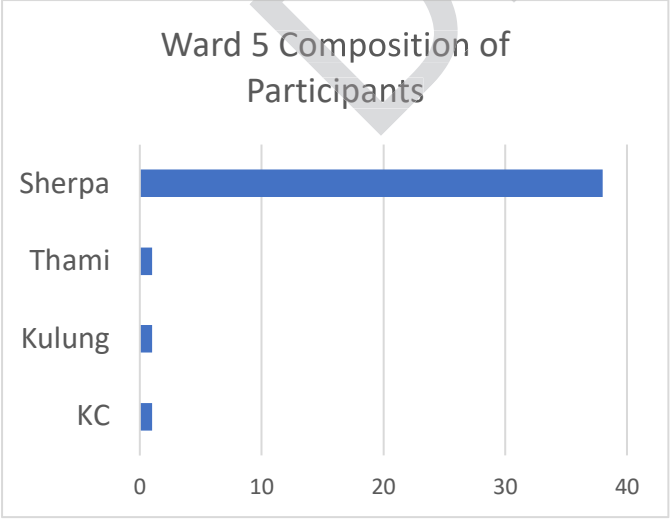
B. Community Consultation Participants' Composition by Ethnicity



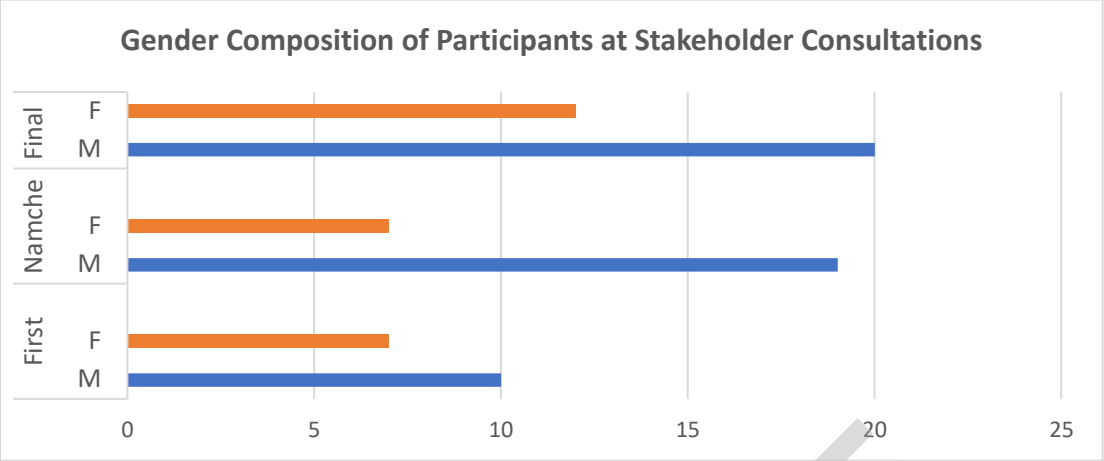




