



# A REPORT ON IMPACTS OF CLIMATE CRISIS AND ENVIRONMENTAL DEGRADATION ON CHILDREN AND YOUTHS IN NEPAL

A Joint Initiative of Child-Centered DRR and Climate Change (CDCC) Consortium-  
Plan International Nepal, Save the Children, UNICEF and World Vision International Nepal

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# FOREWORD

The study "Impacts of the Climate Crisis and Environmental Degradation on Children and Youth in Nepal" is developed in a crucial moment in time. These are the years of action to mitigate the worst impacts of climate change on our future generations. Particularly as we are recovering from the unprecedented crisis caused by the COVID-19 pandemic.

The climate crisis represents the greatest threat to child rights of our time. Climate-related shocks— such as floods, storms, landslides, droughts, wildfires, and extreme temperatures — represent severe threats to children's survival, protection, health, and development in Nepal. Simultaneously, environmental hazards, such as contamination of water and air, take thousands of children's lives every year, that with sustainable practices could be prevented.

Nepal has steadily accelerated the climate change agenda in the past decade by amending key documents such as the updated National Climate Change Policy (2019), National Framework on Local Adaptation Plan of Action (2019), National Adoption Plan (2021), and the second Nationally Determined Contributions (2020). Challenges however remain for implementing integrating, and localizing climate change and disaster risk reduction initiatives.

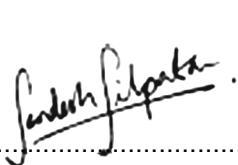
In line with this, the four child-centric agencies — Save The Children, UNICEF, Plan International Nepal and World Vision International Nepal — have established the Child-Centered Disaster Risk Reduction and Climate Change (CDCC) Consortium, to work on initiatives enhancing resilience to climate change. The CDCC consortium advocates for the fulfillment of the rights of young people and supports to develop and implement sustainable solutions that benefit children and their communities by improving education, health, child protection, food and nutrition security and livelihoods.

This study was commissioned to shine a light on how children and youth in Nepal and their families cope with climate-induced disasters and adapt to a changing climate. The focus of the study is to identify — in consultation with children, youths, parents, and caregivers — physical, social, economic, and psychological factors connected to climate change events, and what practices young people and their families follow to cope with ongoing pressures re-enforced by climate change. The scope of environmental degradation covered in the research spans conditions affecting agriculture and food security, energy, water and sanitation, forestry, waste management, and health.

The study provides clear evidence that children and youth are profoundly affected by climate change and environmental degradation in Nepal. It also highlights the current gaps that prevent engagement of young people in climate actions, and give recommendations moving forward to government, donors, development partners and community-level organisations to accelerate climate actions by taking the vulnerabilities and capacities of young people into consideration.

We would like to express our sincere gratitude to the Practical Action Consultancy team for carrying out this study, especially during the difficult context of an ongoing pandemic. This report is enriched in 2023 incorporating broader context and scientific evidence by the consortium team in leadership of Keshav Das.

**Special thanks and gratitude go to Dr Radha Wagle, Srijana Shrestha and Dr Arun Bhatta from Ministry of Forest and Environment for reviewing and providing inputs on the report. We also thank key Informant participants, young people and their caregivers across Nepal that shared their valuable Insights.**



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# ACRONYMS

- ADB** | Asian Development Bank
- CBS** | Central Bureau of Statistics
- CCRI** | Children’s Climate Risk Index
- CDC** | Curriculum Development Centre
- CDCC** | Child-centred Disaster Risk Reduction and Climate Change Consortium
- COP** | Conference of Parties
- DHM** | Department of Hydrology and Meteorology
- DRR** | Disaster Risk Reduction
- FGD** | Focused Group Discussion
- GDP** | Gross Domestic Product
- GLOF** | Glacial Lake Outburst Flood
- GRID** | Green, Resilient, and Inclusive Development
- HH** | Household
- IPCC** | Intergovernmental Panel on Climate Change
- LDCs** | Least Developed Countries
- L&D** | Loss and Damage
- MOF** | Ministry of Finance
- MoFAGA** | Ministry of Federal Affairs and General Administration
- MoFE** | Ministry of Forests and Environment
- MOHA** | Ministry of Home Affairs
- NAP** | National Adaptation Plan
- NAPA** | National Adaptation Program of Action
- NCCP** | National Climate Change Policy
- NDC** | Nationally Determined Contribution
- NDRRMA** | National Disaster Risk Reduction and Management Authority
- NPC** | National Planning Commission
- UNFCCC** | United Nation’s Framework Convention on Climate Change
- WASH** | Water, Sanitation and Hygiene
- WB** | World Bank
- WHO** | World Health Organization
- YLD** | Years lived with disability





# EXECUTIVE SUMMARY

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The science of climate change (the IPCC reports) has established beyond doubt that climate change is real and that human activities are the main cause. At the recently concluded conference of parties (COP27) of UNFCCC, the Secretary General of the United Nations aptly underscored the urgency of the climate crisis when he stated that ‘The red line we must not cross is the line that takes our planet over the 1.5-degree temperature limit,’ he stressed, urging the world not to relent ‘In the fight for climate justice and climate ambition.’ Without a new course of action, climate change will continue to drive rising hunger, water shortages, loss of income, violence, and displacement over the next decade.

The consequences of climate change now include, among others, intense droughts, water scarcity, severe fires, rising sea levels, flooding, catastrophic storms, and declining biodiversity. In many parts of the world, people are facing multiple climate-related impacts such as severe drought and flooding, air pollution, and water scarcity, leaving their children vulnerable to malnutrition and disease. And Nepal is no exception.

Almost every child on earth is exposed to at least one of these climate and environmental hazards<sup>1</sup>. Without urgent action, this number will go up. Hence, there is an urgent need to assess the impacts of the climate crisis on children and youths.

Given the urgency of the climate crisis, this report aimed to identify the effects of climate change on the lives of young people, their parents/caregivers, and other vulnerable/marginalized communities. The report further assessed the adaptation and resilience capacities of children, young people, and vulnerable communities, and subsequently provided a set of recommendations for adopting effective adaptation strategies based on the needs determined from the perceptions and experiences of young people, children, and their communities.

## ► KEY FINDINGS:

1. It is reported that a child born in 2020 is, on average and according to the commitments of the Paris Agreement, at 2 times higher risk of forest fire than a person born in 1960. This risk is particularly acute for children. It is children in many low- and middle-income countries who will continue to bear the brunt of worsening climate change. For some children, this will be exacerbated – particularly those exposed to multiple hazards, those living through conflict, those most profoundly impacted by COVID-19, and those experiencing inequality and discrimination based on gender, disability, indigeneity, displacement, or other, often intersecting factors.
2. The **Children’s Climate Risk Index (CCRI)**, developed by UNICEF, ranks countries based on children’s exposure to climate and environmental shocks, such as cyclones and heat waves, as well as their vulnerability to those shocks, based on their access to essential services. The CCRI reported that **children are more vulnerable to climate and environmental shocks than adults for several reasons including physical and physiological vulnerability and an increased risk of death.**

3. **Climate change poses significant risks to children's health and well-being.** Climate change is a direct threat to children's well-being. **The changing environment exacerbates the impact of disease on children, especially the youngest and most vulnerable. A decrease in food security threatens children's development and survival. As safe drinking water and sanitation become increasingly scarce,** access to water, sanitation, and hygiene (WASH) services are vital to preventing the spread of diseases.
4. The population of Nepal is highly vulnerable to the effects of climate change. Recent studies by the Asian Development Bank estimate that Nepal will lose 2.2% of its annual GDP by 2050 due to climate change. Nepal is exposed to significant disaster risk and ranks 31st on the 2019 INFORM Risk Index, with approximately 80 per cent of the population at risk from natural and climate-related hazards such as extreme heat, flooding and air pollution. **The Children's Climate Risk Index (CCRI)-2021 reports that Nepal has a 'high risk', whereas the risk due to climate and environmental shocks is 'extremely high'.**
5. **Climate and disaster risks are expected to further increase, affecting people and the environment, and putting development gains at risk. Nepal's diverse ecosystems and natural capital – which provide vital ecosystem services for the poor in remote locations – are at risk because of the increasing frequency and severity of drought, erosion, biodiversity loss, forest fires, and diseases.** Heavy monsoon floods and landslides in 2020 caused hundreds of deaths, displaced thousands of people and damaged many roads. Similarly, the unseasonably heavy rains in western Nepal in October 2022 had left a number of people dead, missing, damaged roads, bridges, hydropower plants and other physical infrastructure as well as heavy agricultural losses due to flooding and landslides across the country<sup>2</sup>.
6. **Children, women, indigenous people, and other marginalized groups are often excluded from mainstream development and suffer from cumulative and cascading impacts of climate change and disasters.** They are also at risk due to pre-existing vulnerabilities due to discrimination based on socially ascribed identities as well as factors such as geographical remoteness, socio-economic marginalization, interaction with climate shocks, fragility, and weak governance<sup>3</sup>.
7. Nepal's Vulnerability and Risk Assessments (MoFE, 2021) presents information on the impacts, vulnerability and risk of climate change on eight thematic sectors and one cross-cutting sector, as well as five physiographic regions, seven province and 77 districts. The report warns that it is highly likely that future vulnerabilities will also increase across the majority of the municipalities and provinces due to the projection of increased hazards, the socio-economic downfalls due to COVID-19 and the political instability in Nepal. Ibid, among others, the poor, marginalized groups, women, children, elderly, disabled will be more vulnerable to the impacts. Regarding perceptions of children and marginalized communities on the impact **of climate change, the report found that heavy rains, floods, and landslides in Nepal claimed dozens of lives, destroyed crops and hundreds of homes, and damaged infrastructures** (including schools, bridges, government buildings, and hydropower plants).

8. The National Framework on Climate induced Loss and Damage 2021 states that climate-induced disasters cause around 65 per cent of all disaster-related annual deaths in Nepal (MoFE, 2021). Accordingly, the average annual economic loss from climate-induced disasters is about 0.08 percent of the GDP reaching to around 2.08 per cent of the GDP in extreme years, like 2017 when Tarai floods occurred. The **perception survey further revealed that earthquake and flood risk are the most damaging natural hazards to date in the surveyed districts, while floods and landslides were the most frequent hazards over the past 10 years.** The number of floods has doubled in recent years. Storms, erosion and landslides are also on the rise, resulting in loss of lives and livelihoods.
9. **Heavy monsoon floods and landslides caused deaths and displaced hundreds of people. During the survey, respondents from the mountain districts reported that communities feel warming in the districts earlier than before, triggering the melting of ice and permafrost and an increase in the risk of landslides.** In other districts, respondents reported **incidences of dry spells, droughts, and disease outbreaks.** Detailed illustrations of the perceptions of children and marginalized communities on the impact of climate change can be found in **chapter#02**
10. While assessing national and sub-national child-centered DRR and climate change policies and climate actions in Nepal, it has surfaced that a well-defined disaster risk governance structure is embedded across various tiers of the government of Nepal, and disaster risk reduction is integrated as a priority in different national policies, such as Disaster Risk Reduction and Management Act-2017, Local Government Operations Act 2017, National Policy on Disaster Risk Reduction and Management 2018, National Strategic Action Plan on Disaster Risk Reduction and Management (2018-2030), National Climate Change Policy 2019 and Environment Protection Act -2019, **where sub-national governments are empowered with the authority to frame and implement adaptation plans to prevent the effects and risks of climate change.** Nepal's second Nationally Determined Contribution (NDC 2020) and National Adaptation Plans (NAP) 2021-2050 demands adequate financing to achieve its mitigation, adaptation and policy priorities in climate change.
11. While a sound enabling environment is in place to pave the way for disaster risk reduction, the challenge in the short and medium-term lies in the high volatility of key government institutions and their disaster risk reduction mandates, and in rolling out and/or translating national policy provisions into action at the sub-national and local levels.
12. Several gaps are identified at the level of response and resilience. For instance, the report identified that **absence of a clear climate resilience policy targeting children and young people** is a key challenge in promoting child-centered climate actions in Nepal. The report has also further identified the below gaps:
  - *The absence of disaster risk reduction approaches in the local and regional development programme.*
  - *The participation of children in risk assessment is very limited.*
  - *Community capacity to assess and manage disasters is limited*
  - *Inadequate availability of funding for child-centered DRR and climate actions.*

## ► RECOMMENDATIONS

The **4 broad recommendations** in the report propose a set of priority actions, focusing on the key results areas such as health, nutrition, education, water and sanitation, and child protection.

The four broad **recommendations** are the following:

- A. The government could design child-sensitive climate and environmental policies.** Action must move beyond proclamations for engagement. It must span across sectors in all levels of government and include multiple stakeholders: from UN agencies to civil society; from academia to the public and private sectors. Child-sensitive climate, DRR, and environmental policies, including the NDCs, should acknowledge children's vulnerabilities to climate change and environmental degradation as well as the important role that children and young people play in influencing and accelerating climate actions. The federal, provincial, and local development and climate policies should have an explicit reference to children and young people; and address the specific risks and vulnerabilities of children and young people. This includes child-sensitive inclusive commitments in multiple sectors, such as education, health, water, sanitation, food security and nutrition, energy, social protection, disaster risk reduction (DRR), and information systems.
- B. Engage children and young people in designing and implementing climate change and DRR policies, and programmes.** The climate crisis is a child rights crisis. Children and young people need urgent and meaningful action and innovations to adapt to this changing world and reduce climate and disaster risk, including for child-critical social services. The views, concerns, and solutions of the youngest generation should be incorporated into policies, institutions and actions that move towards a net-zero emissions world and beyond for adaptation and resilience.
- C. Enhance the capacity of children and young people for climate change, DRR actions.** The government of Nepal could consider addressing disaster risks affecting children by strengthening the capacity of children, young people, and communities to deal with hazards. Preventing and mitigating risks before they manifest as disasters and become humanitarian challenges is crucial.
- D. Enhance finance for child-centered DRR and climate change actions.** Bridging the gap between ambition and action with solid funding commitments is paramount to overcoming the climate crisis for every child. While the government considers identifying opportunities in child-critical social services for greater attention, including financial investment, an attempt should also be made to identify where climate policies can increase engagement with children and young people as stakeholders, rights holders, and agents of change, including those from vulnerable populations.

Ultimately, the 4 recommendations, framed out in the report, shall ensure **system transitions** that are fundamental to addressing the risks that climate change poses to children and young people while also providing opportunities for improving the quality and sustainability of economic development.



# CHAPTER 1

# FRAMING AND CONTEXT

## The context and framing of the report

Greenhouse gas concentrations are at their highest level for 2 million years and emissions are continuing to rise<sup>4</sup>. Atmospheric carbon dioxide levels is the highest than it has been for at least 3.5 million years. As a result, the Earth is now about 1.1°C warmer than it was in the late 1800s. The last decade (2011-2020) was the warmest since records began<sup>5</sup>.

The consequences of climate change now include, among others, intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms, and declining biodiversity<sup>6</sup>. In many parts of the world, people are facing multiple climate-related impacts such as severe drought and flooding, air pollution, and water scarcity, leaving their children vulnerable to malnutrition and disease, in addition to loss and damage in worst cases. Almost every child on earth is exposed to at least one of these climate and environmental hazards<sup>7</sup>. Without urgent action, this number will go up. Hence, there is an urgent need to assess the impacts of the climate crisis on children and youths.

Given the urgency of this assessment, the Child-centred Disaster Risk Reduction and Climate Change Consortium (CDCC) commissioned this study with the following **objectives**:

- To identify the effects of climate change on the lives of children and young people, their parents/caregivers, and relevant stakeholders. The focus would be on the children and youths, whose families are highly reliant on their immediate natural environments and are likely to face livelihood difficulties when those ecosystems are lost or damaged.
- To analyze and determine whether the coping strategies and adaptation practices aimed at alleviating these pressures (shocks and stresses) can threaten children's futures or not. This would inform an understanding of how resilient children and their families are in the face of such losses and damages.
- To recommend effective adaptation strategies and measures, based on the needs determined from perceptions and experiences of young people and their communities to key stakeholders. These adaptation strategies and measures would be promoted and adopted through the involvement of children and youths as effective communicators and change agents.

Furthermore, the study aimed to explore data points on the following **research questions**:

- What are the specific impacts of the climate crisis and environmental degradation – in terms of energy, water, sanitation, forest, and land – on the lives of children and youths of marginalized and deprived communities?
- What are the underlying causes and factors – in terms of exposure, vulnerability, policy, capacity, resources, economy, and social aspects – of the climate crisis and environmental degradation effects on children and youths?
- What are the ongoing adaptation measures – in terms of energy, water, sanitation, forest, and land – practiced by children, youths, and their families?
- What could be potential adaptation measures to reduce climate crises and environmental degradation impacts on children and youths of marginalized and deprived communities?

Hence, this report aims to provide a scientifically driven analysis of the impacts of climate change on children, youth, and marginalized communities. The report further provides an analysis of current trends on child-centered DRR and climate actions in Nepal, followed by the mapping of resilience gaps (narrating the current capacity-policy gaps and identification of levers/enablers). Lastly, the report provides key policy recommendations for advocacy by the CDCC consortium and beyond.

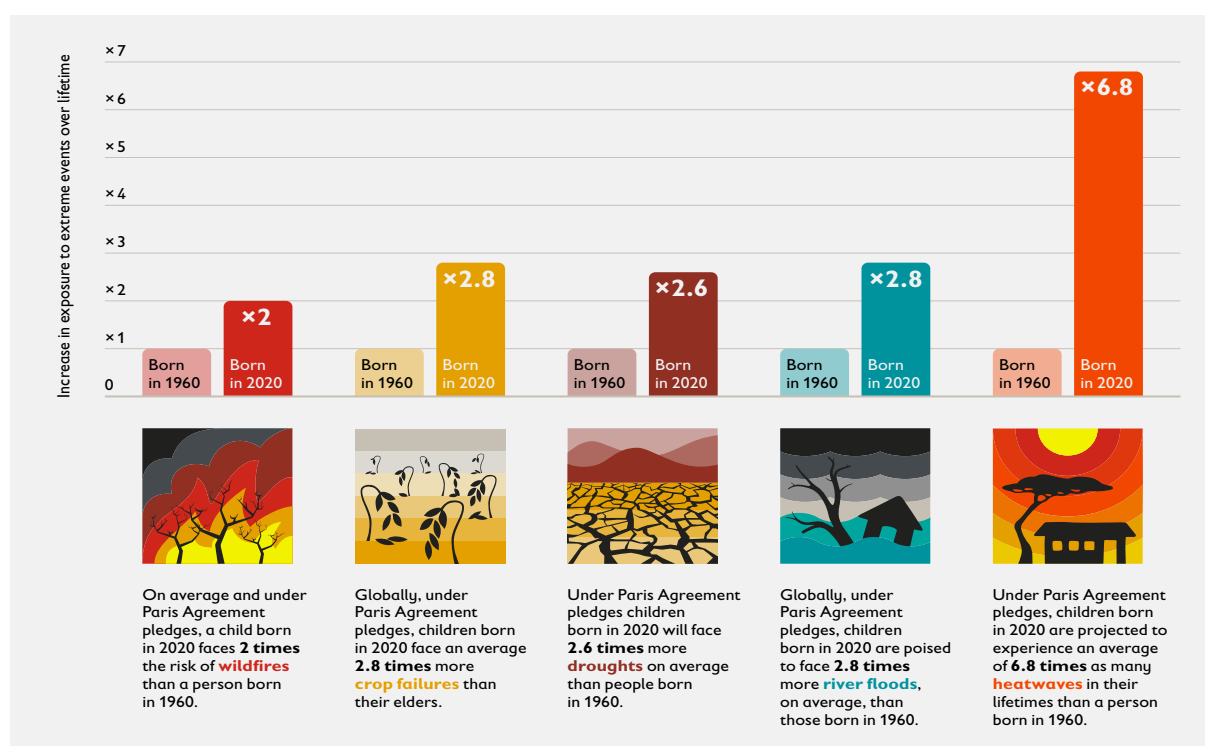
The nature of the research is to broadly examine the various impacts of climate crises and environmental degradation on young people in Nepal. Therefore, the findings provide general information related to the key sectors that children and youths rely on, rather than a thorough understanding of a specific issue. Field work for the study were conducted during 2020 and the broader context and scientific evidence have been updated up to 2022 and so this report has some limitation in regards coherence and cross reference.

## Climate change vulnerability-Global Context

Human-induced climate change is causing dangerous and widespread disruption in nature and affecting the lives of billions of people around the world, despite efforts to reduce the risks. The people and ecosystems that are least able to cope are the hardest hit, as highlighted in the latest Intergovernmental Panel on Climate Change (IPCC) report (IPCC, 2022).

The report 'Born into the Climate Crisis' by Save the Children reports that, on average, a child born in 2020 is at twice the risk of wildfires as a child born in 1960, in line with the commitments of the Paris Agreement. This risk is particularly acute for children in fragile contexts, who have about twice the lifetime risk of wildfires compared to previous generations. Data from the same report shows that 'it is the children of many low- and middle-income countries who will continue to bear the brunt of worsening climate change. This will be compounded for some children – particularly those exposed to multiple hazards, those living through conflict, those most profoundly impacted by COVID-19, and those experiencing inequality and discrimination based on gender, disability, indigeneity, displacement, or other, often intersecting factors (Figure 1). Climate change is inextricably linked to wider issues of inequality and failures to uphold children's basic rights. The future for children already suffering the worst impacts of climate change is looking increasingly dire'.