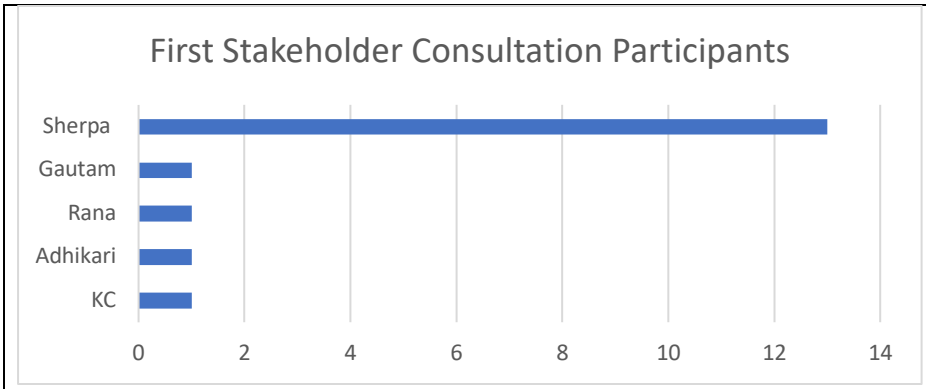


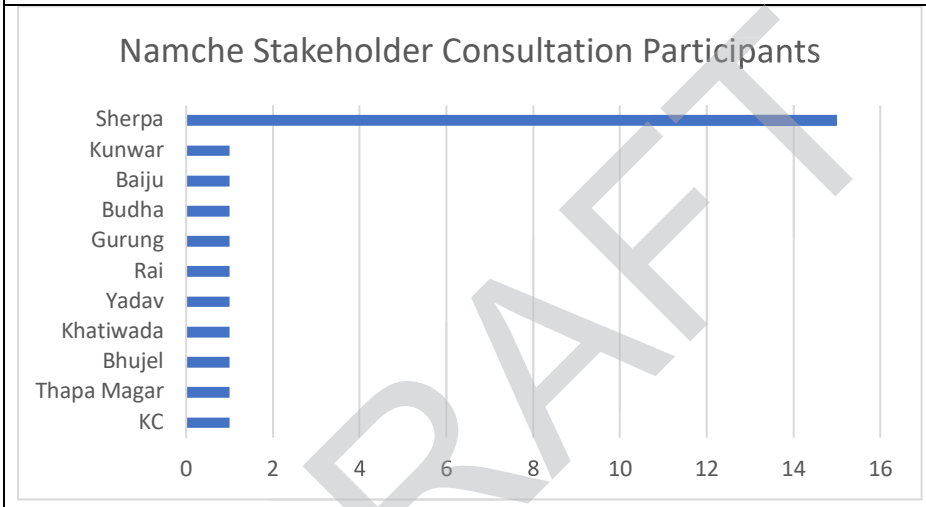


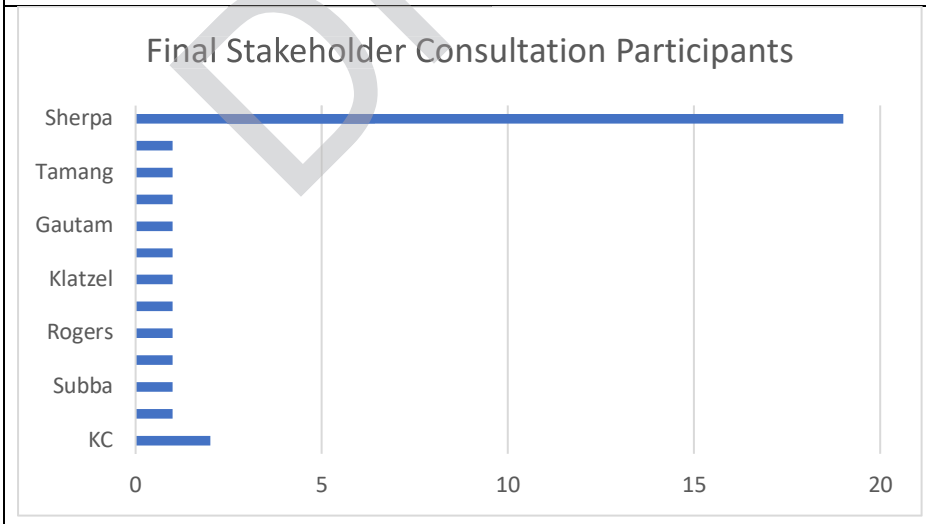
C. Stakeholder Consultation Participants' Composition by Gender



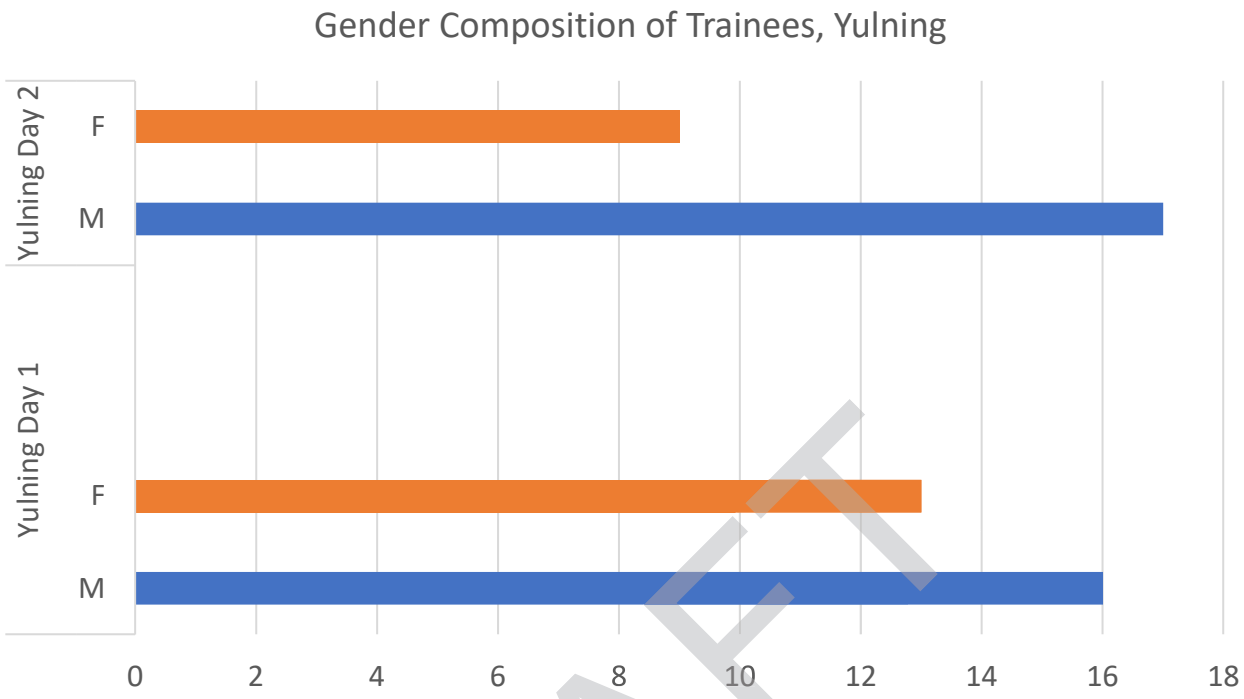
D.. Stakeholder Consultation Participants' Composition by Ethnicity