**Figure 1** Lifetime exposure to extreme events under Paris Agreement pledges for children born in 2020 compared to that of a person born in 1960<sup>8</sup>



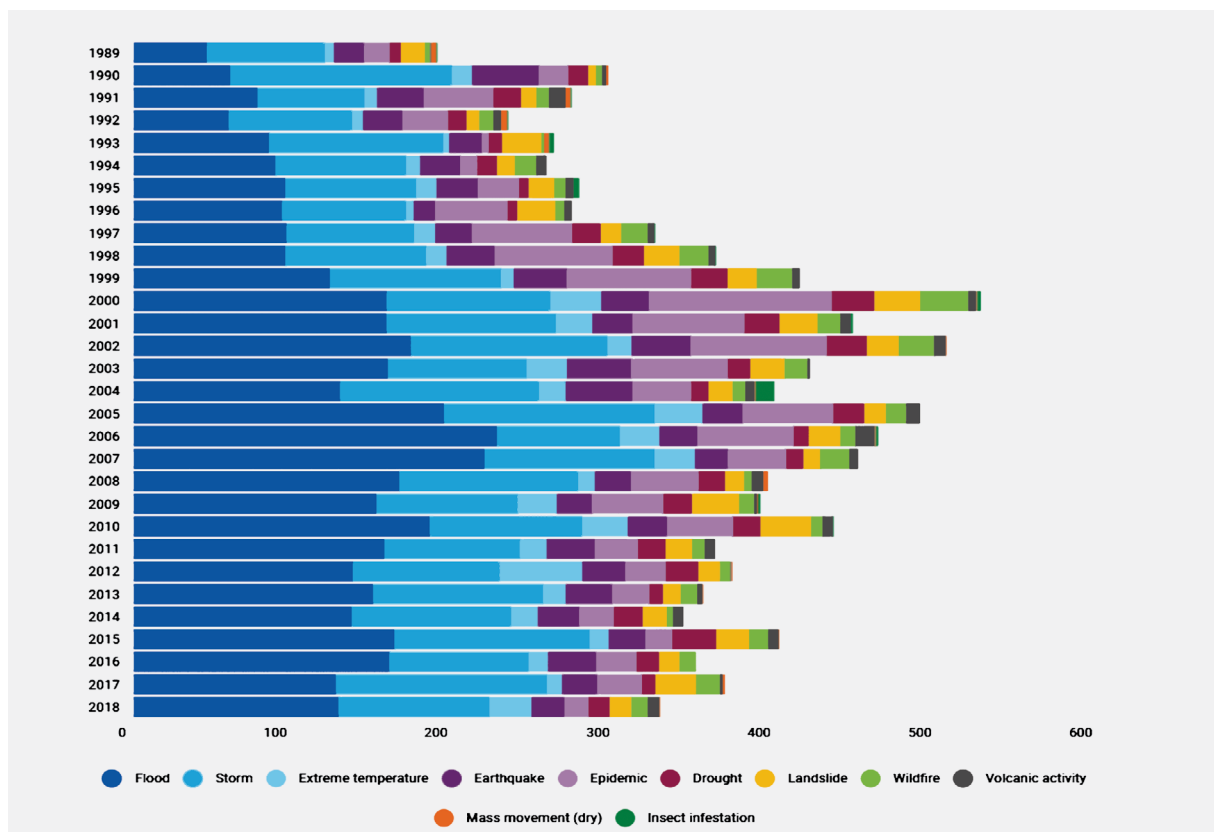
Climate change has many manifestations. Among other things, it affects the mean value as well as the temporal and spatial distribution of temperature and precipitation, the intensity and frequency of storms as well as climate change-induced calamities. The International Panel on Climate Change (IPCC) defines climate change vulnerability as “the degree to which a system is susceptible to and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.”(IPCC, 2021).

The role of climate change in increasing vulnerability in the following areas: natural disasters; agriculture and food security; health; freshwater; and terrestrial ecosystems are discussed below. These areas are identified as the main areas impacted by climate change in the IPCC.

### ► Natural disasters

The impact of climate change on natural disasters is the most widely discussed consequence of climate change. It is often the only area addressed in several climate change vulnerability studies (e.g., Brooks, Adger, and Kelly, 2005, Yusuf and Francisco 2009, Harmeling 2010). Typically, four main categories of natural disasters are distinguished: geophysical (such as earthquakes and volcanoes), meteorological (storms), hydrological (such as floods), and climatological (such as drought, heat waves, and cold waves). Climate change is expected to increase the frequency, geographic distribution, and intensity of some weather events and extremes (IPCC, 2021, Summary for policymakers), and all weather-related disasters (i.e., meteorological, hydrological, and climatological) are potentially impacted by climate change. Natural disasters are more frequent in recent decades than in the 1990s (Figure 2).

**Figure 2** Natural disasters are more frequent in recent decades than in the 1990s. The global number of natural disasters, by type of disaster and year, 1989-2018<sup>9</sup>





Natural disasters are a function of the hazard itself, exposure, and resilience. Hence, if climate change increases the frequency and magnitude of certain natural hazards, it may lead to more frequent and more severe disasters, depending on the direction and magnitude of changes in exposure and resilience.

It should be noted that the destruction of economic assets does not only reduce the wealth of impacted countries but can also lead to long-lasting economic development consequences through the impact on human capital. Even if growth rates can rebound relatively quickly, development can be delayed for long periods.

### ► Pattern of precipitation and floods

Increased frequency in extreme precipitation and overall higher precipitation intensity are very likely consequences of climate change. This can lead to increased and more severe flooding, depending on the timing of snow and rainfall, river basin conditions, and flood prevention infrastructure (IPCC, 2007, Summary for policymakers). Floods are the most frequent natural disaster, leading to a loss of life, destruction of physical capital, reduced agricultural production, and other effects such as the increase in waterborne diseases and reduced water quality. Increased glacier melting can also lead to increased flooding, including through the outburst of glacial lakes. Moreover, intense and extreme precipitation is also the main cause for the high vulnerability of the transport sector found in some developing countries' studies, in particular, if roads are unpaved (World Bank, 2019).

### ► Impact on agriculture

In addition to the natural disasters mentioned above, there are various channels through which climate change affects agricultural production. Higher temperatures generally increase growing seasons in colder regions

but decreases them in warmer zones.

Precipitation increases soil moisture and the availability of fresh water, generally boosting production. Both the level and distribution of precipitation play an important role. Increased rainfall variability and intensity can have negative impacts on both rainfed agriculture and, to a lesser extent, irrigated agriculture. Moreover, a higher atmospheric concentration of carbon dioxide enhances plant growth and water use efficiency for various crops. However, the positive effect of carbon dioxide does not materialize in areas where nutrient availability, in particular nitrogen availability, is the dominant constraint to plant growth. Generally, agricultural production is expected to decrease in lower latitude countries and increase in higher and middle latitudes as long as global warming remains below 3°C degrees (IPCC, 2021). If average global temperatures increase, even more, agricultural production could decline in higher latitudes as well. As LDCs and other low-income countries are located in lower latitudes, the impact on agricultural production from climate change is likely to be negative, thereby affecting food security and the nutrition.

### ► Impact on human health

Climate change is expected to affect human health through various channels. As discussed above, climate change could increase climatic hazards, such as heat waves, droughts, and floods. Reduced fresh-water availability, increased ground-level ozone, and increased spread of bacterial contaminants caused by climate change could lead to an increase in mortality and diseases due to unsafe water, sanitation, and hygiene, which constitutes one of the biggest health risk factors in developing countries (World Health Organization-WHO, 2008).

Climate change is also expected to increase the size of areas where vector-borne diseases such as malaria and dengue fever are endemic, which again could lead to increased health burden in the absence of countervailing

measures. Climate change impacts health in three major ways; first, direct impact causing heat and illnesses from extreme weather events, second, indirect impact through rising air pollution and vector food and water borne diseases and third, socially mediated effects resulting in mental illness, heat induced stress, population displacement resulting in violence and conflicts (Strengthening health resilience to climate change WHO 2016). Climate change is expected to impact rise in infectious diseases like dengue virus and malaria, as well as transmission of water borne and food borne diseases like cholera, gastroenteritis and dysentery and also an increase in YLD (years lived with disability) (Impact of climate change on health and well-being of people in Hindu Kush Himalayan region: a narrative review 2021).

Finally, rising high temperatures, even outside of heat waves, are expected to increase cardiovascular and respiratory diseases, whereas rising low temperatures would decrease the burden of disease. The climate sensitive health risks, as outlined by WHO, are injury and mortality from extreme weather events, heat related illness, respiratory illness, waterborne diseases, zoonotic diseases, vector borne diseases, malnutrition and food borne disease, non-communicable diseases and mental and psychosocial illnesses<sup>10</sup>. The magnitude of future negative effects, however, remains quite uncertain. Estimates for the current situation find only a modest role for global climate change as a risk factor for mortality and morbidity. A recent report by the WHO on global health risks attributes 141,000 deaths (equivalent to 0.2 percent of world deaths) to climate change in 2025, predominantly in poor countries. Between 2030 and 2050, climate change will cause approximately 250,000 additional deaths per year from malnutrition, malaria, diarrhea and heat stress<sup>11</sup>. However, not all possible health impacts are included in the report. Least Developed Countries (LDCs) are found to be the most affected region in relative terms.

### ► Impact on water availability

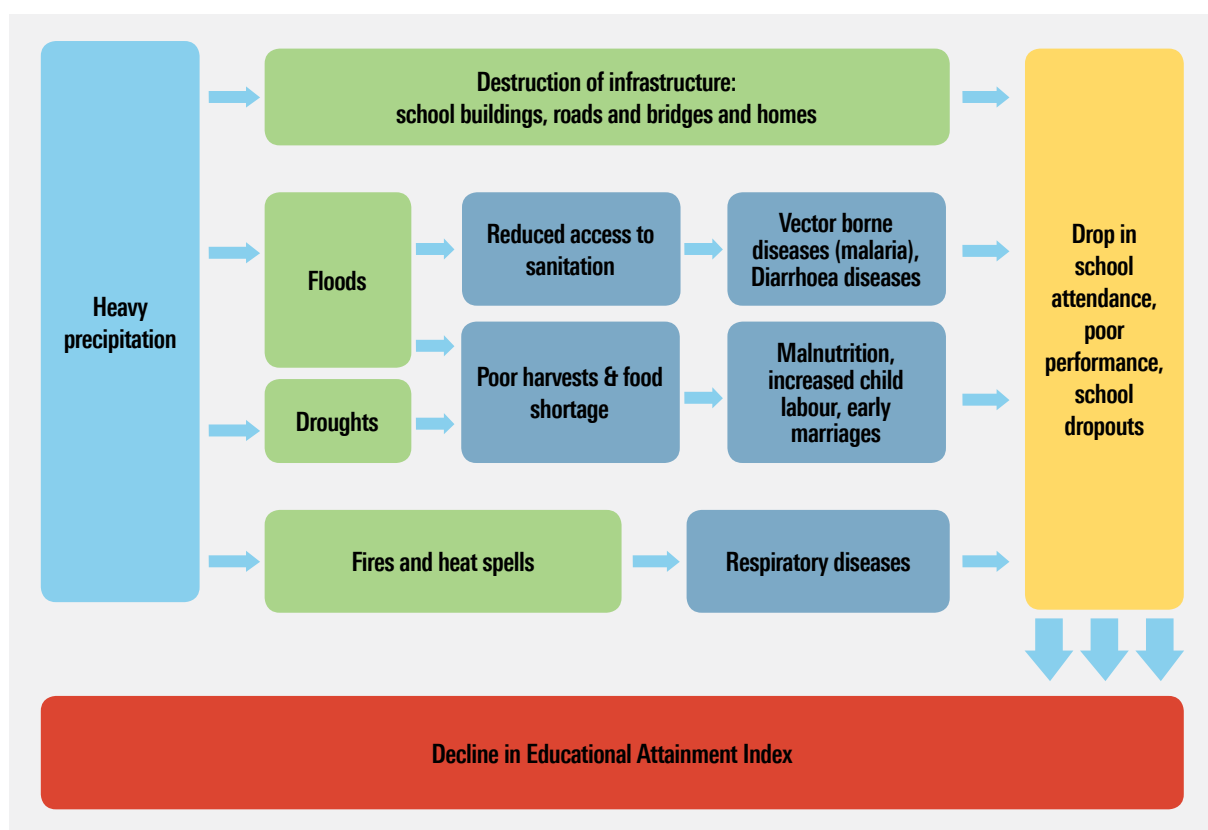
Both current observations and climate projections indicate that fresh water resources are very strongly impacted by climate change, which would have important implications on livelihoods and development. First, average water availability and its distribution over time critically affect agriculture with obvious impacts on food security and nutrition, as discussed above. However, changes in water availability can have a wide range of further development impacts.

The supply of safe drinking water can be affected. Depending on water infrastructure and management techniques, both reduction in water availability and an increase in water variability caused by changes in precipitation, runoff, and river flows can have detrimental effects. Moreover, temperature increases can have negative effects on water quality. Heavy precipitation events and flooding can also lead to increased water pollution, in particular, if environmentally unsafe agricultural and mining practices are employed and wastewater treatment facilities are insufficient.

### ► Impact on education

Climate change has a direct impact on education. The primary impacts of climate change on education arise from the effects of extreme weather events, such as heavy rains accompanied by flash floods, strong winds, and hailstorms with short and long-term consequences. In the Terai, schools are closed for one to two weeks during the cold spell. Extreme heat and cold during school opening hours also affect students' learning if schools do not have the necessary conditions to provide children with education, which has a long-term impact on learning outcomes. Drought and increasing temperatures lead to poor harvests and food scarcity, which have negative impacts on educational attainment as like pushing young generations to drop education for labor works. Extreme weather events reduce the availability of safe drinking

**Figure 3** Pathways of climate change impact on education (Source: Adapted from UNICEF, 2011)



water, affect sanitation facilities and increase the incidence of weather-related diseases such as malaria and diarrhoeal diseases, leading to absenteeism and possibly dropping out of school. Besides the primary impacts, climate change also has secondary impacts on education. These arise from the ways in which households respond to or choose to cope with and adapt to climate change as evidenced by income supplementing activities of household members, migration, and child marriages. Figure 3 illustrates a simple pathway of climate change (particularly heavy rainfall) impact on education.

## Children's Climate Risk profile

The **Children's Climate Risk Index (CCRI)**, developed by UNICEF, provides the first comprehensive view of children's exposure and vulnerability to the impacts of climate change. It ranks countries based on children's

exposure to climate and environmental shocks, such as cyclones and heat waves, as well as their vulnerability to those shocks, based on their access to essential services. **The CCRI reported that children are more vulnerable to climate and environmental shocks than adults for several reasons including physical and physiological vulnerability and an increased risk of death.** Many children live in areas that experience multiple, overlapping climate and environmental hazards. Droughts, floods, and severe weather, coupled with other environmental stresses, compound one another. These hazards can not only exacerbate each other but also marginalize pockets of society and increase inequality. They also interact with other social, political, and health risks, including COVID-19. Overlapping hazards ultimately make certain parts of the world even more precarious places for children – drastically reducing their future potential.

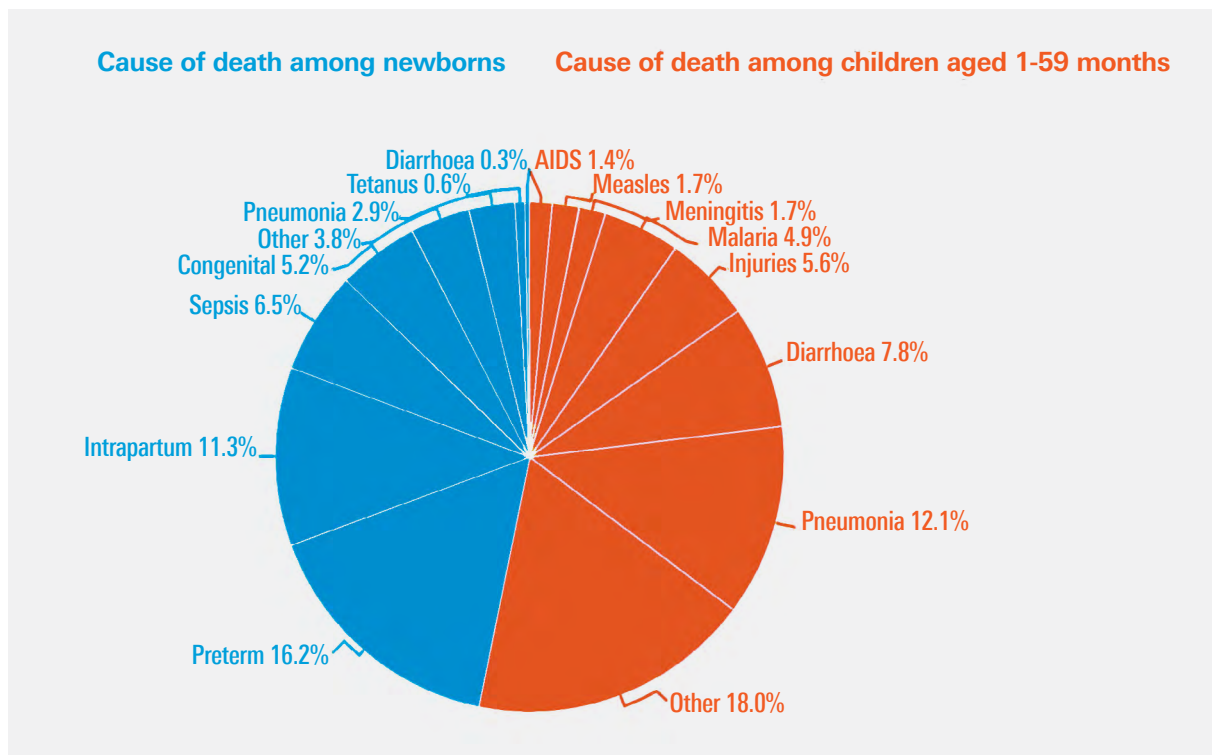
**Climate change poses significant risks to children’s health and well-being.** Climate change is a direct threat to children’s health and well-being. In many communities, rising sea levels and temperatures are already putting stress on the ecosystem – affecting the areas where people can safely settle and grow food. And while children are the least responsible for the changing environment, they are likely to bear the greatest burden.

**Changing environments worsen the effects of diseases on children, particularly the youngest and most vulnerable.** The habitat for mosquitoes transmitting malaria, dengue fever, and yellow fever is projected to almost certainly expand, thus taking a further toll on communities already suffering greatly from these diseases. Diseases such as malaria are more likely to affect rural areas but have the potential to spread to urban settings, which are already suffering from rising levels of air pollution. Air pollution is linked with one in eight under-five deaths, according to World

Health Organization data. It is also associated with increased rates of asthma and other respiratory diseases such as pneumonia. (Figure 4)

**A decrease in food security threatens children’s development and survival.** Food insecurity has long been a reality in many communities around the world. Warmer temperatures are predicted to lead to lower crop yields, placing further stress on the global food supply. For children, even brief periods of undernutrition means a greater risk of dying from common infections and lifelong damage to their development. Food insecurity also threatens maternal health, which is closely related to a child’s survival and thriving in the early years. In 2018, nearly one in four – or 149 million children under 5 – were stunted, and over 49 million suffer from wasting, according to the 2019 Joint Malnutrition Estimates from UNICEF, WHO, and the World Bank.

**Figure 4** Global distribution of deaths among newborns and children under 5, by cause, 2017 (WHO, 2017)



**As safe drinking water and sanitation become increasingly scarce, progress made in child survival may be reversed.**

Access to water, sanitation, and hygiene (WASH) services is vital to preventing the spread of diseases. Despite the vast progress made, it is estimated that 440,000 children under age 5 died in 2017 – and 800 children continue to die every day – from diarrhoeal disease. Already oft-occurring extreme weather events such as storms and floods are likely to put more stress on the delivery of WASH services. UNICEF projections show that by 2040, one in four children under the age of 18 – some 600 million people – will be living in areas of extremely high water stress. Addressing climate change as well as its impacts on children will be critical in protecting the gains made in child survival rates over the past 30 years. The impact of climate change on child mortality is only beginning to become evident, and even under optimistic scenarios, children are likely to pay a heavy price. Concerted international efforts are therefore needed to address the three channels through which climate change affects children.