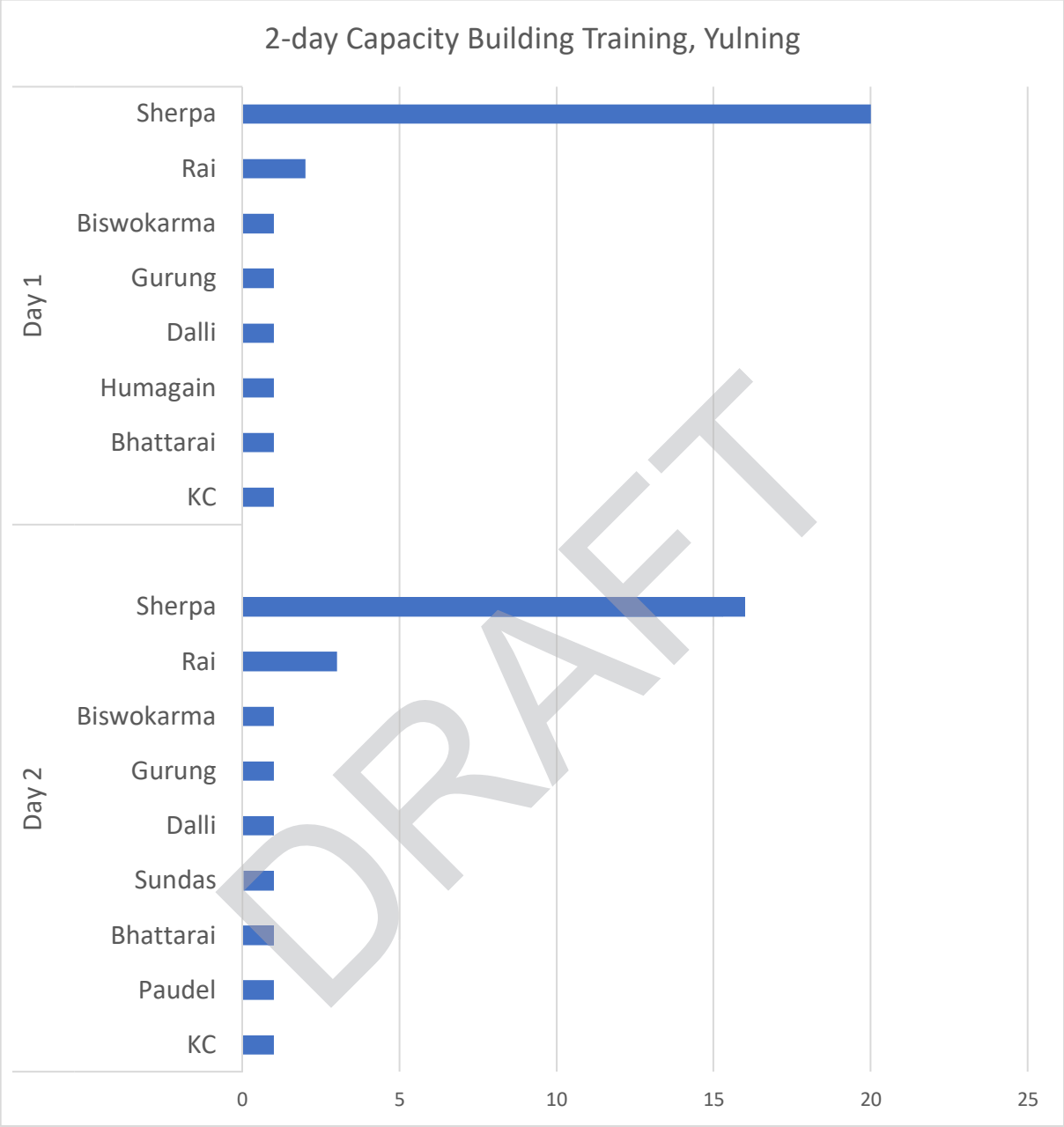




E. Trainee Composition by Gender



F. Capacity Building Training Composition by Ethnicity



Annex 2. Photos of Community Consultation Workshops

Ward 1. Community Consultation Workshop

Ward 2. Community Consultation Workshop

Ward 3. Community Consultation Workshop

Ward 4. Community Consultation Workshop

Ward 5. Community Consultation Workshop

Annex 3. Participants' Attendance List

Ward 1 Community Consultation, Kharikhola, May 5, 2025			
S.N.	**Name**	**Gender**	**Position**
1	Trijan Rana Magar	M	Ward Member
2	Lhakpa Futi Sherpa	F	Ward Member
3	Kamala Bishwakarma	F	Ward Member
4	Anil Rai	M	Ward Member
5	Madan B.K.	M	Teacher-Kharikhola HSS
6	Dan Bahadur Magar	M	Chair (Sikkli Tole)
7	Bhalakaji Magar	M	Chair, Future Star Youth Club
8	Pemba Dorjee Sherpa	M	Chair, Thukten Tole Bikash Samuha
9	Phunjok Sherpa	M	Lenjokharka
10	Pasang Kaji Sherpa	M	Kharikhola Youth Group
11	Mohan Kumar Rana Magar	M	Kharikhola Tole Bikash Samiti, Secretary
12	Pema Yangjee Sherpa	F	Kathagya Mahila Samuha
13	Dali Sherpa	F	Kharikhola Tole Bikash Samiti
14	Ongchu Sherpa	M	Kharikhola Tole Bikash Samiti
15	KC Lhamu Sherpa	F	Kharikhola Mahila Samuha
16	Shiva Na. Chaudhari	M	Police Station, Kharikhola
17	Sumitra Magar	F	Local
18	Mamata Magar	F	Local
19	Sita Magar	F	Womens Group-Assiatnt Secretary
20	Ang Dendi Sherpa	M	aa.Kha.E
21	Sita Maya Magar	F	Kharikhola Tole Bikash
22	Pabitra Basnet	F	Buksa BS
23	Bhakti Maya Rai	F	Sundar Bihani Womens Group
24	Gharti Maya Rai	F	Sundar Bihani Womens Group
25	Mingma Dorje Sherpa	M	Sundar Bihani Womens Group
26	Pasanglhamu Sherpa	F	Sundar Bihani Womens Group
27	Dolma Sherpa	F	Sundar Bihani Womens Group
28	Fura Yangee Sherpa	F	HTN (Finanace Officer)
29	Pasang Yangjee Sherpa	F	UBC
30	Pasang Ngima Sherpa	M	SPCC
31	Saraswati KC	F	KPLRM