► **Climate change vulnerability - Nepal Context**

The temperature in Nepal rose at a rate of 0.056 degrees Celsius per year in the period 1971-2014, with the increase being greatest at higher altitudes (DHM, 2017)<sup>12</sup>. Precipitation also decreased in all seasons during this period. Extreme precipitation is increasing (Karki et al, 2017). Nepal is highly vulnerable to the effects of climate change impacts. Recent studies by the Asian Development

- Approximately 1 billion children (nearly half of the world's children) live in extremely high-risk countries
- Estimated 330 million children (1 in 7 children globally) are exposed to at least five major climate and environmental hazards, shocks and stresses
- Nearly 920 million children (over one-third of children globally) are exposed to water scarcity;
- 600 million children (over 1 in 4 children globally) are exposed to vector-borne diseases, such as malaria and dengue

(UNICEF, 2021)

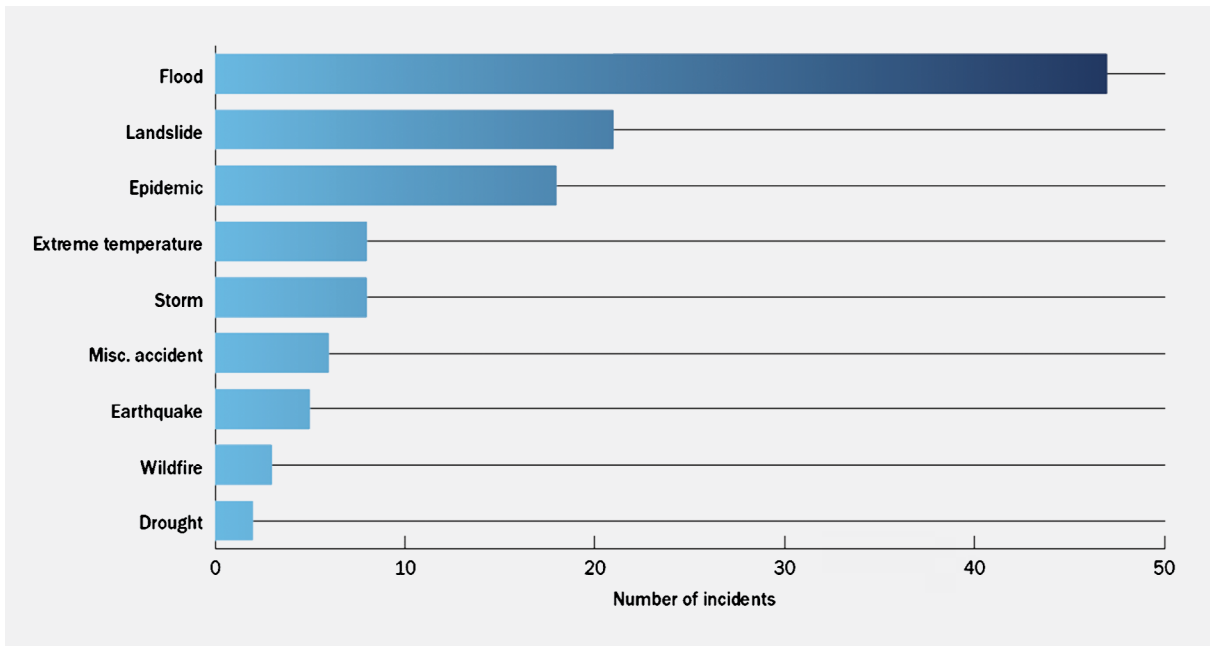
Bank estimate that Nepal will lose 2.2% of its annual GDP by 2050 due to climate change. Nepal ranks 10th among the countries most affected by extreme weather events in the years 2000-2019 (German Watch, 2021) Nepal is exposed to significant disaster risk, ranking 31st on the 2019 INFORM Risk Index, with approximately 80 per cent of the population at risk from natural and climate-related hazards such as, extreme heat stress, flooding, and air pollution<sup>13</sup>.

It is also one of the 20 most disaster-prone countries in the world with more than 4,000 disaster-related fatalities in the last 10 years and economic losses of over US\$ 4 billion.

Table 1 provides estimated number of people in Nepal affected by an extreme river flood (extreme flood is defined as being in the 90th percentile in terms of the numbers of people

**TABLE 1: Estimated number of people in Nepal affected by an extreme river flood**

Population Exposed to Extreme Flood (1971–2004)	Population Exposed to Extreme Flood (2035–2044)	Increase in Affected Population
353,695	369,120	15,425

**Figure 5** Average annual natural hazards in Nepal 1980-2020 (Source: WB report 2022)

affected) in the historic period 1971–2004 and the future period 2035–2044 (represent an average and assume present-day population distributions) (World Bank, data-Climate Risk Profile, Nepal 2021)

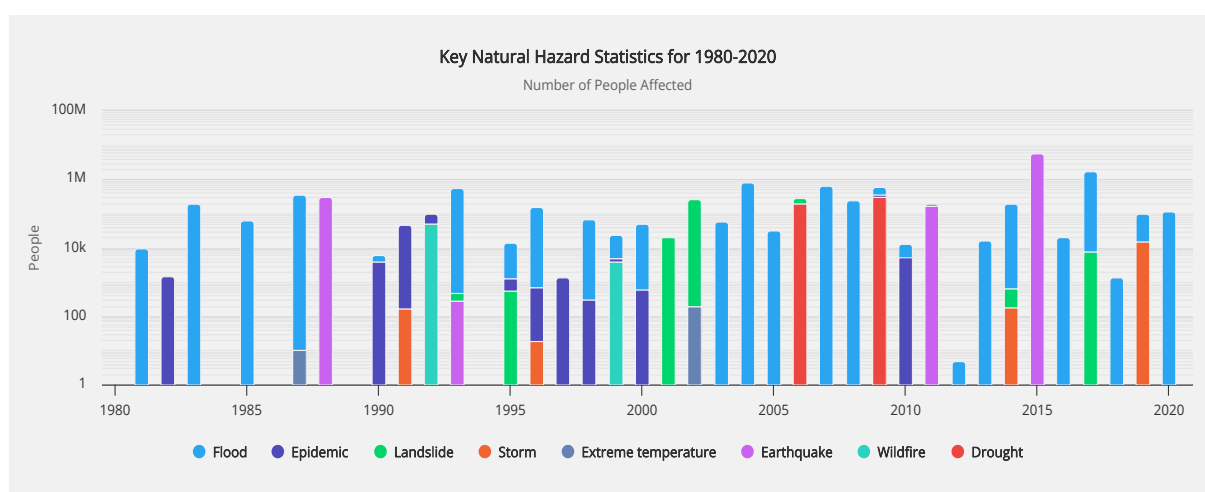
For instance, in 2021, heavy rains, floods, and landslides in Nepal claimed dozens of lives, destroyed crops and hundreds of homes, and damaged hundreds more infrastructures (including schools, bridges, government buildings, and hydropower stations).

Earthquakes and flood risk are the most damaging natural hazards to date, while floods and landslides were the most frequent hazards (and expected to increase as climate change accelerates) over the past 40 years (Figure 5). The number of flood events has doubled in recent years; storms, erosion, and landslides are also on the rise, resulting in loss of life and livelihoods.

The overall loss and damage, vulnerability and risk are increasing across Nepal and are projected to increase rapidly in the future undermining local communities' livelihoods and undo previous development gains (VRA, MoFE, 2021)

## Natural Hazard Statistics

Heavy monsoon floods and landslides in 2020 caused hundreds of deaths, displaced thousands of people, and damaged many roads. Similarly, the unseasonal, heavy rains during October 2022, in the West of Nepal had left a wake of deaths, missing persons, damage to roads, bridges, hydropower stations and other physical infrastructure as well as heavy agricultural losses due to flooding and landslides across the country. In another incident in September 2022, landslides triggered by heavy rains in Achham district in Sudurpaschim Province had killed 14 children under the age of 18, 15 women and 13 Dalits (under-privileged community). The mountains are warming up faster than the plains, leading to the melting of ice and permafrost and increasing the risk of landslides. Dry spells, droughts, forest fires, heat waves, flash floods and disease outbreaks are increasing, as is the risk of slow onset. The charts below (Figure 6) provide an overview of the most frequent natural disasters in a given country and understand the impacts of these disasters on human populations.

**Figure 6** Key Natural Hazard Statistics for 1980-2020 (Source: WB report 2022)

**Climate and disaster risks are expected to further increase, affecting people and the environment, and putting development gains at risk.** Temperature is projected to increase by 0.92–1.07°C in the medium term (2016–45) and 1.3–1.8°C in the long term (2036–65) from the reference period of 1981–2010<sup>14</sup>. Likewise, annual precipitation is expected to increase in both the medium and long term by 2–6 percent to 8–12 percent with more precipitation expected in the higher regions<sup>15</sup>. Winters are projected to be drier and monsoon summers wetter, with up to a threefold increase in rainfall. The number of people in Nepal annually affected by river flooding caused by climate change could more than double to around 350,000 in 2030 (from 157,000 in 2010)<sup>16</sup>. The economic impact of this flooding could triple<sup>17</sup>. This will contribute to further increasing Nepal’s relative exposure to climate-related hazards.

**Climate impacts are being felt across all sectors, particularly those related to water.**

The recently developed ‘Vulnerability and Risk Assessment and Identifying Adaptation Options<sup>18</sup>’ report, identified that warming threatens the future of Nepal’s high mountain glaciers, which are a critical supply of fresh water to the region. In Kathmandu, water stress is so severe that piped supply is reported to meet less than 32 percent of household demand in the monsoon and 19 percent in the dry season<sup>19</sup>. Water availability

also affects small-scale hydropower and agriculture, which remains a vital part of the livelihoods of 64 percent of the population. Decreasing water availability comes at critical cropping times, decreasing soil moisture, with prolonged droughts resulting in crop failures and productivity losses. Currently, all but one hydroelectric plant is run-of-river; its productivity is impacted by river runoff volume and sedimentation caused by poor land and forest management as well as extreme weather events. This represents a potential vulnerability in the context of uncertain future precipitation regimes, glacial melting, and potential increases in the risks of landslides and glacial lake outburst floods (GLOFs). Out of 2070 glacial lakes in Nepal (equal to or larger than 0.003 km<sup>2</sup>) 47 are potentially dangerous glacial lakes (PDGLs) identified; 42 are located in the Koshi basin, three in the Gandaki basin, and two lakes in the Karnali basin (ICIMOD & UNDP, 2015).

**Nepal’s diverse ecosystems and natural capital – which provide vital ecosystem services for the poor in remote locations – are at risk because of the increasing frequency and severity of drought, erosion, biodiversity loss, forest fires, and diseases.** Forests are an important source of livelihood for over 30,000 communities and cover more than 40 percent of Nepal’s land area<sup>20</sup>. **They are also important buffers to climate impacts and provide critical ecosystem**

**Figure 7** CCRI - Children's Climate and Environment Risk Index (UNICEF, 2021)

Severity	CCRI	Pillar 1: climate and environmental shocks	Pillar 2: Child vulnerability
Extremely High		7.5	
High	6.1		
Medium			4.2
Low			
Very Low			

services, including groundwater recharge, water quality and quantity control, and reduction of landslides, erosion, drought, and flood risks. While Nepal harbours great biodiversity, its many unique ecosystems, and natural resources are also being affected by climate change, with a negative impact on the tourism economy and the life and livelihoods of mountain peoples.

**Women, indigenous people, and other marginalized groups are often excluded from mainstream development and suffer from cumulative and cascading impacts of climate change and disasters.** Women, particularly those from poor and historically marginalized caste/ethnic groups, are the most affected by the effects of climate (Gurung and Bisht 2014). They are also vulnerable to discrimination based on socially ascribed identities such as caste, ethnicity and indigeneity as well as factors such as geographic remoteness, socioeconomic marginalization, interaction with the climate shocks, fragility, and weak governance<sup>21</sup>.

**The Children's Climate Risk Index (CCRI)-2021 reported that Nepal has 'high risk', whereas risk due to climate and environmental shocks is 'extremely high.** (Figure 7). Droughts, floods, air pollution, and river erosion across Nepal have left thousands of children homeless and hungry, and without reliable healthcare and water.

Table 2 below shows that Nepal, together with the South Asian countries, is one of the countries most affected by the effects of climate change worldwide. Extreme climate-related events – heat waves, storms, floods, fires, and droughts - affect more than half of the region's population every year and continue to burden South Asian countries' economies.

**Rising global temperatures and changing weather patterns have put the futures of millions of children living in climate-vulnerable areas in South Asia at constant risk.** Worse, before they can recover from one disaster, another one strikes, reversing any progress made.

**TABLE 2: Rank of different countries in South Asia as per CCRI -2021**

Country Name	Children's Climate Risk Index (CCRI) Rank	Climate and environmental shocks	Child vulnerability to climate change shocks	Emissions Per Capita (Mt)
Pakistan	14	8.7	6.4	0.98
Afghanistan	15	7.3	7.9	0.20
Bangladesh	15	9.1	5.1	0.51
India	26	9.0	4.6	1.80
Nepal	<b>51</b>	<b>7.5</b>	<b>4.2</b>	<b>0.43</b>
Sri Lanka	61	7.0	3.3	1.00
Bhutan	111	4.3	3.3	1.83





## CHAPTER 2

# PERCEPTIONS OF CHILDREN AND MARGINALIZED COMMUNITIES ON THE IMPACT OF CLIMATE CHANGE

A perception survey was carried out in 2020 to assess the level of impacts of climate change on children and marginalized communities. The study adopted the IPCC (2014) Impact Risk Framework and carried out primary data collection and analysis. The detailed methodology, followed for this perception survey, is enclosed as **Annexure-1**.

The survey showed that children, youths, and marginalized communities of Nepal are highly vulnerable to climate change impacts. Similar to the findings, derived from the secondary sources (as narrated in Chapter 1), the survey revealed that heavy rains, floods, and landslides in Nepal claimed dozens of lives, destroyed crops and hundreds of homes, and damaged infrastructures (including schools, bridges, government buildings, and hydropower stations).

The perception survey further revealed that earthquake and flood risk are the most damaging natural hazards to date in the surveyed districts, while floods and landslides were the most frequent hazards over the past 10 years. The perception is in line with the findings of World Bank (2022) that reports flood and landslide as the most recurring hazards in Nepal during 1980-2022. The number of flood events has doubled in recent years; storms, erosion, and landslides are also on the rise, resulting in loss of life and livelihoods.

Heavy monsoon floods and landslides caused deaths and displaced hundreds of people. During the survey, respondents from the mountain districts reported that communities feel warming in the districts earlier than before, triggering the melting of ice and permafrost and an increase in the risk of landslides. In other districts, respondents reported incidences of dry spells, droughts, and disease outbreaks. Detailed illustrations of the key findings of the field survey and the perceptions of children and marginalized communities on the impact of climate change are presented below.

## 2.1 Household profile of the research communities

The 800 surveyed households have a total population of 4,480, indicating an average household size of 5.6 compared to the national average household size of 4.88 (CBS, 2011). Men make up 51.2 percent and women 48.8 percent of the surveyed population, while children and youth make up 54.1 percent of the surveyed population (Table 3).

Compared to the districts and national proportions (CBS, 2011), the surveyed community has a lower proportion of children (Table 4). However, the proportion of youth is higher. This discrepancy could be due to the years between this research (2020) and the National and District Population data (2011).

**TABLE 3: Population of surveyed households**

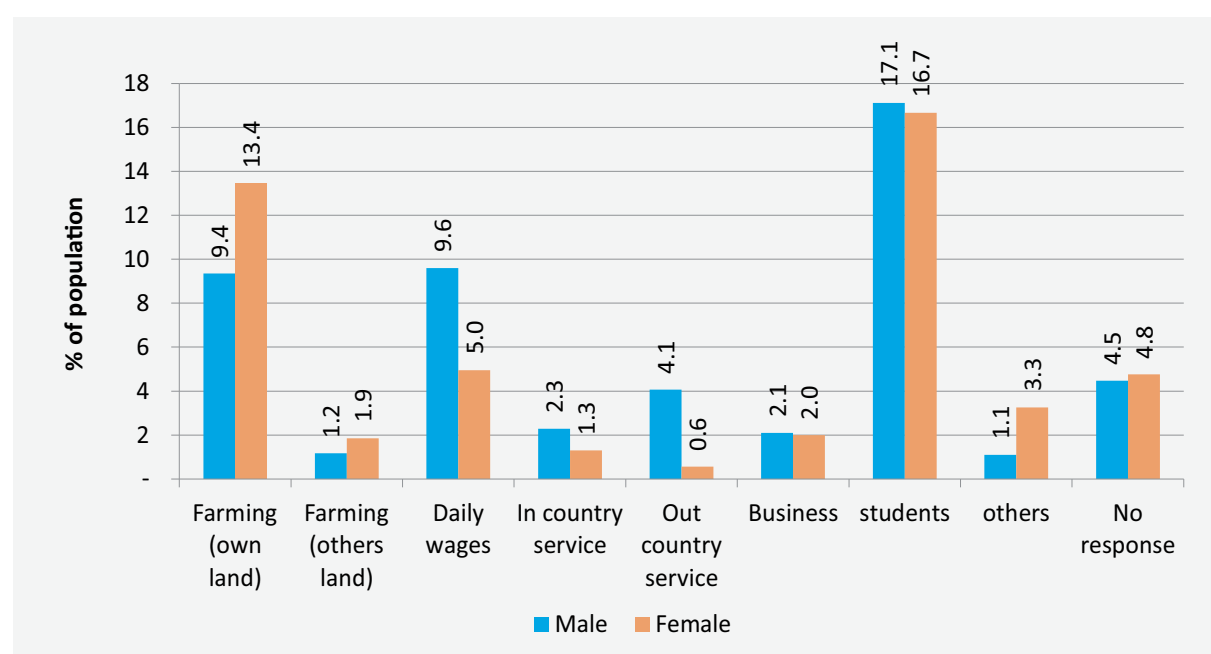
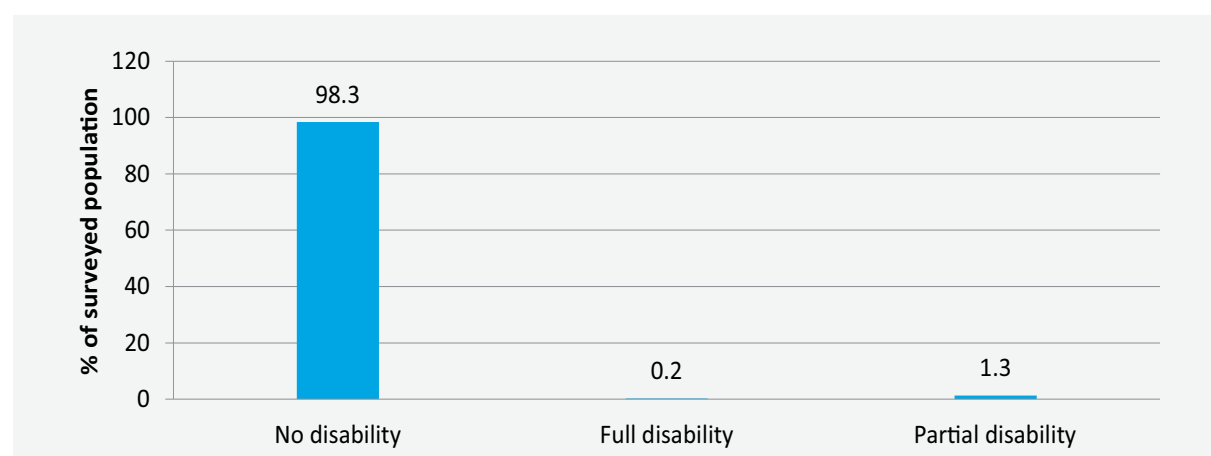
District	Male	Female	Total	No. of Household	Household average size
Sankhuwasabha	170	148	318	59	5.4
Mahottari	695	677	1372	223	6.2
Kaski	542	531	1073	201	5.3
Bardiya	462	429	891	170	5.2
Jajarkot	160	163	323	71	4.6
Bajhang	266	237	503	76	6.6
Total	2295	2185	4480	800	5.6
<b>percent of total</b>	<b>51.2</b>	<b>48.8</b>	<b>100</b>		

**TABLE 4: Comparison of the surveyed population with district and national population (percent)**

Age group	Survey population	Survey Districts (CBS, 2011)	National (CBS, 2011)
<18 (children)	36.7	44.8	41.8
18-24 (youth)	17.3	12.6	13.0
>24 (adult and elder)	45.9	42.6	45.1
Total	100	100	100

By population, agriculture employs a fourth of the people in the respondent households (25.8 percent), followed by daily wage labour (14.6 percent) (Figure 8). The findings show greater female engagement in farming and

uncategorized activities. Almost 34 percent of the research population are students, and around 1 percent are people with disabilities (Figure 9). Most of these people are physically disabled.

**Figure 8 Occupation of surveyed population (n=4480)****Figure 9 Population of persons with disability (percent) (n=4480)**

## 2.2. Vulnerability of communities, children and youth

Based on the discussion with key informants, it is found that there is low awareness on climate change among children, youth, parents, and communities. The surveyed communities and households did not come across organizations, providing supports to communities on climate change mitigation and adaptation works.

### ► Income/livelihood

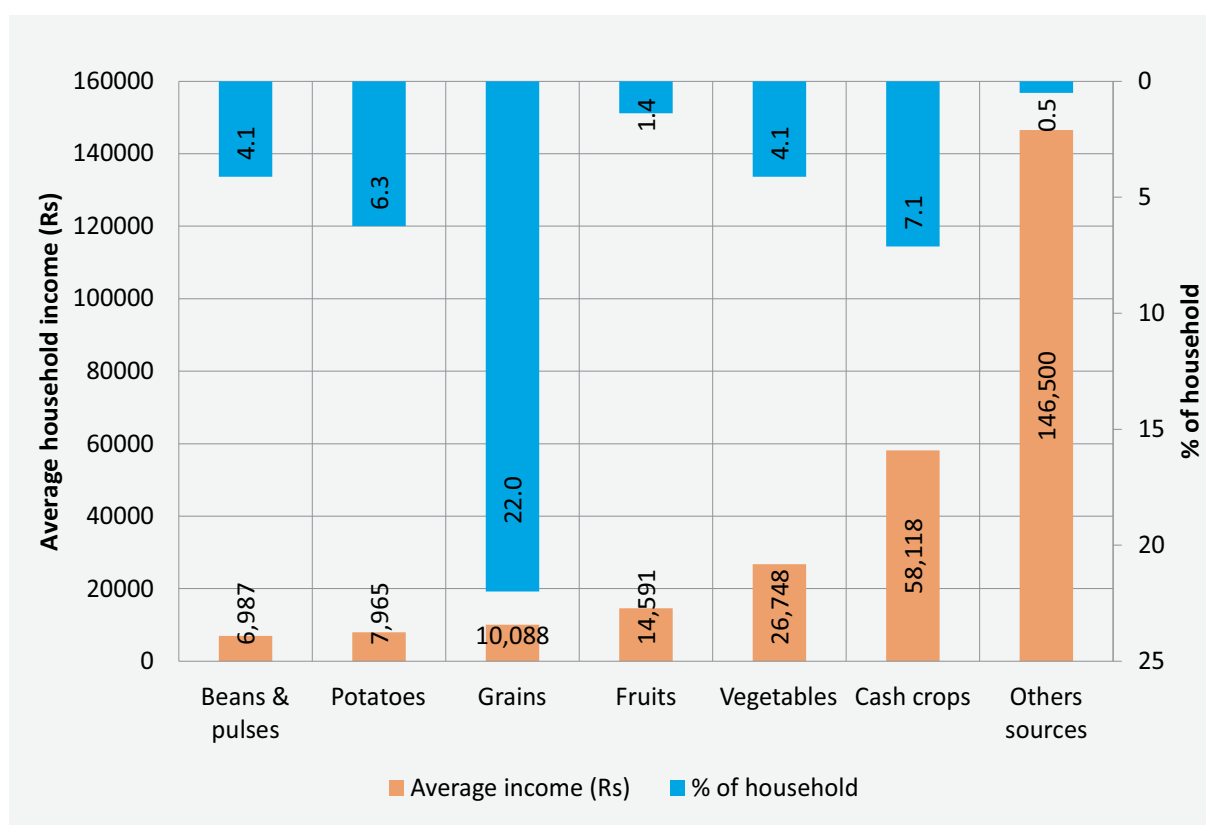
Most respondent households (40.7 percent) are depended on wage-based income, followed by agriculture income (30.5 percent). The survey found that the average landholding of household (HH) is less than 0.2 ha and primarily practising subsistence-based agriculture production. The household

average annual cash income from the sale of agricultural products is very low (Figure 10). Hence, surveyed households are having very limited economic power and could afford access to basic needs such as food and other economic benefits.