Ward 2 Community Consultation, Lukla, May 7, 2025			
S.N.	**Name**	**Gender**	**Position**
1	Lok Bahadur Dipali	M	Police Inspector
2	Ambar B. Rai	M	Police Sub-Inspector
3	Ang Sona Sherpa	M	Tribeni Sanstha
4	Lhakpa Nuru Sherpa	M	Tribeni Sanstha
5	Pemba Nuru Sherpa	M	Tribeni Sanstha
6	Yuwati Maya Rai	F	Farmer/Womens Group
7	Nima Yanjee Sherpa	F	Lukla Womens Group
8	Samir Tamang	M	Mane Tole Bikash Sanstha
9	Santosh Tamang	M	Phyafulla Tamang Sewa Samaj
10	Prem Kumar Nepali	M	Dalit Sanstha
11	Nawang Jimba Sherpa	M	Greentara Tole Bikash
12	Tanka Bahadur Rai	M	Ward Member
13	Ming Futi Bhote	F	Laligurans Womens Group
14	Lhomi Sherpa	F	Member
15	Furi Kitar Sherpa	M	Laligurans Womens Group
16	Pasanglhamu Sherpa	F	Mane Tole Bikash Sanstha
17	Sancha Maya Rai	F	Local
18	Sonam Dorjee Sherpa	M	Vice Chair-Lukla Khanepani
19	Lhakpa Geljen Sherpa	M	KPLRM
20	Lhakpa Gelu Sherpa	M	Ward Member-2
21	Krishna Ram Prajapati	M	Mausam Bikash Samiti
22	Dawa Jangbu Sherpa	M	Dudhkoshi Tole Bikash (Chair)
23	Pasang Doma Sherpa	F	Ward Secretary
24	Saraswati KC	F	KPLRM
25	Sumitra Tamang	F	Ward 2
26	Fura Yangee Sherpa	F	Himalayan Trust Nepal
27	Pasang Yangjee Sherpa	F	UBC
28	Pasang Ngima Sherpa	M	SPCC

Ward 3 Ghat, May 9, 2025				
S.N.	**Name**	**Gender**	**Position**	**Address**
1	Nuru Zangbu Sherpa	M	Chairman ward-3	KPLRM-3
2	Ngawang Nuru Sherpa	M	Vice Chair	Gumela
3	Pasang Nuru Sherpa	M	Chairman DDC	KPLRM-3
4	Dawa Geljen Sherpa	M	Chairman	KPLRM-3
5	Phunuru Sherpa	M	Secretary	Chaurikharka
6	Shesharaj Bastola	M	Headmaster-Janasewa BS	Janasewa BS
7	Gokarna Rai	M	Headmaster-Yuba Barsha BS	Monjo
8	Mingmar Gyalpo Sherpa	M	P.C.M Gumela	Thulo Gumela
9	Ngawang Dorjee Sherpa	M	U.C.M Chief Monk	Monjo
10	Dolma Dekey Sherpa	F	Khumbu Yula Women Group	Monjo
11	Mina Phuti Sherpa	F	Ward Member-3	Phakding
12	Nima Lhamu Sherpa	F	Vice Chair-Chomolongma Buffer Zone Committee	Thuling (Ghat)
13	Sapana Rai	F	Headmaster-Pema Choling BS	Thuling (Ghat)
14	Kanchhi Phuti Sherpa	F	Secretary-Kusumkhagka	Sanogumela
15	Lhemi Sherpa	F	Chair-Kusumkhagka	Chuserma
16	Dawa Doma Sherpa	F	Treasurer--Kusumkhagka	Chuserma
17	Nima Yangjee Sherpa	F	Boudha Womens Group	Chaurikharka-Dungdey
18	Doma Futi Sherpa	F	Red Panda Womens Group	Cheplung
19	Debika Rai	F	Sagarmatha Group	TokTok
20	Nima Futi Sherpa	F	Vice Chair	Phakding
21	Yangji Sherpa Rai	F	Chair-mahila samuha	Phakding
22	Sonam Choti Sherpa	F	Vice Chair-Mahila Samuha	TokTok
23	Lulindra Timilsina	M	Police personal	

24	Arjun Kumar Rai	M	Police personal	
25	Resham Limbu	M	Police personal	
26	Nurbu Thile Sherpa	M	Chair-Thuling Tole	
27	Saraswati KC	F	KPLRM	
28	Fura Yangee Sherpa	F	Himalayan Trust Nepal	
29	Pasang Yangjee Sherpa	F	UBC	
30	Pasang Ngima Sherpa	M	SPCC	

Ward 4 Community Consultation, Khumjung				
S.N.	**Name**	**Gender**	**Position**	**Address**
1	Nima Yangeen Sherpa	F	Acting Ward Chair	Khunde
2	Dawa Geljen Sherpa	M	Ward Member	Khumjung
3	Lorak Jangbu Sherpa	M	Sagarmatha Sa.Bi.Sa	Pangboche
4	Nima Ongchu Sherpa	M	Local	Pangboche
5	Devkala Kulung	F	Beyul Mahila Samuha	Pangboche
6	Nima Yangee Sherpa	F	Beyul Mahila Samuha	Pangboche
7	Dorji Tshering Sherpa	M	Amadabalam Youth Club	Pangboche
8	Ang Tshering Sherpa	M	Khumbila Tol Bikash	Khumjung
9	Chhimi Tshering Sherpa	M	Local	Khumjung
10	Sonam Tshering Sherpa	M	Local	Khumjung
11	Nima Tshering Sherpa	M	Local	Khumjung
12	Mingma Nuru Sherpa	M	Local	Khumjung
13	Ang Nima Sherpa	M	Local	Khumjung
14	Sarki Futi Sherpa	F	Local	Khumjung
15	Dawa Doma Sherpa	F	Local	Khumjung
16	Dafuti Sherpa	F	Local	Khumjung
17	Sonam Geljen Magar	M	Khumjung Yuba Club	Khumjung
18	Ngwang Norbu Sherpa	M	Local	Khumjung
19	Dawa Tshering Sherpa	M	Khumjung Yuba Club	Khumjung
20	Pasang Tshering Sherpa	M	Khumjung Yuba Club	Khumjung
21	Ngwang Tshering Sherpa	M	Khumjung Yuba Club	Khumjung
22	Palden Sherpa	M	Khumjung Yuba Club	Khumjung
23	Chamji Sherpa	F	Khunde Mahila Samuha	Khunde
24	Serkima Sherpa	F	Khumjung Gumba	Khumjung
25	Ngim Futi Sherpa	F	Local	Khumjung

26	Mingma Kanchi Sherpa	F	Local	Khumjung
27	Sonam Geljen Sherpa	M	Khumbila Tol Bikash	Khumjung
28	Ngimu Sherpa	F	Khumjung Mahila Samuha	Khumjung
29	Lhakpa Yangji Shrepa	F	Khumjung Mahila Samuha	Khumjung
30	Pemba Cheki Sherpa	F	Khumjung Mahila Samuha	Khumjung
31	Pasang Yangji Sherpa	F	Khunde Mahila Samuha	Khunde
32	Doka Sherpa	F	Khunde Tol Bikash	Khunde
33	Tshering Sherpa	F	Khunde Mahila Samuha	Khunde
34	Ngwang Palmu Sherpa	F	SPCC	Pangboche
35	Mingma Nuru Sherpa	M	SPCC	Lukla
36	Pasang Ngima Sherpa	M	SPCC	Shyangboche
37	Laxman Rai	M	KPLRM	Khumjung
38	Tenjing Dorji Sherpa	M	Kayagiri Tol Bikash	Namche
39	Pasang Yangjee Sherpa	F	Consultant	-
40	Saraswati KC	F	KPLRM	KPLRM
41	Hatraj Ghimire	M	-	KPLRM
42	Pasang Ngima Sherpa	M	-	Local
43	Pasang Tshering Sherpa	M	Chair	-
44	Aang Nuru Sherpa	M	Local	-
45	Kusang Tshering Sherpa	M	Local	-
46	Paasng Dawa Sherpa	M	Local	-