## 2.3 Representations in institutions

Acting as a representative of a community in different institutions provides an opportunity for influencing decisions on relevant problems and needs. The survey revealed that of the 4,480 people from the households surveyed, 20 hold a position in local government (Table 5). Of these, 12 are men, 8 are women, 2 are local government chairpersons, 1 is vice-chairperson, 1 is treasurer, 2 are secretaries and 14 are members. None of the members are in the 18-24 age group.

**Figure 10** Cash income from sales of crops (n=800)



**TABLE 5: Child and youth representatives in local level institutions**

S. N.	Institution	Representation from the surveyed population	Child member (under 18 years)	Youth member (18-24 years)	Adult member (above 24 years)
1	Local Government	20	-	-	20
2	Youth club	46	6	20	20
3	Child club	21	13	8	-
4	Community-level climate change committee	6	-	1	5
5	Forest Users' Group	154	-	4	150
6	Community Disaster Management Committee	23	-	-	23
7	Conservation Area Management Committee	4	-	-	4
8	Saving and credit groups	341	1	25	315
9	Mother group	240	1	14	225
	<b>Total</b>	<b>855</b>	<b>21</b>	<b>72</b>	<b>762</b>
	<b>Percentage</b>		<b>3</b>	<b>8</b>	<b>89</b>

The survey further found that existing communities' systems do not encourage children and youth to participate in decision-making processes at the local level. It was learnt from the FGD in Bajhang that the adult (male) usually dominates the discussions in the community meetings and do not pay attention to the voices and concerns of children and youth. The children and youth are hesitant to share their problems and needs during the community meetings.

## 2.4. Access to social security benefits

Households are receiving five different types of social security allowances from the government, such as senior citizen allowance, single woman allowance and disability allowance. Around 2.0 percent of the households are getting more than one type of benefit (Table 6). The number of households receiving Senior Citizen Allowance is over 12 percent among the total households surveyed.

**TABLE 6: Households getting social security benefits (No.)**

District	No. of Household				
	Senior Citizen	Single woman	Disability	Dalit children below 5 years old	Extreme poverty
Sankhuwasabha	6	3	1	0	0
Mahottari	25	14	3	47	0
Kaski	40	6	3	9	0
Bardiya	12	6	6	0	0
Jajarkot	3	1	0	2	0
Bajhang	13	9	2	15	1
<b>Total</b>	<b>99</b>	<b>39</b>	<b>15</b>	<b>73</b>	<b>1</b>

Source: Household survey, 2020

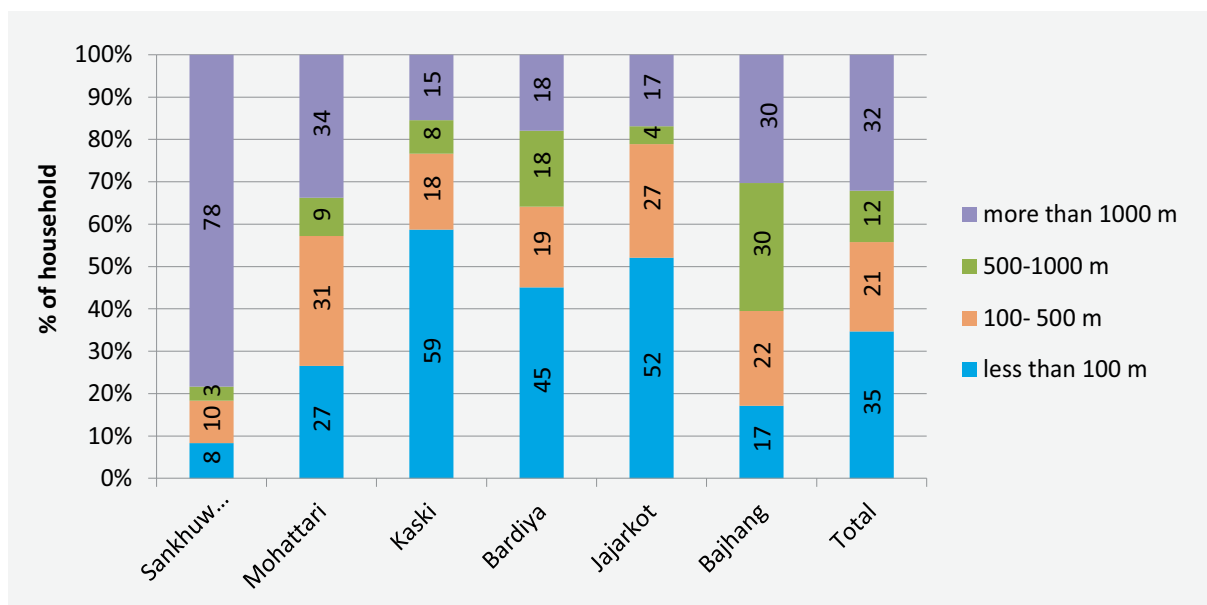
## 2.5 Proximity of households to potential hazards

The proximity of households to potential hazards is a factor of exposure. Overall, 35 percent of the respondents reported that their houses are within 100m of a potential hazard (Figure 11), suggesting that these households experience high exposure to climate-induced threats. At district levels, the disaggregated data show that Kaski district has the highest percentage of households within 100m of distance from a hazard, followed by Jajarkot

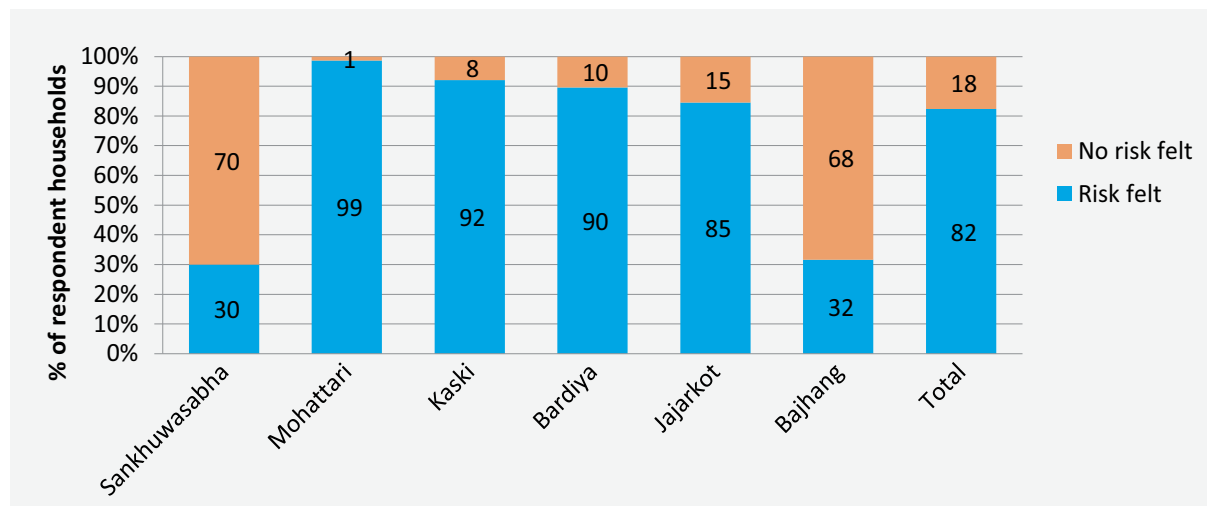
and Bardiya districts. In the Sankhuwasabha district, most of the households are more than 1,000 m from hazards.

Overall, 82 percent of respondents felt they are at risk from one or more climate hazards (Figure 12). Fear of hazards also affects people’s psychological well-being and confidence, limiting their capacity to undertake adaptation measures or to respond to climate crises when they arrive. Several factors combine to burden household respondents with feelings of risk exposure.

**Figure 11** Distance from hazards (m)



**Figure 12** Feeling of risk from landslides and floods



## 2.6 Perceptions of climate change and climate hazards

Information from all the research districts reveals that extreme climate events are increasing in frequency and intensity. The dry months, usually in the winter, are becoming drier and drier. The total amount of rainfall during monsoon seasons is uncertain; there is an increasing trend toward more intense rainfall in monsoons. This trend suggests an increase in the frequency and intensity of landslides in the hill districts like; Jajarkot and Kaski and of floods in the Terai districts like; Bardiya and Mahottari. The timing of the arrival of the monsoon is becoming increasingly uncertain. Communities from the Sankhuwasabha mountain district perceive that the onset date of monsoon is earlier, but FGD participants from other districts

perceive that monsoon onset is later. The total amount of monsoon rainfall is perceived to be increasing. The hot months are getting hotter, but the cold in winter has also become more intense.

The study explored respondents' perceptions of changes in the magnitude and seasonality of climate parameters. The climate parameters include temperature, rainfall, drought, wind, hail, lightning, cold and heat waves, cloud and fog cover and snowfall. The timeframe covered was the last 10 years. Questions were asked on the trends of the parameters, whether they were increasing or decreasing or remained the same. The perceptions covered a wide range of variations. Therefore, to organize the information, perceptions have been categorized with legends given below with explanations.

### Legends for the Table 7 to 18

++	Increasing trend or the parameter has increased as perceived by >50 percent of total respondents
+	Increasing trend or the parameter has increased as perceived by most of total respondents but is <50 percent of total respondents
--	Decreasing trend or the parameter has decreased as perceived by >50 percent of total respondents
-	Decreasing trend or the parameter has decreased as perceived by most of the respondents but is <50 percent of total respondents
==	No change or the parameter has remained the same as perceived by >50 percent of total respondents.
=	No-change or the parameter has remained the same as perceived by most of the respondents but is <50 percent of total respondents
??	Uncertainty as perceived by >50 percent of total respondents
?	Uncertainty as perceived by most of the respondents but is <50 percent of total respondents
X	Not applicable including did not get any responses
Mixed symbol	Appearing two legends together in a single cell indicates equal number of respondents related to that particular parameter.

Some respondents did not respond to all of the parameters. For example, the experience of landslides, snowfall and avalanches are limited to the hills and mountains, so perceptions of these parameters are limited to hill and mountain communities. Similarly, heatwave issues are more characteristic of the Terai.

### ► Temperature or warming

Most households perceived an increasing trend in temperature during pre-monsoon and monsoon seasons. The child respondents in Bajhang district reported an increase in pre-monsoon temperature (Table 7). In the Sankhuwasabha district, they have perceived that the cold remains unchanged in post-monsoon and winter seasons. In Jajarkot, respondents perceived that winter temperature is reducing and becoming cooler.

### ► Rainfall

In the case of rainfall, all child respondent households said there is a positive trend in pre-monsoon and monsoon seasons, except in Bajhang, where child respondent households said there is no change in monsoon rainfall (Table 8). Similarly, the respondents have detected a decreasing rainfall trend in post-monsoon and winter seasons, except in Sankhuwasabha, where child respondent households report that the rainfall trend in post-monsoon and winter seasons has not changed. Bajhang child respondent households report that winter rainfall has not changed.

In youth respondent households, there are a few responses with low certainty on an increasing trend of rainfall during pre-monsoon and monsoon. The youth respondents from Bajhang also expressed a low certainty on a decreasing trend in pre-monsoon rain. The perception of youth households regarding the winter rainfall in different districts varies.

**TABLE 7: Temperature trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	++	++	==	==	++	++	==	==
Mahottari	++	++	--	--	++	++	--	--
Kaski	++	++	--	--	++	++	--	--
Bardiya	++	++	--	--	++	++	--	--
Jajarkot	++	++	--	- ?	++	++	--	-
Bajhang	++	==	--	==	++	++	--	--

Source: Household survey, 2020 (n= child 400, youth 400)

**TABLE 8: Rainfall trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	++	++	==	==	++	+	==	==
Mahottari	++	++	--	--	++	++	--	-
Kaski	++	++	--	--	++	++	==	==
Bardiya	++	++	--	--	++	++	==	?
Jajarkot	++	++	--	--	+	+	--	+
Bajhang	++	=	--	=	-	++	--	-

Source: Household survey, 2020 (n= child 400, youth 400)



## ► Drought

There is no consensus among districts on whether drought is increasing or decreasing (Table 9). Both children and youth households from Mahottari report that drought is increasing in all the seasons, with youth reporting some uncertainty about the increase of drought during monsoon. In Jajarkot and Bajhang, both groups responded that drought trends are increasing in the pre-monsoon season.

## ► Wind, hail and lightning

Generally, our respondents perceive that

high wind events are increasing in the pre-monsoon season, except the respondents from Sankhuwasabha, who reported no change (Table 10). Almost all FGD participants, except Kaski, shared that high winds damage and destroy roofs of schools and houses. The youth FGD from Mahottari also shared that high winds damage the electricity extension lines. Reports on hailstone events do not show much consistency among districts, although increases during pre-monsoon and monsoon are perceived in Mahottari and Kaski (Table 11).

**TABLE 9: Drought trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	=	==	==	==	==	==	==	==
Mahottari	++	++	++	++	++	+	++	++
Kaski	==	==	==	==	==	==	==	==
Bardiya	++	+	==	==	= +	= +	==	==
Jajarkot	++	--	??	??	++	--	??	?
Bajhang	++	==	==	=	++	- =	=	?

Source: Household survey, 2020 (n= child 400, youth 400)

**TABLE 10: Wind trend as perceived by household respondents.**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	==	==	==	==	==	==	==	==
Mahottari	++	++	+	+	++	++	-	+
Kaski	++	++	==	==	++	++	==	==
Bardiya	++	++	==	??	+	+	==	??
Jajarkot	++	--	--	++	++	-?	-	++
Bajhang	++	==	==	==	++	+	+	+

Source: Household survey, 2020 (n= child 400, youth 400)

**TABLE 11: Hail trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	--	==	==	==	--	==	==	==
Mahottari	++	++	-	-	++	++	-	-
Kaski	++	++	==	==	++	++	==	==
Bardiya	+	==	==	??	+	?	==	??
Jajarkot	++	-	+	+	++	??	?	?
Bajhang	++	?	-	=	++	??	-	-?

Source: Household survey, 2020 (n= child 400, youth 400)

Lightning is another climate-related event that endangers people and livestock in Nepal (Table 12). The aggregated data of 2017 and 2018 shows that lightning was the third fatal hazard after flood and landslides in Nepal (MoHA, 2019). The event is generally in pre-monsoon, where respondents from Kaski, Jajarkot and Mahottari perceived it as increasing. A satellite-based study has also reported that most lightning events are in April and May, the pre-monsoon months (Saha et al., 2019).

### ► Cold waves and heatwaves

Respondents from Sankhuwasabha, Kaski and

Bajhang districts did not report any perception of cold waves and heatwaves trends. The children and youth respondents from the two Terai districts, Mahottari and Bardiya, responded that cold waves are increasing in post-monsoon and winter seasons (Table 13). Similarly, respondents from these two districts have also reported that the frequency of heatwaves is increasing in pre-monsoon and monsoon seasons (Table 14). This information suggests that the extreme temperatures, experienced as cold waves and heat waves, are becoming more frequent.

**TABLE 12: Lightning trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	= -	==	==	==	==	==	==	==
Mahottari	++	++	+	+	++	++	+	+
Kaski	++	++	==	==	+	++	==	==
Bardiya	==	==	==	==	==	=	==	==
Jajarkot	++	??	=	+	+	?	?	?
Bajhang	==	+	==	=	==	+	==	==

Source: Household survey, 2020 (n= child 400, youth 400)

**TABLE 13: Cold-wave trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	X	X	X	X	X	X	X	X
Mahottari	==	==	++	++	==	==	++	++
Kaski	X	X	X	X	X	X	X	X
Bardiya	==	==	++	++	==	==	++	++
Jajarkot	X	X	X	X	==	==	==	++
Bajhang	X	X	X	X	X	X	X	X

Source: Household survey, 2020 (n= child 400, youth 400)

**TABLE 14: Heatwave trend as perceived by household respondents**

District	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	X	X	X	X	X	X	X	X
Mahottari	++	++	==	==	++	++	==	==
Kaski	X	X	X	X	X	X	X	X
Bardiya	++	++	==	==	++	++	==	==
Jajarkot	X	X	X	X	= ?	=	=	==
Bajhang	X	X	X	X	X	X	X	X

Source: Household survey, 2020 (n= child 400, youth 400)

### ► Landslides

Respondents from hill and mountain districts reported that landslides are increasing in the monsoon season (Table 15). Children and youth respondent households from Kaski responded that landslides are also increasing in the pre-monsoon season. Respondents from Sankhuwasabha report no change in the trend of landslide events in any season.

Respondents from Mahottari and Bardiya, the two Terai districts, do not experience landslides. Both child and youth respondents have also attributed the causes of the landslides to human activities, especially the haphazard construction of roads in the hills in Kaski, Jajarkot and Bajhang.

### ► Flood

Two Terai districts, Bardiya and Mahottari, have perceived that flooding events are in an increasing trend during monsoon season (Table 16). Child respondent households from Kaski, Jajarkot and Bajhang have also perceived that flood events are increasing in the monsoon season. Likewise, the youth respondent households from Jajarkot and Bajhang perceived that flood events have an increasing trend in monsoon season. However, youth respondent households from Kaski responded that there is no change in the flood events. From Sankhuwasabha, the youth and child respondent households said there were no flood events in the previous 10 years.

**TABLE 15: Landslides trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	==	==	==	==	==	==	==	==
Mahottari	X	X	X	X	X	X	X	X
Kaski	++	++	==	==	++	++	==	==
Bardiya	X	X	X	X	X	X	X	X
Jajarkot	= ?	++	+ ?	=	?	++	?	?
Bajhang	==	++	==	==	==	++	=	=

Source: Household survey, 2020 (n= child 400, youth 400)

**TABLE 16: Flood trend as perceived by household respondents.**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	==	==	==	==	==	==	==	==
Mahottari	++	++	==	==	==	++	==	==
Kaski	==	++	==	==	==	==	==	==
Bardiya	==	++	==	==	=	++	==	==
Jajarkot	+	++	+	?	+	++	+	?
Bajhang	==	++	==	==	++	++	=	=

Source: Household survey, 2020 (n= child 400, youth 400)

### ► Snowfall and avalanche trend

Respondents from the Jajarkot district reported an increasing trend in uncertainty on the occurrence of snowfall in post-monsoon and winter seasons (Table 17). The uncertainty is in the timing, the geographical location and the magnitude of snowfall. However, despite

uncertainty in snowfall, few participants in the FGD of Bajhang mentioned that the number of avalanches is increasing in high mountain areas of the district. However, less than 50 % of adults in the HH survey indicate that there is no change in avalanche events in the Bajhang district. (Table 18).

**TABLE 17: Snowfall trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	X	X	X	X	X	X	X	X
Mahottari	X	X	X	X	X	X	X	X
Kaski	X	X	X	X	X	X	X	X
Bardiya	X	X	X	X	X	X	X	X
Jajarkot	==	==	?	+ ?	==	==	+?	?
Bajhang	==	==	==	==	==	==	==	==

Source: Household survey, 2020 (n= child 400, youth 400)

**TABLE 18: Avalanche trend as perceived by household respondents**

Districts	Child				Youth			
	Pre-monsoon	Monsoon	Post-monsoon	Winter	Pre-monsoon	Monsoon	Post-monsoon	Winter
Sankhuwasabha	X	X	X	X	X	X	X	X
Mahottari	X	X	X	X	X	X	X	X
Kaski	X	X	X	X	X	X	X	X
Bardiya	X	X	X	X	X	X	X	X
Jajarkot	X	X	X	X	X	X	X	X
Bajhang	X	X	X	X	=	=	=	=

Source: Household survey, 2020 (n= child 400, youth 400)

## 2.7 Perceptions of impacts of climate crises on the environment

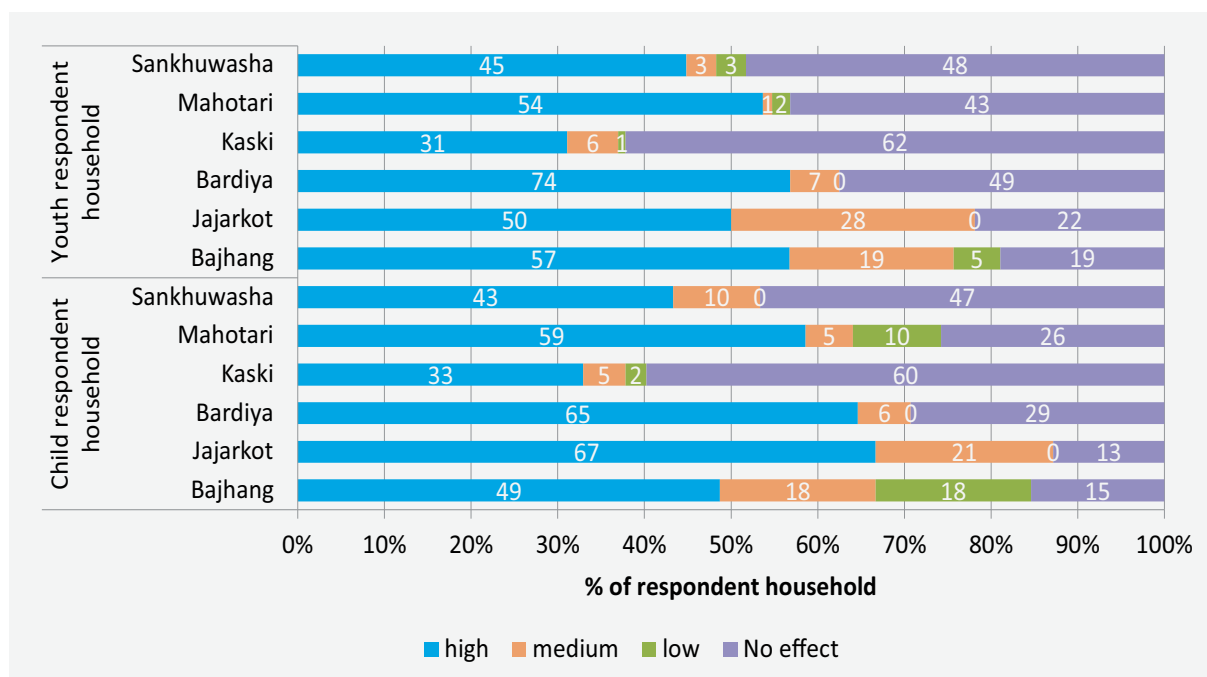
Out of a broad scope of environmental issues, this study focused on water resources, sanitation, forest and energy to understand the impacts of climate crises on the environment.

### ► Impacts of climate crises on water resources

Nearly 62 percent of the respondents

reported that climate events have adverse effects on the quantity of their drinking water supplies (Figure 13). Around 54 percent child respondents reported that water availability has decreased, while 46 percent came to that conclusion in the youth respondent households. The FGD information also relates changes in rainfall patterns to drying water sources. Also, the quantity of water available for households decreases when floods and landslides damage the water supply systems. Due to the lack of working irrigation systems, a considerable portion of agricultural land has been abandoned.

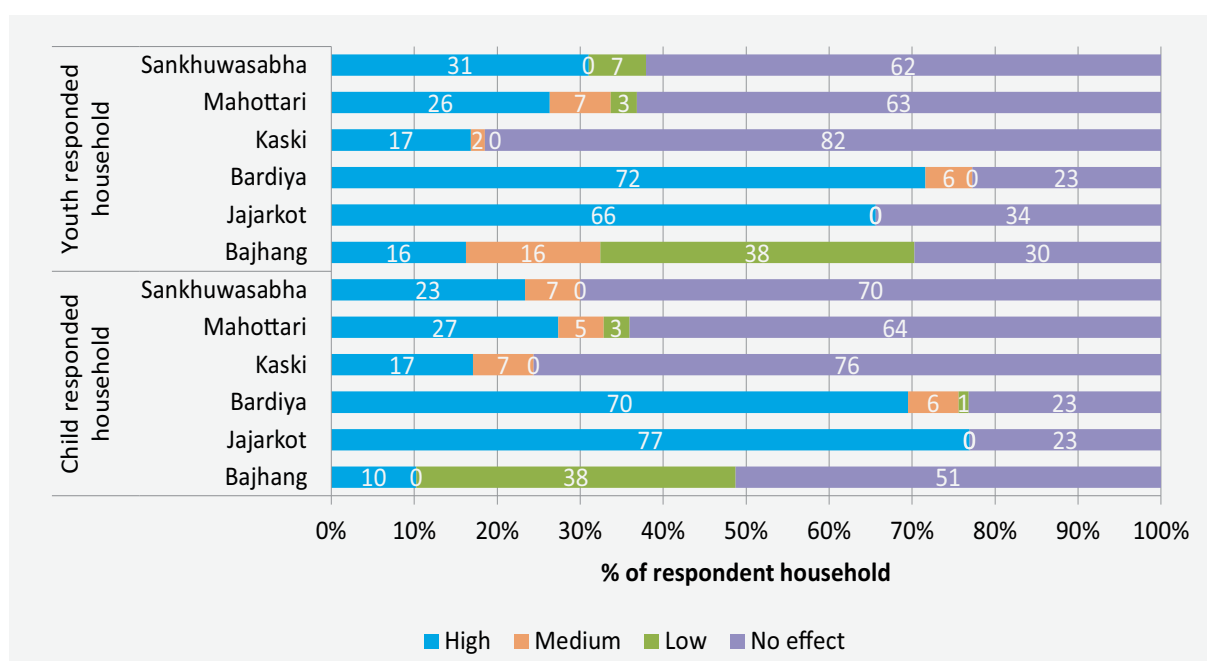
**Figure 13** Impacts of climate crises on the quantity of water (district percent)



The quality of water has also been affected by climate-induced hazards. Overall, more than 46 percent of the respondents reported that their water quality deteriorates when there are frequent climate-induced floods and landslides (Figure 14). Data on the physical, chemical or biological water qualities were not expected from the respondents. However, the FGDs reported that an increase in the

sedimentation load or the turbidity of drinking water during floods and landslides served as evidence they could see. Further experienced evidence is biological, as households reported that water-borne diseases, such as diarrhea and cholera, increase after floods, which may be attributable to contamination of the drinking water.

**Figure 14** Impact of climate crises on quality of water (district percent)

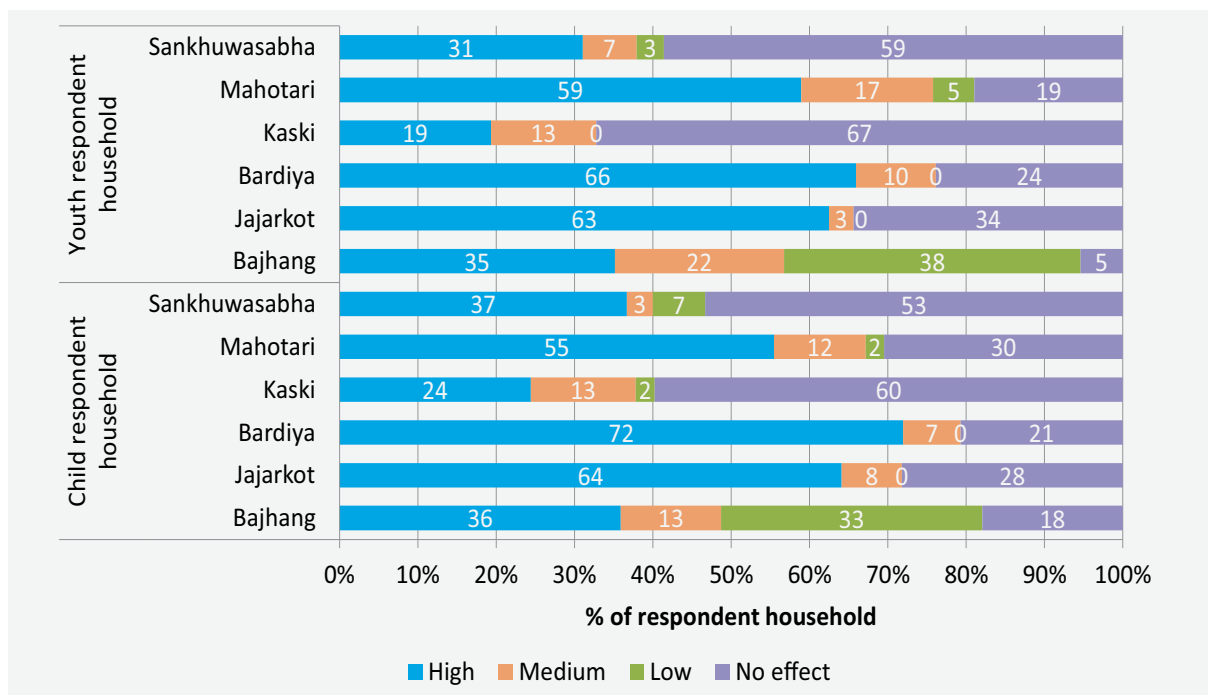


► **Impacts of climate crises on sanitation**

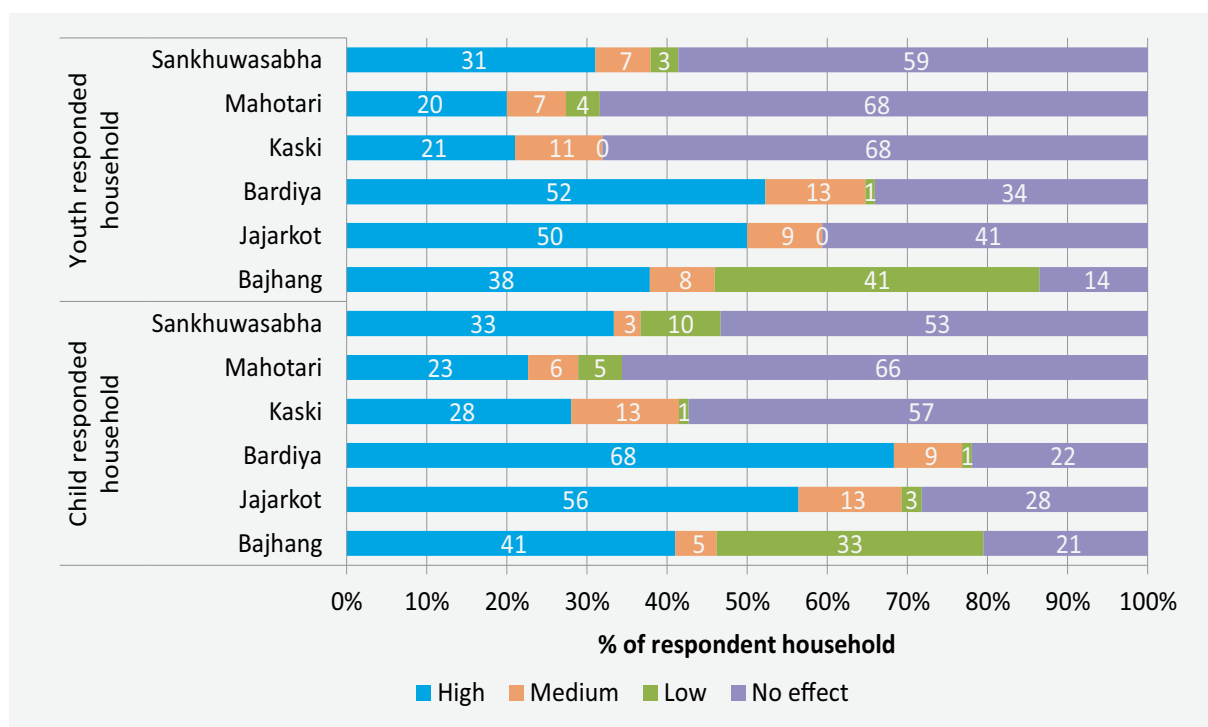
Around 64 per cent of respondents reported toilets that were not cleaned due to a lack of water. Water shortages for laundry and

bathing activities challenge around 51 percent of the respondent households (Figure 15). At the district level, most respondents from Kaski and Mahottari have not perceived the water problem for bathing and washing (Figure 16).

**Figure 15** Impacts of climate crises on sanitation (cleaning toilet) (district percent)



**Figure 16** Impacts of climate crises on wash and bath (district percent)



► **Impacts of climate crises on forest and energy**

Information from FGDs reveals that drought affects the growth of forests and grasses, reducing total biomass production in the six study districts. KIIs have also reported increasing forest fire events and linkages with climate crises especially extended dry spells and warmer temperatures.

The increasing frequency of floods and landslides during the monsoon season has reduced the physical area of forests by eroding, damaging, and scouring the land. The negative impacts of too much and too little water on forests and natural resources threaten wildlife populations.

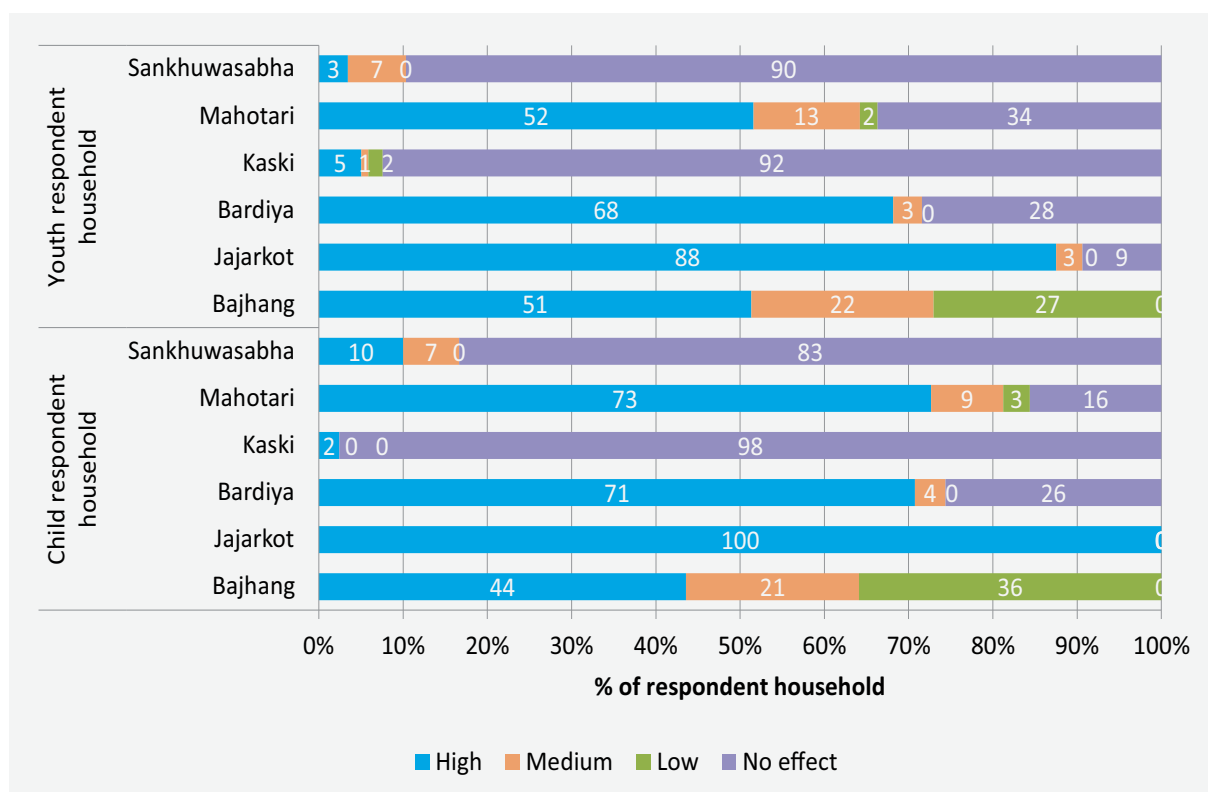
In Sankhuwasabha, FGDs describe the degradation of around 75 ha of forest with less growth and drying of grasses over the last five years. Forest degradation results in a reduction of food and habitat for wildlife. The

loss of productive forests has directly affected the communities' source of energy: fuelwood.

FGDs in Mahottari report damage to forest and agricultural lands from flooding as the leading climate hazard, having already lost around 40 ha of land to flooding, in addition to infrastructure destruction.

In Bardiya, FGDs say their community has lost 53 ha of community land to flooding, including playgrounds for children. Similarly, in Jajarkot, a total of 15 ha of community forest has been lost to floods and landslides. Perceptions of the respondents indicate that climate pressures are affecting the sources of energy at the household level. Of the total number of respondents, 57.3 percent reported a reduction in fuelwood availability, and 30.3 percent ranked the problem as high or very high (Figure 17). FGD participants concluded that reduced plant growth due to drought and forest loss due to floods and landslides account for the lack of fuelwood.

**Figure 17** Impacts of climate crises on forest and energy (district percent)



Animal dung contributes to household fuel needs, particularly in the Terai. Overall, the impact on animal dung availability as fuel is low, as only 13.3 percent of the respondents report an effect from the climate crisis. However, nearly half of the respondents from the Mahottari district reported a problem with the availability of animal dung as fuel.

Electricity is now becoming a significant source of household energy. However, damage to electrical infrastructures, such as power lines and generating stations, from floods, landslides and windstorms limit reliability. As well, low water flow through hydropower stations during extremely dry seasons affects electricity generation and supply. Problems with electricity supply were reported by 21.6 percent of all respondents. Most evidence came from the Terai districts, Mahottari and Bardiya.

Liquid Petroleum Gas (LPG) is another energy source, and its use is increasing in Nepal. As an imported commodity, the chance is high that its supply could be interrupted during climate crises such as floods, landslides, and windstorms. The link between climate events and LPG shortages is the interruption in the delivery.

Effects of climate on biogas production are negligible in this research, likely because few households own biogas plants. While small-scale biogas production has its advantages, it can be affected by climate crises. Biogas consumes a relatively high amount of water, increasing pressure on household supplies, particularly in the dry season. During the wet season, flooding can damage the digester tanks as they are stored underground.

### ► Perceptions of impacts of climate crises on social and economic components

Climate crises and climate-induced hazards disrupt diverse income-generating activities carried out by respondent households. These income-generation activities include agriculture and livestock rearing, natural resource use, informal wage-earning, in-country service and labour, foreign employment, and business. According to our respondents, the effects of the disruption are very high in most of the activities, who say that the main hazards disrupting all their income generation are floods and landslides. Further data analysis shows how the effects of hazards experienced vary from district to district and among different economic activities.

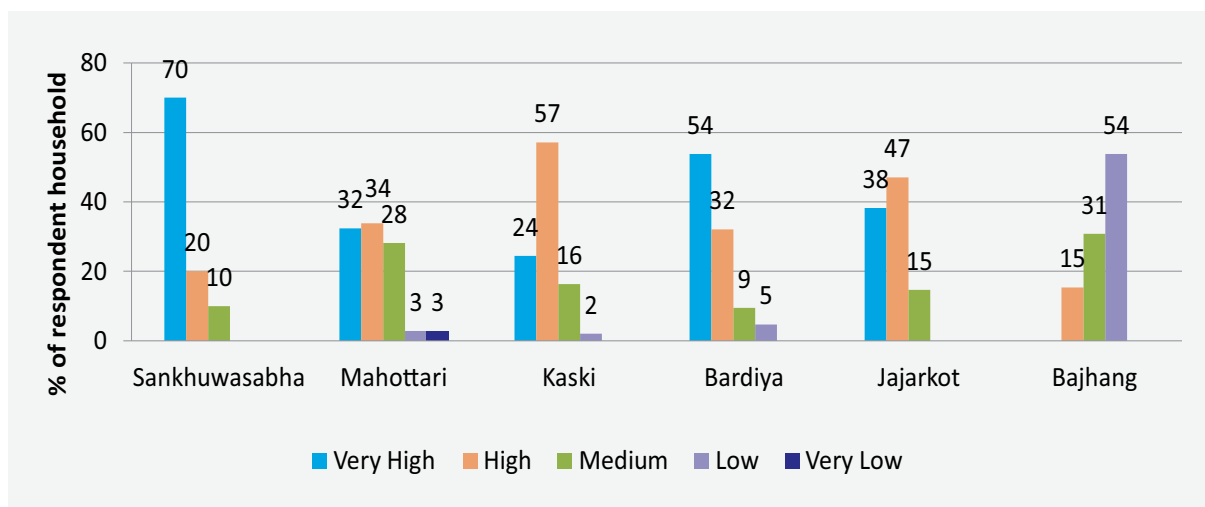
### ► Impacts of climate crises on agriculture and livestock-based income

Out of 800 respondent households, 306 reported that agriculture and livestock-based income sources are their primary source of income. At the district level, most respondents from Bardiya and Sankhuwasabha districts rated the impacts of climate crises on agriculture-based income as very high. In Kaski, Jajarkot, and Mahottari, the impacts were rated as high. See Figure 18

For agriculture and livestock, floods are the main climate-induced hazard followed by drought, hailstones and cold waves that affect the income from agriculture and livestock rearing. Cold waves also damage crops in the Terai, especially winter crops such as potatoes. Such physical damage to farmland has reduced agricultural income. New pests and diseases are appearing in agriculture, and invasive plants and animals have also emerged, according to FGD participants.