Ward 5. Community Consultation, Thame				
S.N.	**Name**	**Gender**	**Position**	**Address**
1	Pasang Diki Sherpa	F	Local	Thame
2	Pasang Kinjum Sherpa	F	Local	Thame
3	Pasang Diki Sherpa	F	Local	Thame
4	Lhakpa Doma Sherpa	F	Local	Thame
5	Dawa Choekyi Sherpa	F	Local	Thame
6	Karsang Sherpa	M	Local	Thameteng
7	Pemba Nuru Sherpa	M	Local	Thame
8	Mingma Nuru Sherpa	M	Renjola Tole Bikash	Thameteng
9	Fura Kami Sherpa	M	Yuwa Samuha	Thamo
10	Karma Gyaljen Sherpa	M	Thamo Sagarmatha Buffer Zone	
11	Pasang Gyaljen Sherpa	M	Ward Chair, KPLRM	Theso
12	Ang Dami Sherpa	F	Local	Thame
13	Ang Diki Sherpa	F	Local	Thame
14	Mingma Nuru Sherpa	M	Local	Thame
15	Nawang Denduk Sherpa	M	Local	Thame

16	Mingfuti Sherpa	F	Local	Thame
17	Pasang Diki Sherpa	F	Local	Thame
18	Yangjee Sherpa	F	Local	Thame
19	Kinjum Sherpa	F	Local	Thame
20	Fura Diki Sherpa	F	Local	Thame
21	Chhiring Doma Sherpa	F	Local	Thame
22	Mingma Diki Sherpa	F	Local	Thame
23	Pemba Lhamu Sherpa	F	Local	Thame
24	Thukten Dorjee Sherpa	M	Local	Thame
25	Ang Pasang	M	Local	Thame
26	Nawang Thundu Sherpa	M	Local	Thame
27	Nima Lhamu Sherpa	F	Local	Thame
28	Mingma Nuru Sherpa	M	Local	Thame
29	Ram Thami	M	KPLRM	Namche
30	Ang Furba Sherpa	M	Local	Thame
31	Lhamu Chhiki	F	Local	Thame
32	Shiva Chetri Sherpa	M	Local	Thame
33	Thukten Dorjee Sherpa	M	Local	Thame
34	Fura Yangee Sherpa	F	Himalayan Trust Nepal	Lukla
35	Saraswati KC	F	KPLRM	
36	Pasang Ngima Sherpa	F	SPCC	Phera
37	Pasang Yangjee Sherpa	M	UBC	Monjo
38	Dawa Dolma Sherpa	F	Local	Thame
39	Kami Dorjee Sherpa	M	Local	Thame
40	Suresh Kulung	M		
41	UN Sherpa	M	Kerung	Kerung

First Stakeholder Consultation, April 2, 2025			
S.N.	**Name**	**Gender**	**Designation**
1	Tashi Lhamu Sherpa	F	KPLRM
2	Saraswati KC	F	KPLRM
3	Nabraj Gautam	M	KPLRM
4	Lhakpa Gyalzen Sherpa	M	KPLRM
5	Ang Dendi Sherpa	F	Ward 1 Engineer
6	Ang Phurba Sherpa	M	Ward 2 chair
7	Nuru Zangbu Sherpa	M	Ward 3 chair
8	Laxman Adhikari	M	Ward 4 chair
9	Pasang Gyalzen Sherpa	M	Ward 5 chair
10	Lhakpa Chhiri Sherpa	M	KPLRM Spokesperson

11	Sushma Rana	M	SNP Warden
12	Chhiring Sherpa	M	SNPBZ
13	Tshering Sherpa	M	SPCC
14	Yangji Doma Sherpa	F	SPCC
15	Mingma Norbu Sherpa	M	HTN
16	Fura Yangji Sherpa	F	HTN
17	Pasang Yangjee Sherpa	F	UBC