**Figure 18** Impacts of climate crises on agriculture-based income (district percent)



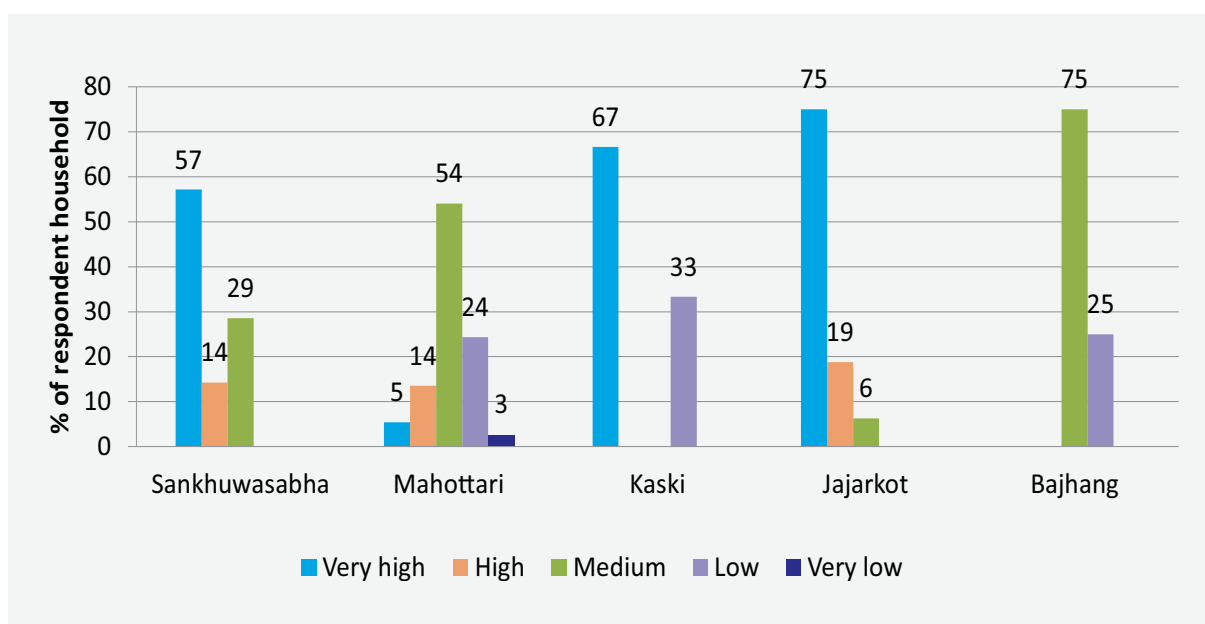
► **Impacts of climate crises on natural resource-based income**

Only 71 of the households surveyed provided feedback on income from natural resources (Figure 19). However, most of those who provided feedback rated the effects of the climate crisis on natural resource-based income as medium, followed by very high. They perceive drought as the main hazard affecting these incomes. Most natural

resource-based incomes come from annual herb crops that rely on seasonal rainfall patterns for their growth and biomass production.

None of the respondents from Bardiya reported climate-related impacts on their natural resource-based income. This may reflect the low dependence of the communities surveyed in this district on natural resource-based income.

**Figure 19** Impacts of climate crises on natural resources-based income (district percent)



► **Impacts of climate crises on infrastructure**

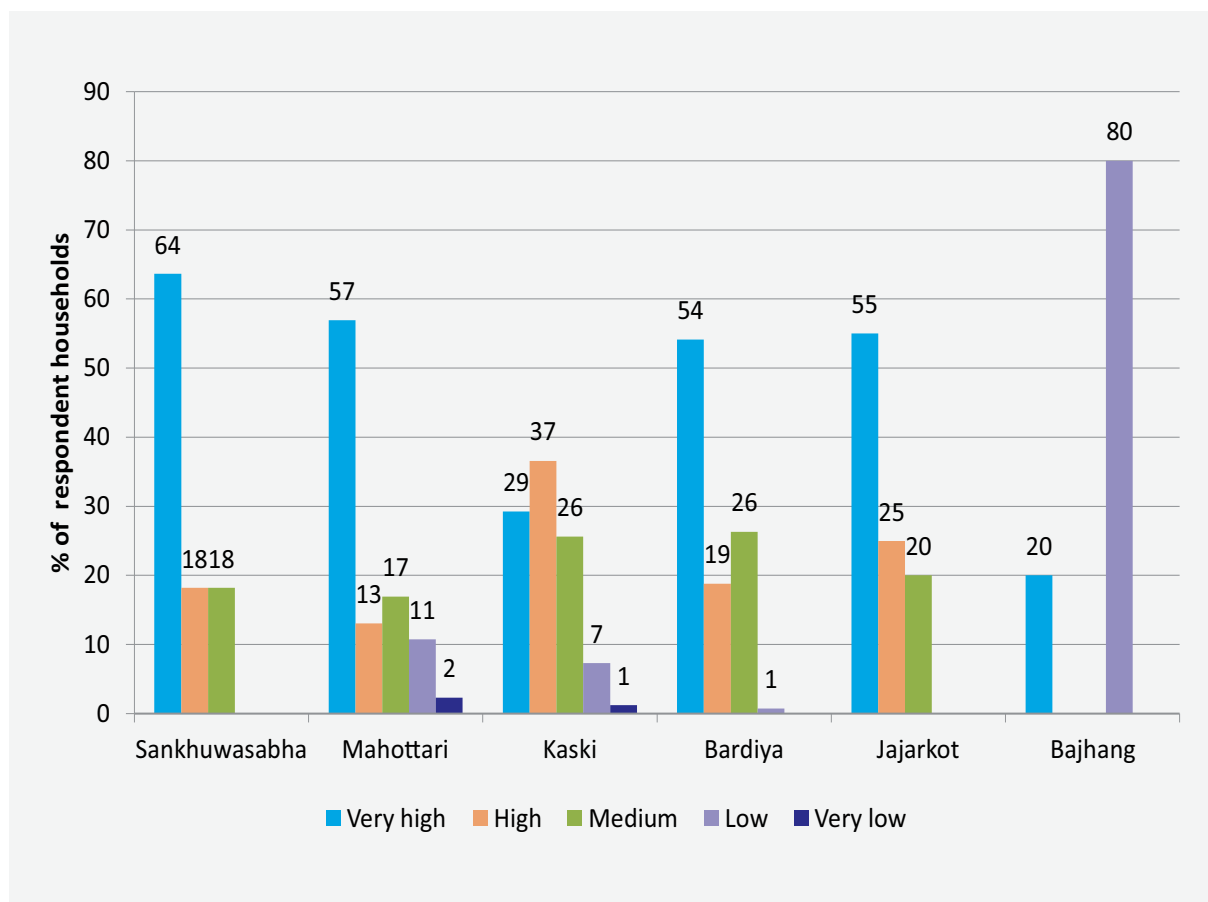
Housing is the most critical infrastructure facility. Out of the 800 households surveyed, 401 HHs reported the effects of climate hazards on their houses and ranked the impacts as very high (Figure 20). Again, floods and landslides are the two main hazards that threaten respondents' housing.

A majority of respondents from Sankhuwasabha, Mahottari, Bardiya and Jajarkot rated climate threats to their housing as very high (Figure 20). In Bajhang, a majority felt the impact on housing is low. The reason for such different experiences was not explored, but it could relate to local housing types and perceived distance of their home to hazards. Most respondents from districts experiencing very high threats also report that their houses are temporary.

Infrastructure system vulnerabilities include damages to roads, trails, drainage, electricity transmission lines, telephone lines, drinking water, irrigation, and schools caused by floods, landslides, and windstorms. Floods and landslides are responsible for most infrastructure damage, whereas strong winds damage roofs of buildings and destroy trees that bring down electricity and telephone lines and block roads when they fall.

Climate-induced infrastructure damages impede people's mobility, obstructing public transportation and individuals' ability to respond to emergencies or resume activities after a crisis event. In the previous five years, 726 individuals from respondent households faced obstructions to their mobility from climate hazards. Again, significant proportions of respondents from Sankhuwasabha, Mahottari, Bardiya and Jajarkot consider this

**Figure 20** Impacts of climate crises on housing (district percent)

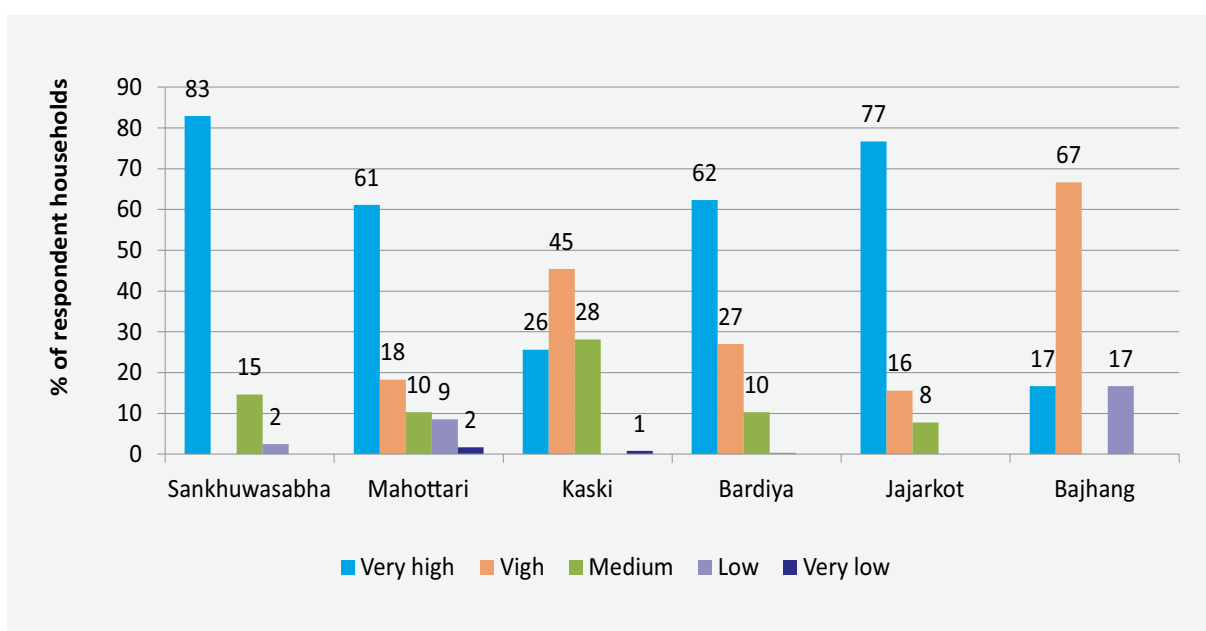


obstruction threat as very high (Figure 21). The mobility of men and women is affected equally. From the age group point of view, the most affected are the over 24-year adults (Figure 22). The adults require high mobility to meet their community and family responsibilities. Most respondents consider these mobility restrictions resulting from the

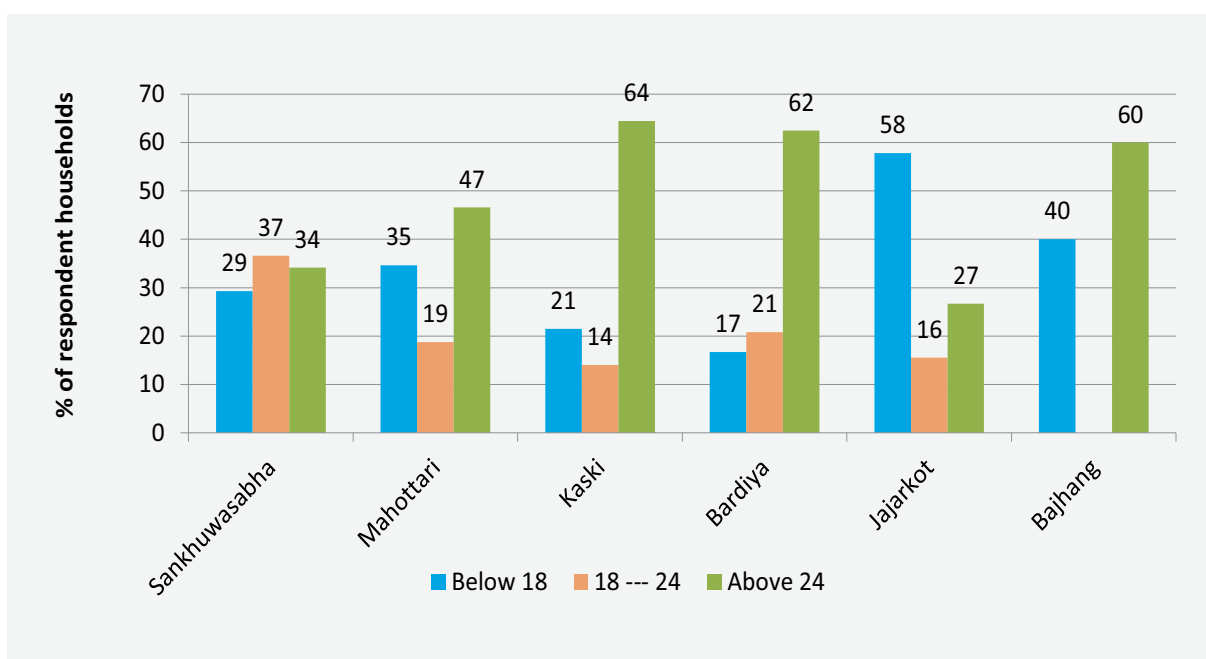
climatic hazards to be very serious and major concerns.

One of the main mobility needs of adults is travelling to markets and agricultural fields and out of the villages. In the Terai, floods hinder the journey of children and young people to schools and colleges.

**Figure 21** Impacts of climate crises on people's mobility (district percent)



**Figure 22** Impacts on mobility by age (district percent)



### ► Perceptions of climate crises and environmental degradation impacts on young people

Children and youth are affected by climate change and climate events. In Kaski, the FGDs revealed that households force female children and youths for marriage when the family experiences difficulties. This becomes more likely when adverse impacts from the climate crisis limit the resources available to parents. The FGD from Bardiya district reported that two girls were recently forced to marry before the age of 18 because their parents had experienced economic difficulties due to the floods.

Children have a much higher risk of climate-related health issues than adults. This vulnerability results from their immature physiology and metabolism, their incomplete development, their unique behavioural patterns and their dependence on caregivers. They are also at greater risk from air, food, and water pollution because of their relatively low body weights (Sheffield and Landrigan, 2011). Climate-induced extreme weather limits outdoor activities, and these constraints compound for young people when floods and landslides damage playgrounds and sports fields.

The climate crisis further aggravates the reduced availability of essential services

such as health and education in rural areas, particularly for children and youths. The impacts of climate change on household finances limit their ability to purchase these services from other population centers, further restricting development opportunities.

Finally, when climate disasters strike, school buildings are often used as emergency shelters for the community. The occupation of school buildings by disaster victims curtails many educational activities for local children and young people.

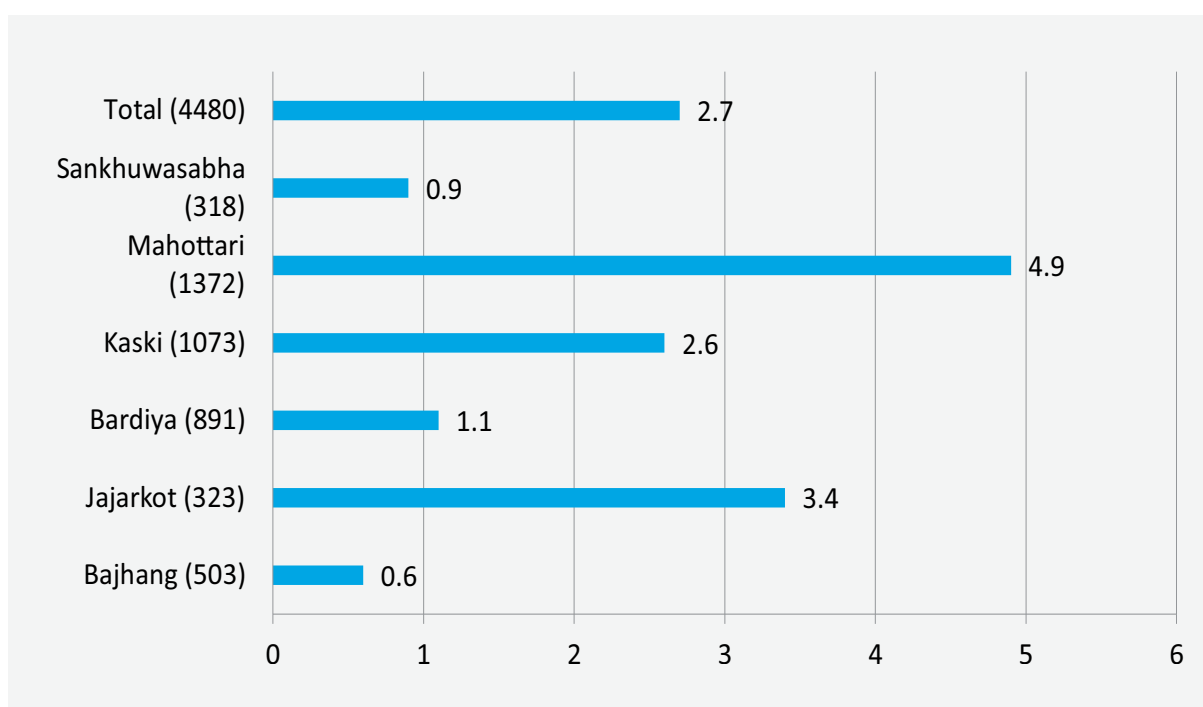
### ► Impacts of climate crises on the lives of young people

Over the last five years, climate hazards were killed or injured 122 individuals from our 800 households (Table 19). Of the total, 29 people died, 21 were left physically disabled, and 50 were injured. Respondents did not specify the level of injury for the remaining 22 cases. Mahottari district indicates a high impact on human life, followed by Kaski and Jajarkot districts. In terms of district-wise percentage, Mahottari is also the highest among the districts, followed by Jajarkot (Figure 23).

More youth and children were reported to be affected as compared to adults. In total, 63 children and youth, equal to half of the victims of climate-induced disasters, were reported to

**TABLE 19: No. of individuals killed or injured by climate hazards (last 5 years)**

District	By gender		By age		Total killed or injured	Total surveyed population
	Male	Female	Up to 24	Above 24		
Sankhuwasabha	2	1	2	1	3	318
Mahottari	44	23	40	27	67	1372
Kaski	9	19	10	18	28	1073
Bardiya	5	5	6	4	10	891
Jajarkot	5	6	3	8	11	323
Bajhang	2	1	2	1	3	503
<b>Total</b>	<b>67</b>	<b>55</b>	<b>63</b>	<b>59</b>	<b>122</b>	<b>4480</b>

**Figure 23** Impacts of climate crises on lives of children and youth in past 5 years (percentage)

be injured or killed. Adverse effects of climate change have also forced some households into extreme poverty, according to Jajarkot and Bajhang FGDs, and parents ask their children to forage valuable wild species. This additional labour burden includes collecting a parasitic fungus called *Yarsagumba*, or *Ophiocordyceps sinensis*, to supplement household income. Among mountain communities, young people looking for this fungus are exposed to extreme high-altitude and cold dangers that can be fatal.

### ► Impacts of climate crises on health

The 800 respondent households reported that in the last 5 years, 426 people or 9.5 percent of the total research population, got sick following a climate-induced disaster. Of this total, 210 (49.3 percent) are men, and 216 (50.7 percent) are women. By age, 229 (53.8 percent) are children below 18 years, 53 (12.4 percent) are youths between 18 and 24 years, and 144 (33.8 percent) are adults over 24 years. The information shows that children make up a higher proportion of the population suffering health problems

after a climate-induced disaster. While the study population is in the ratio of 37:17:46 of children:youth:adult, the illness ratio shows 54:12:34, a high proportion of children.

Malnutrition is a problem in Jajarkot, according to KIIs, because climate-related damages to farming efforts lead to low crop yields. Bajhang FGD participants reported that reductions in local food production, and subsequent food shortages, resulted in increased cases of stunted growth among children.

Floods bring diseases like pneumonia, diarrhoea, cholera, and fever, to which children are more susceptible (information from the FGDs). Together with other family members living in flood risk zones, young people can be psychologically traumatized during the rainy or flood season because they are scared of the possible impacts that cause stress to children, youth and their family members (FGD Bardiya). The FGD of Mahottari reported that youths get health problems from dirty floodwaters. Bardiya and Mahottari are the two flood-prone districts.

**TABLE 20: No. of illness following climate-induced disasters in last 5 years as reported by respondents**

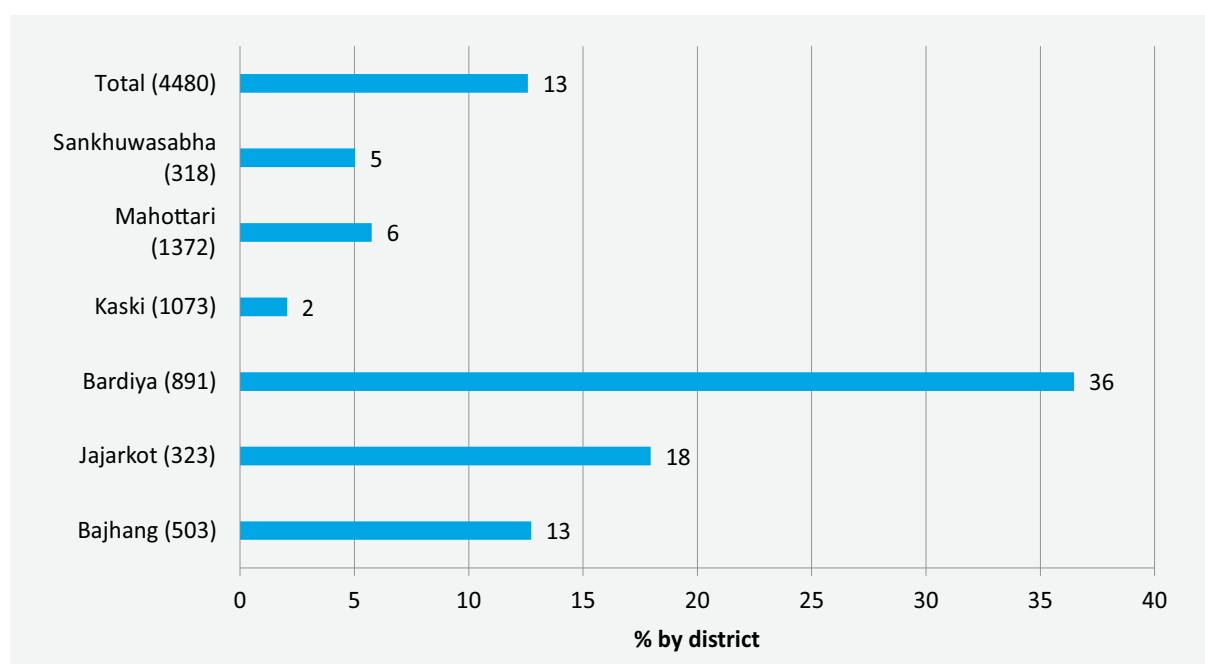
District	By gender		By age group			Total illness	District Research population	Percentage of district research population
	Male	Female	Children	Youth	Adult			
Sankhuwasabha	8	9	9	3	5	17	318	5.3
Mahottari	77	77	86	16	52	154	1372	11.2
Kaski	0	6	3	0	3	6	1073	0.6
Bardiya	69	74	48	30	65	143	891	16.0
Jajarkot	36	44	59	4	17	80	323	24.8
Bajhang	20	6	24	0	2	26	503	5.2
Total	210	216	229	53	144	426	4480	9.51
Percentage of total sickness	49.3	50.7	53.8	12.4	33.8			

### ► Impacts of climate crises on the education of children and youth

The research finds that over the last five years, the education of 564 children, youths and adults from 800 households has been affected to various degrees by climate events (Table 21). In terms of gender, 291 (51.6 percent) are women, and 273 (48.4 percent) are men.

The highest number of effects is reported from Bardiya, followed by Jajarkot district (Figure 24). In terms of percentage, Bardiya has the highest percentage (36 percent) of its population who has been affected in their education by climate events, followed by Jajarkot (18 percent). The overall affected population is 13 percent of the total research population.

**Figure 24** Impacts of climate crises on education in last 5 years (percent of district survey population)



**TABLE 21: Effect of climate hazard on education by gender in past 5 years (No.)**

District	Male	Male %	Female	Female %	Total
Sankhuwasabha	5	31	11	67	16
Mahottari	27	34	52	66	79
Kaski	13	59	9	41	22
Bardiya	162	50	163	50	325
Jajarkot	28	48	30	52	58
Bajhang	38	59	26	41	64
Total	<b>273</b>	<b>48</b>	<b>291</b>	<b>52</b>	<b>564</b>

Regarding the age of the affected children and youth, only 406 respondent households shared that information. They reported that a total of 341 individuals were 20 years and under, meaning that the vast majority (84 percent) of those affected are children.

According to the respondent households, young people stopped going to schools and university for up to 3 months a year due to the direct effects of climate hazards. This is not dropping out, but it still has profound effects on children and youths' quality of education.

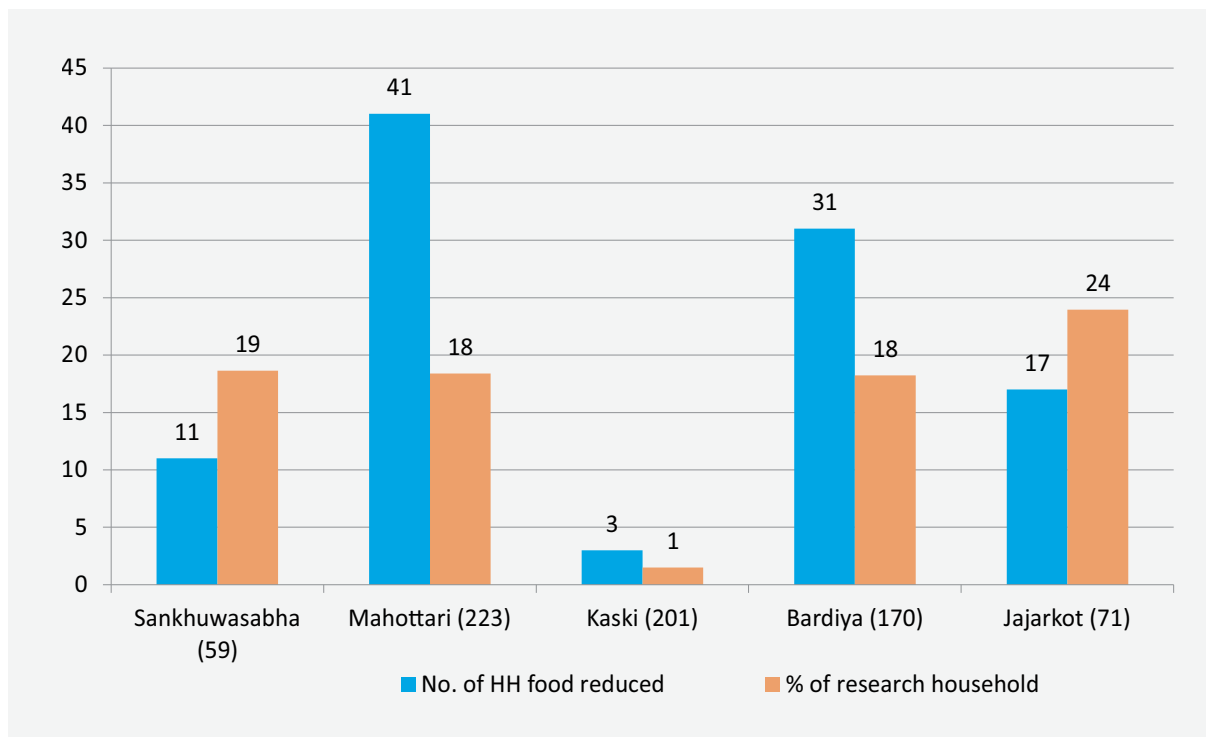
For education, according to 343 respondent households who linked the problem with a specific climate hazard, floods were determined as the most disruptive hazard by 257, landslides by 50, and avalanches by 36. Inundation and damage of trails, bridges, school buildings and houses are the immediate and direct effects of floods that hampered the education of children and youth. Indirectly, sickness after a hazard and psychological disturbances to the children affect their education. According to participants in the Kaski FGD, absenteeism from school is more common among girls than boys due to climate-induced hazards. After a climate disaster affects household finances, parents may have to leave home to

supplement income for long-term or short-term work in-country or overseas. Household responsibilities then are passed to children and youths, and subsequently, absenteeism from school increases, and in severe cases, they drop out. Even if they continue to attend school, the quality of learning deteriorates significantly.

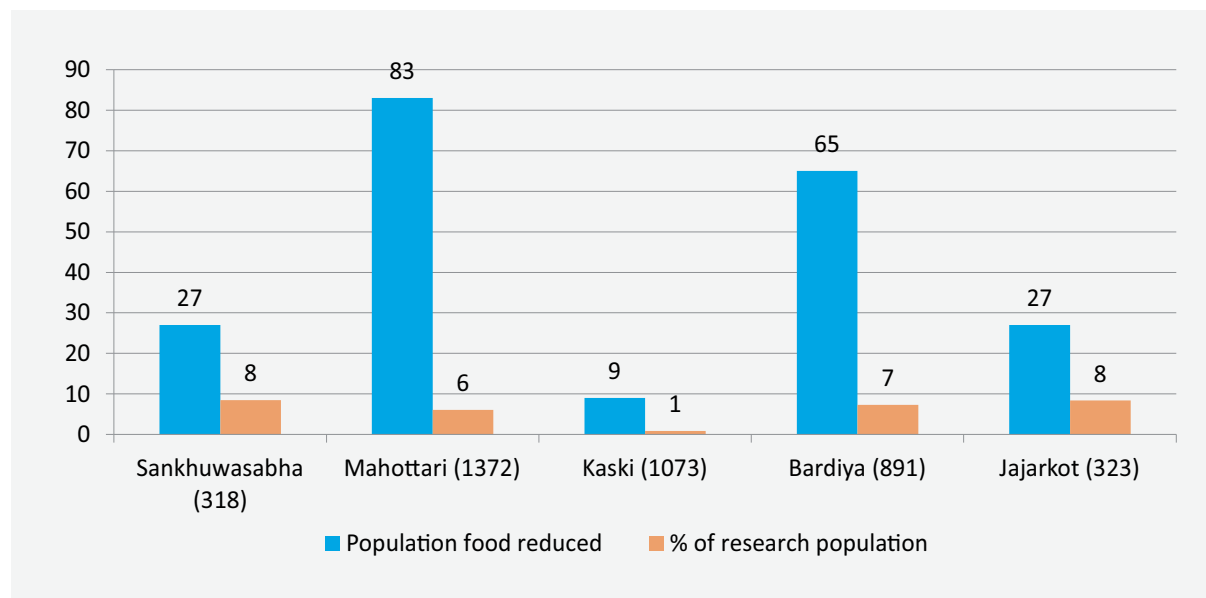
### ► Effect of climate crises on food consumption

A total of 103 households (12.9 percent) reported that they reduced the amount of food for family members after suffering from climate disasters. These reductions in food consumption affected 211 individuals, 4.7 percent of the survey population. By gender, 55 percent were women, and 45 percent were men. From the perspective of age groups, 64 percent of the affected were children, 25 percent were youths, and 11 percent were adults. Our findings indicate that women and children suffered the most from food reductions when a climate disaster strikes their households. These food reductions are usually temporary, as 82 percent of the responding households say the reductions last for less than three months. This could start immediately after the event or at some point in the following few months.

**Figure 25** Household food reduction following effects of climate crises  
(No. in parenthesis is survey household)



**Figure 26** Population suffering from food reductions due to climate crises  
(No. in parenthesis is population of survey households)







## CHAPTER 3

# CURRENT TRENDS ON CHILD-CENTERED DRR AND CLIMATE CHANGE ACTIONS IN NEPAL

IPCC (2022) clearly states that the science is clear on climate change and any further delay in concerted global action will miss a brief and rapidly closing window to secure a liveable future. Children represent one of the largest and most vulnerable group at risk from the impacts of climate change. It is more urgent to consider children in such action.

### 3.1 Child-Centered DRR and Climate Change Policies

Nepal adopted the 2015-2030 Sendai Framework for Disaster Risk Reduction, and it is a party to the United Nations Framework Convention on Climate Change and ratified the 2015 Paris Climate Agreement. In September 2017, the parliament of the Government of Nepal endorsed the **Disaster Risk Reduction and Management Act 2017**. This legislation signals the country's paradigm shift from disaster response to risk reduction. Its salient features include the establishment of a **National Disaster Risk Reduction and Management Council (NDRRMC)** chaired by the Prime Minister at the federal level which serves as the highest policy-making body on matters related to disasters and risk reduction. At the provincial, district, and local government levels, Disaster Management Committees had also been formed, which are being managed under the NDRRMC.

The country's local governance legislation (**Local Government Operations Act 2017**) serves as the governing law for municipal and rural municipal governments. Under Section 3 of the legislation, disaster management is identified as one of the primary functions and duties of local governments.

Besides, from the key legislation mentioned above, disaster risk reduction in Nepal is likewise guided by various government policy instruments crafted under the leadership of the Ministry of Home Affairs (MoHA), in collaboration with sectoral Ministries and humanitarian partners. These include the

**National Policy on Disaster Risk Reduction and Management 2018**. Another key government policy is the **National Strategic Action Plan on Disaster Risk Reduction and Management (2018-2030)** which serves as the country's roadmap for the implementation of its commitments to the 2015-2030 Sendai Framework for Disaster Risk Reduction.

Similarly, the **National Climate Change Policy 2019** emphasizes mainstreaming climate change across sectors and identified children and youth, among others, as key target groups in addressing their needs for responding to climate change. Likewise, a similar reference is also found in the **Environment Protection Act of 2019**, where sub-national governments are empowered with the authority to frame and implement adaptation plans to prevent the effects and risks of climate change. The act identifies children among others – women, persons with disabilities, senior citizens, and economically disadvantaged communities – as the groups most vulnerable to climate change.

Nepal's **Vulnerability and Risk Assessments (VRA)** highlights the impacts, vulnerability and risk of climate change on eight thematic sectors and one cross-cutting sector, as well as five physiographic regions, seven province and 77 districts. The report also includes a range of adaptation options for addressing the adverse impact of climate change in respective sectors.

Nepal's second **Nationally Determined Contribution (NDC, 2020)** outlines activity-based and policy targets in key sectors (such as Energy; Industrial Processes and Product Use; Agriculture, Forestry, and Other Land Use; and Waste/Sanitation) that it aims to achieve by 2030. It has included ambitious targets such as achieving net-zero greenhouse gas emission by 2045, and preparation and implementation of climate-resilient and gender-responsive adaptation plans in all its 753 local governments by 2030. Children and youth are identified as the

most vulnerable communities and the NDC of Nepal aims to develop specific programs with dedicated resources to ensure full, equal, and meaningful participation of women, children, youth, indigenous peoples, and marginalized groups in climate change-related policy development and during the planning, monitoring, and implementation processes at local, provincial and national levels as well as enhance the leadership, participation and negotiation capacity of women, indigenous peoples and youth in issues of climate change<sup>22</sup>.

Nepal's **National Adaptation Plans (NAP) 2021-2050** includes short (until 2025), medium-term (until 2030) and long-term (until 2050) programmes that aim to assist Nepal to better integrate actions and strategies to address climate risk and vulnerability in development planning and implementation. The short and medium-term measures are designed to support the government of Nepal in implementing the adaptation measures it has defined in its Nationally Determined Contribution (NDC) for 2020.

**Nepal's national framework on loss and damage (L&D) 2021** supports understanding and contextualizing of L&D in the Nepali context and provides a unique opportunity to devise country-driven, participatory, and inclusive approaches to tackle climate change risk and vulnerability.

Therefore, a defined disaster risk governance structure is embedded across various tiers of

the government of Nepal, and disaster risk reduction is integrated as a priority in different national policies, including in the country's Constitution<sup>23</sup>. While a sound enabling environment is in place to pave the way for disaster risk reduction, the challenge in the immediate and medium-term lies in the high volatility of key government institutions and their disaster risk reduction mandates, as well as **in rolling out the provisions of national level policies at the subnational, local levels and translating into actions**<sup>24</sup>.

## 3.2 Climate Resilience Actions

Based on the secondary research and the perception survey, the prevailing climate change adaptation and resilience practices in Nepal were identified. Field studies in Nepal, that aimed to document the factors that increase people's vulnerability to floods and droughts, have identified factors that help people achieve well-being by building their resilience, or adaptive capacity<sup>25</sup>. Drawing upon the perception survey, the study has come up with several soft and hard resiliency measures, which reduce vulnerability to natural hazards. These measures take into account the unique interplay among physical, social, economic, and political relationships, where children and youth could play a critical role. The ability to reduce vulnerability to disasters is related to the robustness of the systems<sup>26</sup> summarised in the Table 22 below.

**TABLE 22: Factors enabling adaptation and resilience capacity of Children and youth**

System	Details	Degree of resilience capacity (children and youth)
Communications	The presence of diversified communication media and accessibility of information about the weather in general and hazards in particular.	Access to climate/ weather information enhances the resilience capacity
Infrastructure	Climate resilient infrastructure and system which functions even during extreme events	Climate resilient infrastructure such as 'disaster resistance buildings', bridges, transportation, etc. enhances resilience capacity
Finance	Access to banking, credit, and insurance products that spread risk before, during, and after extreme events.	Access to finance (by parents) and youth enhances the financing power (purchasing, expenditure capacity)
Economic diversification	Access to a range of economic and livelihood options.	Diversified sources of income and economic opportunities for parents of Children and youths enhance resilience capacity
Education	Basic language and other skills are necessary to understand risks and shift livelihood strategies as necessary.	Enhanced engagement of children and youth in climate change risk management increases resilience power
Organization and representation	Right to organize and to have access to and voice concerns through diverse public, private and civil society organizations.	Representation of children and youth at local-regional and national levels in child-centered policy-making processes
Knowledge generation, planning, and learning	The social and scientific basis required to learn from experience, proactively identify hazards, analyze risk and develop response strategies tailored to local conditions.	Educational programmes for children and youths

The perception survey revealed that around 99.8 percent (child and youth) respondents consider irrigation systems as an effective measure to enhance crop productivity. Around

54 percent respondents also reported that changing crop varieties in their farmlands also benefiting their families with enhanced income (Table 23).

TABLE 23: Adaptation measures in agriculture and food security

District		No. of respondents to different coping and adaptation measures				
		Doing nothing and enduring the consequences	Installing new irrigation	Changing crops species and variety	Increasing use of pesticides and insecticides	Leaving agriculture and adopting an alternative livelihood
Child (below 18)	Sankhuwasabha	6	30	14	20	3
	Mahottari	44	128	105	97	15
	Kaski	70	82	17	9	3
	Bardiya	25	82	33	10	3
	Jajarkot	5	39	23	22	3
	Bajhang	14	39	26	23	1
	<b>Child - Total</b>	<b>164</b>	<b>400</b>	<b>218</b>	<b>181</b>	<b>28</b>
	<b>Child - percent (Rank)</b>	<b>41.0</b>	<b>100 (1)</b>	<b>54.5 (2)</b>	<b>45.3 (3)</b>	<b>7.0</b>
Youth (18 - 24)	Sankhuwasabha	3	29	11	21	4
	Mahottari	34	95	78	78	15
	Kaski	102	119	34	11	9
	Bardiya	28	86	40	12	3
	Jajarkot	4	32	21	21	1
	Bajhang	12	37	26	25	2
	<b>Youth - Total</b>	<b>183</b>	<b>398</b>	<b>210</b>	<b>168</b>	<b>34</b>
	<b>Youth - percent (Rank)</b>	<b>45.8 (3)</b>	<b>99.5 (1)</b>	<b>52.5 (2)</b>	<b>42</b>	<b>8.5</b>
<b>Overall Child and Youth Total</b>		<b>347</b>	<b>798</b>	<b>428</b>	<b>349</b>	<b>62</b>
<b>Overall Child and Youth percent (Rank)</b>		<b>43.4</b>	<b>99.8 (1)</b>	<b>53.5 (2)</b>	<b>43.6 (3)</b>	<b>7.8</b>

Regarding the adaptation in forestry, the survey indicated that 49.4 percent respondents claimed to have improved forest management as their primary response to climate threats (Table 24). During the

Sankhuwasabha FGD, participants reported planting forest and horticulture tree species are considered as a desirable activity for community. The participants of the FGD are promoting multi-year fodder tree species.

TABLE 24: Adaptation and response measures for forests

District		No. of respondents to different coping and adaptation measures			
		Doing nothing and enduring the consequences	Increasing tree planting on private and community land	Improving forest management practices	Accessing forest resources from distant forests
Child (below 18)	Sankhuwasabha	1	19	21	11
	Mahottari	36	88	91	103
	Kaski	73	13	16	11
	Bardiya	29	12	36	0
	Jajarkot	6	30	24	25
	Bajhang	1	20	21	38
	<b>Child - Total</b>	<b>146</b>	<b>182</b>	<b>209</b>	<b>188</b>
	<b>Child - percent (Rank)</b>	<b>36.5</b>	<b>45.5 (3)</b>	<b>52.25 (1)</b>	<b>47 (2)</b>
Youth (18 --24)	Sankhuwasabha	2	15	18	7
	Mahottari	28	66	70	73
	Kaski	108	16	23	18
	Bardiya	34	18	32	1
	Jajarkot	4	25	24	19
	Bajhang	3	17	19	33
	<b>Youth - Total</b>	<b>179</b>	<b>157</b>	<b>186</b>	<b>151</b>
	<b>Youth - percent (Rank)</b>	<b>44.75 (2)</b>	<b>39.25 (3)</b>	<b>46.5 (1)</b>	<b>37.75</b>
<b>Overall Child and Youth Total</b>		<b>325</b>	<b>339</b>	<b>395</b>	<b>339</b>
<b>Overall Child and Youth percent (Rank)</b>		<b>40.63 (3)</b>	<b>42.38 (2)</b>	<b>49.38 (1)</b>	<b>42.38 (2)</b>

In the context of **household energy dynamics**, 58 percent respondents reported that the principal source for cooking, and heating is fuelwood, whereas, 44 percent

respondents reported to have access to grid and other alternative sources (such as mini/ pico hydro) for lighting. (Table 25).

TABLE 25: Adaptation measures in energy sector

District	No. of respondents to different coping and adaptation measures				
	Doing nothing and enduring the consequences	Minimizing amount of fuelwood/ animal dung used	Using alternative energy sources	Other	
Child (below 18)	Sankhuwasabha	6	22	18	3
	Mahottari	34	122	93	33
	Kaski	75	7	8	1
	Bardiya	15	62	11	0
	Jajarkot	4	32	34	0
	Bajhang	9	8	27	0
	<b>Child - Total</b>	<b>143</b>	<b>253</b>	<b>191</b>	<b>37</b>
	<b>Child - percent (Rank)</b>	<b>35.75 (3)</b>	<b>63.25 (1)</b>	<b>47.75 (2)</b>	<b>9.3</b>
Youth (18 - 24)	Sankhuwasabha	5	16	20	1
	Mahottari	28	88	67	29
	Kaski	115	9	8	1
	Bardiya	15	66	14	1
	Jajarkot	3	26	25	2
	Bajhang	8	7	27	1
	<b>Youth - Total</b>	<b>174</b>	<b>212</b>	<b>161</b>	<b>35</b>
	<b>Youth - percent (Rank)</b>	<b>43.5 (2)</b>	<b>53 (1)</b>	<b>40.25 (3)</b>	<b>8.75</b>
Overall Child and Youth Total	<b>317</b>	<b>465</b>	<b>352</b>	<b>72</b>	
Overall Child and Youth percent (Rank)	<b>39.63 (3)</b>	<b>58.13 (1)</b>	<b>44 (2)</b>	<b>9.00</b>	

**In the context of drinking water and sanitation**, around 46.6 percent respondents claimed to be affected by drought and non-availability of drinking water and water for sanitation and basic hygiene. (Table 26).