Namche Stakeholder Consultation, June 22, 2025			
S.N.	**Name**	**Gender**	**Designation**
1	Pasang Gyalzen Sherpa	M	Ward Chairperson, KPLRM
2	Captain Krishna Kunwar	M	Shree Bagwati Prasad Co
3	Bibek Baiju	M	Conservation Officer
4	Bharat Budha	M	Game Scout
5	Ang Dolma Sherpa	F	Namche Women's Group-Chairperson
6	Lina Gurung	F	Assistant Professor, Kathmandu University
7	Indra Mani Rai	M	Associate Professor, Kathmandu University
8	Chimi Kalden Sherpa	M	Namche Water
9	Tshering Penjo Sherpa	M	Chairperson, Bufferzone
10	Lama Kazi Sherpa	M	Chairperson, SPCC
11	Ram Lalan Yadav		Yak Farmer
12	Khemraj Khatiwada	M	Police
13	Gambhir Budha	M	Farmer
14	Fura Chheten Sherpa	M	Project Coordinator-SPCC
15	Bal Bahadur Thapa Magar	M	Computer Operator
16	Mingma G Sherpa	M	Namche Youth Group (NYG)
17	Chhiring Sherpa	M	Local
18	Saraswati K.C.	F	KPLRM
19	Dr. Pasang Yangji Sherpa	F	Consultant
20	Pasang Nima Sherpa	M	Program Coordinator-SPCC
21	Mingma Nuru Sherpa	M	SPCC
22	Tshewang Sherpa	F	SPCC
23	Ngawang Jangbu Sherpa	M	Ward Member
24	Pasang Chutin Sherpa	F	Namche Women's Group
25	Netra Kumar Bhujel	M	Admin Assistant
26	Tshering Sherpa	F	Namche Youth Group (NYG)

Final Stakeholder Consultation, June 6, 2025				
S.N.	**Name**		**Position**	**Organization**
1	Mingma Chhiri Sherpa	M	Chairperson	KPLRM
2	Tashi Lhamu Sherpa	F	Vice Chairperson	KPLRM
3	Nabraj Gautam	M	CAO	KPLRM
4	Nuru Zangbu Sherpa	M	Ward Chair	KPLRM-3
5	Uma Baraili	F	Executive member	KPLRM
6	Dr. Lhakpa Norbu Sherpa	M	Advisor	KPLRM
7	Bibek Baiju	M	Conservation Officer	SNP
8	Chhepal Dorjee Sherpa	M	Chairperson	Khumjung BZUC
9	Deepak KC	M	Program Analyst	UNDP
10	Sima Tamang	F		UNDP
11	Dr. Mingma Norbu Sherpa	M	CEO	Himalayan Trust Nepal
12	Chhiring Sherpa	M	CEO	SPCC
13	Yangji Doma Sherpa	F		SPCC
14	Pasang Ngima Sherpa	M		SPCC
15	Ms. Pasang Chhiki Sherpa	F	Chairperson	Thamichho Kyidug
16	Tenzing Choegyal Sherpa	M	Cryosphere Analyst	ICIMOD
17	Dawa Tshering Sherpa	M	Glaciologist	
18	Dr. Pasang Yangjee Sherpa	F	Consultant	Himalayan Trust Nepal
19	Lhakpa Tenji Lama (Sherpa)	M	Programme Manager	Himalayan Trust Nepal
20	Fura Yangjee Sherpa	F	Finance Officer	Himalayan Trust Nepal
21	Frances Klatzel	F		
22	Mingma Sherpa	F	Glaciologist	CSN
23	Ms. Tuka Cheki Sherpa	F		
24	Mr. Gopal Lama	M	E. D.	Just Nepal Foundation (JNF)
25	Mr. Sonam Dorji Sherpa	M	General Manager	Khumbu Bijuli Company
26	Pemba Tenzing Sherpa	M		Thamichho Kyidug
27	Paul Rogers	M	Consultant	
28	Dr. Deepak Rijal	M	Consultant	JNF
29	Sapana Subba	F	Project Manager	PLMF
30	Saraswati KC	F	Environment Officer	KPLRM
31	Nibedan Baidya	M	Operation Manager	UNDP
32	Garden Rai	M	Vice-president	FNJ Solukhumbu

Thuchiche!