Reducing water use is the second option used by overall respondent households, which is also the second option for child respondent households.

TABLE 26: Adaptation or response measures in drinking water and sanitation

District		No. of respondents to different coping and adaptation measures				
		Doing nothing and enduring the consequence	Minimizing water use	Managing new sources of water	Changing the source of water	Collecting from more distant sources
Child (below 18)	Sankhuwasabha	7	22	8	10	8
	Mahottari	40	77	52	33	105
	Kaski	61	40	28	6	20
	Bardiya	35	6	43	2	0
	Jajarkot	4	23	25	14	30
	Bajhang	1	19	20	33	37
	<b>Child - Total</b>	<b>148</b>	<b>187</b>	<b>176</b>	<b>98</b>	<b>200</b>
	<b>Child - percent (Rank)</b>	<b>37.0</b>	<b>46.8 (2)</b>	<b>44 (3)</b>	<b>24.5</b>	<b>50 (1)</b>
Youth (18 - 24)	Sankhuwasabha	5	17	7	5	6
	Mahottari	29	52	39	32	74
	Kaski	97	57	37	11	34
	Bardiya	44	13	41	0	0
	Jajarkot	3	20	21	13	24
	Bajhang	0	19	19	35	35
	<b>Youth - Total</b>	<b>178</b>	<b>178</b>	<b>164</b>	<b>96</b>	<b>173</b>
	<b>Youth - percent (Rank)</b>	<b>44.5 (1)</b>	<b>44.5 (1)</b>	<b>41 (4)</b>	<b>24</b>	<b>43.3 (3)</b>
<b>Overall Child and Youth Total</b>		<b>326</b>	<b>365</b>	<b>340</b>	<b>194</b>	<b>373</b>
<b>Overall Child and Youth percent (Rank)</b>		<b>40.8</b>	<b>45.6 (2)</b>	<b>42.5 (3)</b>	<b>24.3</b>	<b>46.6 (1)</b>

The perception survey found that 59.9 percent respondents (children and youth) are not opting for any adaptation and resilience activities (Table 27). Around 41.3 percent child and youth are engaged in

household responsibilities. Around 15 percent respondents reported that children and youth are having access to learning on climate change and environment.

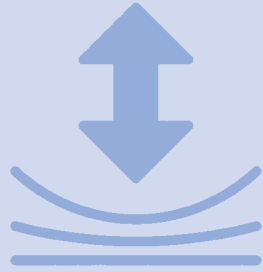


TABLE 27: Adaptation or response measures by children and youth

District		No. of respondents to different coping and adaptation measures				
		Doing nothing and enduring the consequences	Engaging more in youth and child clubs	Learning more on skill and knowledge on climate change	Using learned skills and knowledge in the home	Other
Child below 18	Sankhuwasabha	4	8	10	25	0
	Mahottari	41	7	37	101	28
	Kaski	80	3	2	3	0
	Bardiya	71	2	2	11	0
	Jajarkot	20	8	10	17	1
	Bajhang	16	0	0	22	0
	<b>Child - Total</b>	<b>232</b>	<b>28</b>	<b>61</b>	<b>179</b>	<b>29</b>
	<b>Child - percent (Rank)</b>	<b>58 (1)</b>	<b>7.0</b>	<b>15.3 (3)</b>	<b>44.8 (2)</b>	<b>7.3</b>
Youth (18 - 24)	Sankhuwasabha	3	8	4	25	0
	Mahottari	30	4	33	76	22
	Kaski	117	6	3	1	1
	Bardiya	64	15	8	19	1
	Jajarkot	17	9	7	11	3
	Bajhang	16	1	4	19	0
	<b>Youth - Total</b>	<b>247</b>	<b>43</b>	<b>59</b>	<b>151</b>	<b>27</b>
	<b>Youth - percent (Rank)</b>	<b>61.8 (1)</b>	<b>10.8</b>	<b>14.8 (3)</b>	<b>37.8 (2)</b>	<b>6.8</b>
<b>Overall Child and Youth Total</b>		<b>479</b>	<b>71</b>	<b>120</b>	<b>330</b>	<b>56</b>
<b>Overall Child and Youth percent (Rank)</b>		<b>59.9 (1)</b>	<b>8.9</b>	<b>15 (3)</b>	<b>41.3 (2)</b>	<b>7</b>

Hence, to sum up, the emerging dynamics of climate change could significantly increase the impact on children, youth, and marginalized communities. It will also affect the local-level food, livelihood, and socio-economic systems. The implications of these dynamics for policymaking for adaptation are immense. Assessing the interactions among forest, energy, agriculture, water

management, disaster risk reduction and other livelihood systems on the one hand and climate scenarios on the other, has implications for the development of effective strategies for adapting to both short- and long-term impacts of climate change<sup>27</sup>. Failure to explore these linkages will jeopardise the country's ability to adapt to climate change.



## CHAPTER 4

# RESILIENCE GAP

Climate change threatens children’s survival and ability to grow and thrive, despite them being the least responsible for contributing to it<sup>28</sup>. The key to addressing these threats is strengthening resilience to climate change and providing access to safe water and sanitation, universal healthcare and quality education, as this has been shown to significantly reduce children’s vulnerability to the effects of climate change<sup>29</sup>.

The progress made for children and young people over the last few decades and their future prosperity are at risk — for them and the wider society, particularly because of the **resilience gaps** in policy, financing, and low resilience capacities of children and young people.

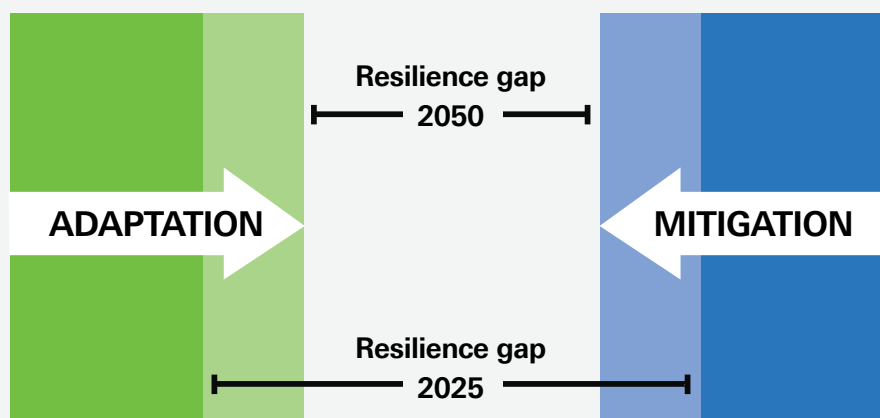
To respond to climate change, we need to close the climate resilience gap by taking

action to mitigate and adapt to climate change.

Adaptation and mitigation measures are tightly bound. Stronger mitigation efforts will not only moderate the long-term climate impacts for future generations but will make our preparedness efforts today more enduring and worthwhile. Communities can take concrete steps to prepare for the expected impacts of climate change. For instance, communities can restore wetlands for flood control or plant forests, effectively building their climate resilience. The range of potential actions is wide.

In the Nepal context, however, several gaps in climate change resilience are observed. Just to name a few, one could consider the following gaps.

**Figure 27 Resilience Gap** (Source: Union of Concerned Scientists 2016; [www.ucsusa.org/Resilience\\_principles](http://www.ucsusa.org/Resilience_principles))



*The "resilience gap" represents the degree to which a community or nation is unprepared for damaging climate effects—and therefore the degree to which people will suffer from climate-related events. The arrows show the two ways to narrow the gap. We can adapt (left arrow) by preparing for climate impacts, and mitigate carbon emissions (right arrow) to slow the pace at which climate risks grow more severe or more common over time. The changing size of the resilience gap in 2025 versus 2050 conveys the potential for society's resilience gap to be narrowed, though not eliminated, through concerted effort on both fronts.*

### ► Absence of a clear climate resilience Policy- (targeting Children and young people)

The inclusion of references to children and young people is a key principle for building child-sensitive climate resilience policies. As discussed in chapter 2 and 3, the current climate change policies of Nepal (including the National Determined Contributions- NDCs) contain very limited references to children and young people, including direct references related to topics such as primary education, health, nutrition, intergenerational rights, and families. Though the national DRR policies identify children and young people as vulnerable groups, policymakers must make greater strides to recognize children and young people as not only vulnerable groups or victims but also as participants and innovative leaders.

### ► Absence of Disaster risk reduction approaches in local and regional development programme

At the Palika (urban and rural municipalities) and province-level planning and development programmes, there is an urgency to integrate child-focused, DRR approaches in the overall planning and programme implementation. This would enable children and young people to live in a safe and clean environment – including risk-informed programming and risk reduction – as a cross-cutting priority.

In the current sub-national level policies of Nepal, the explicit inclusion of DRR, and climate change actions for benefiting children and youths are yet to be spelled out, and therefore, there is a need to mainstream disaster risk reduction and climate change adaptation into the thematic sectors of Palikas and provinces, such as education, nutrition, water, sanitation and hygiene [WASH], health, child protection, social protection.

### ► Children’s participation in risk assessment

The Participation of children and young people in climate actions and DRR strategies is of paramount importance. The cardinal principle should be ‘decide with, not for’. Based on the assessment carried out in Chapter-2, (perception survey), it was evident that communities, children and youth groups do have limited engagement in shaping climate actions. For example, post-disaster rebuilding should aim to “build back better” not just from a disaster-risk perspective but from a quality-of-life perspective. The definition of measures that would improve the quality of life must be carried out by the municipalities themselves.

### ► The capacity of the community to assess and manage disaster

For effective participation in designing and implementing climate actions, the capacities of communities, children, and young people should also be strengthened. Prevention and mitigation of risks before it manifests as disasters and become humanitarian challenges are essential. The local governments of Nepal would, therefore, need to expand the scope of disaster risk management by improving the capacity building of children and communities, in addition to policy-level interventions with governments and development organizations.

### ► Inadequate availability of financing

Protecting and preparing children and young people requires urgent funding and resources. Adaptation and resilience building remains critically underfunded and resourced. In budgetary terms, the study could not find/ locate a reliable figure of budget allocation for climate resilience activities, targeting children and young people.

### ► Equitable climate resilience actions

Relevant policies must ensure that the climate risks faced by the most vulnerable groups of people are manageable and that these communities, children, and youth have access to tractable options. A growing set of evidence describes the important relationship between climate hazard exposure, socioeconomic vulnerability, and community actions needed to prepare for climate impacts; each of these interrelated drivers plays a key role in a community's climate resilience<sup>30</sup>.

Flooding and drought, for example, can have disproportionate impacts on low- and fixed-income communities<sup>31</sup>. The most vulnerable people may live in places that are more exposed to flood waters or in

older, less safe housing. Children, the elderly, sick, and disabled people can be particularly isolated and vulnerable to climate effects<sup>32</sup>. Additionally, low- and fixed-income households may not be able to afford economic means (such as insurance) that would cover their losses. On a larger scale, poorer communities simply have fewer resources to prepare for and cope with impacts<sup>33</sup>.

As a nation, Nepal would therefore have a moral obligation to protect the health, safety, and well-being of those most vulnerable and least empowered. Climate resilience policy and action is a new frontier where this obligation must be met.



## CHAPTER 5

# RECOMMENDATIONS

The **4 broad recommendations** in the report propose a set of priority actions, focusing on the key results areas such as health, nutrition, education, water and sanitation, and child protection. The recommendations were developed based on the outcomes, derived in chapters 2, 3, and the chapter-4 (resilience gap). They are intended to inform governments and other stakeholders of the need for urgent actions and to highlight various opportunities for governments to prioritize child-centered climate actions.

While in COP 27, the global communities are calling for actions from governments to PROTECT, PREPARE and PRIORITIZE the health, safety, learning, and opportunities of every child by adapting the critical social services<sup>34</sup>, the recommendations, set out in the report, advocate for an enhanced 'adaptive capacity of children and young people, ensuring their voices are heard and acted on, and their education and skills are enhanced so they can participate in creating a sustainable future.

The four broad **recommendations** (Figure 28) are the following:

**A. Government designs of child-sensitive climate and environmental policies-**

Action must move beyond proclamations for engagement. It must span across sectors in all levels of government and include multiple stakeholders: from UN agencies to civil society; from academia to the public and private sectors<sup>35</sup>.

Child-sensitive climate, DRR, and environmental policies, including the NDCs, should recognise the vulnerability of children to climate change and environmental degradation as well as the important role of children and young people play in influencing and accelerating climate actions.

Development and climate policy at federal, provincial, and municipal level

should have an explicit reference to children and young people; and address the specific risks and vulnerabilities of children and young people. This includes child-sensitive inclusive commitments in multiple sectors, such as education, health, water, sanitation, food security and nutrition, energy, social protection, disaster risk reduction (DRR), and information systems.

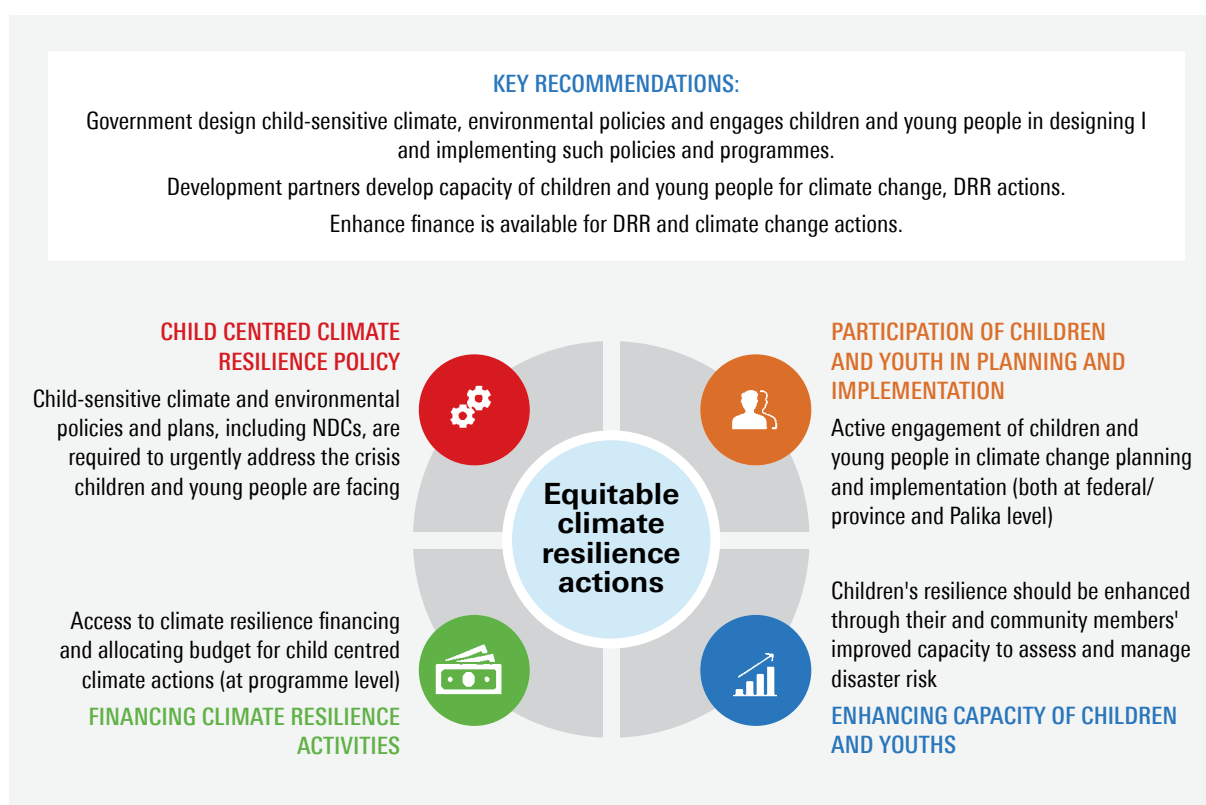
- B. Engage children and young people in designing and implementing climate change, DRR policies, and programmes.** The climate crisis is a child rights crisis<sup>36</sup>. Children and young people need urgent and meaningful action and innovations to adapt to this changing world and reduce climate and disaster risk, including for child-critical social services. The views, concerns, and solutions of the youngest generation should be incorporated into policies, institutions and actions that move towards a net-zero emissions world<sup>37</sup>.

The key stakeholders (including the government) of Nepal should recognize that children and young people often experience the most serious consequences from climate and environmental hazards, shocks, and stresses. Therefore, the participation of children and young people in formulating climate change and DRR policies, and programmes are of paramount importance.

- C. Develop the capacity of children and young people for climate change, DRR actions.** The government of Nepal could consider addressing disaster risks affecting children by strengthening the capacity of children and communities to deal with hazards. Prevention and mitigation of risks before these manifest as disasters and become humanitarian challenges are essential<sup>38</sup>.



Figure 28 Key recommendation



**D. Enhance finance for DRR and climate change actions.** Bridging the gap between ambition and action with solid funding commitments is paramount to overcoming the climate crisis for every child<sup>39</sup>. As the government considers what opportunities there are to give more attention to children's social services, including financial investment, it should also seek to identify where climate policies can increase the engagement of children and young people as stakeholders, rights holders, and agents of change, including those from vulnerable populations<sup>40</sup>.

Ultimately, the 4 recommendations, framed out in the report, shall ensure **system transitions** that are fundamental to addressing the risks that climate change poses to children and young people while also providing opportunities for improving the quality and sustainability of economic development.

In addition, the report also acknowledges the findings and recommendations, of the 'Nepal Country Climate and Development Report-2022<sup>41</sup>', which outlines **three key enabling themes, such as,**

- A. *Strengthening the resilience of people and community assets through early warning systems, shock-responsive safety nets, and access to quality skills training;*
- B. *Embedding disaster risk management at all tiers of government and across all sectors; and*
- C. *Prioritizing Nepal's funding needs by convening and coordinating financing for climate action.*

In the next section, below, a detailed sector-wide recommendation matrix (Table 28) is presented.

TABLE 28: Sector wide recommendation

KEY STRATEGY AREA	SECTOR LEVEL INTERVENTION		
	Water/WASH	Health & Nutrition	Education
A. Child-centered climate resilience policies	Ensure WASH, Health, Education, Nutrition, Social Policy, and Child Protection services are climate sensitive. They must include climate adaptation and resilience within their plans to ensure they are resilient	Every child has a right to a healthy environment. Health systems should be adapted so that they are climate-smart and resilient to environmental shocks and hazards; provide services to all children, especially the most vulnerable and at-risk due to climate change.	To prepare every child to live in a climate-changed world, their 'adaptive capacity' must be improved, their voices heard and acted on, and their education and skills enhanced so they can participate in creating a sustainable future.
	Safe water and sanitation are essential for children's health and development, and they also decrease children's exposure to life-threatening risks and malnutrition. Water and sanitation services should be climate resilient to ensure sustainable access to safe drinking water for all children over time.		
B. Participation of children and youth in planning and implementation of climate actions	Ensuring children know how to survive and respond to the increasing climate risks and hazards is essential and are their right. Hence, disaster risk reduction education should be incorporated into the learning of children, and they must have the ability to participate in all aspects of comprehensive school safety, school and community disaster management, and learn safety rules for specific hazards.		
C. Enhancing the capacity of children and youth	To ensure young people are reflected in all decisions they should be represented within all key institutions and ministries with responsibility for implementing climate adaptation and resilience plans		
D. Enhanced finance for climate resilience/DRR activities	Green skills development could be a priority. By building practical green skills such as the ability to gather and interpret climate data and identify and implement climate-friendly technologies, young people are empowered to participate in the growing green economy and they can lay the path from livelihoods that will be less viable due to climate change.		
	Leverage and increase access to all available traditional, innovative, and alternative climate and risk-reduction finance mechanisms including domestic budgets, bilateral, multilateral, private sector, and international financial institutions, and officially supported export credits to fill funding gaps and finance urgent and essential action.		
	Reference domestic and international sources of finance within individual child-critical sector adaptation plans – WASH, health, nutrition, education, social policy, and child protection – and cross-sectorial adaptation plans.		

In addition to the above broad recommendations, the below prioritized activities (Table 29) could also be considered by key stakeholders such as the government

of Nepal (at federal/provincial and Palika levels), development partners, donors, and community organizations.

**TABLE 29: Activities prioritized by different stakeholders**

Key Stakeholder - Government of Nepal
<p><b>Prioritized activities:</b></p> <ul style="list-style-type: none"> <li>• Designing child-centered local level climate, environment and DRR plans and integrating into province and municipal planning.</li> <li>• Coupling such plans with climate risk-management information systems at local, province and federal levels.</li> <li>• Promoting climate resilient technologies, which are affordable-efficient-and safe to children and youths. (Such as, alternative technologies in water management, agriculture, and forest management).</li> <li>• Supplementing National Adaptation Plans (NAPs) with local level climate resilience and adaptation planning</li> <li>• Strengthening environment, climate change adaptation and disaster risk reduction section/unit/committees at the local and province level in accordance with the Local Governance Operation Act, 2017 and the National Climate Change Policy, 2019.</li> <li>• The National Planning Commission should ensure that adequate climate funds are allocated for child- and youth-led climate change programmes by decentralizing the government's climate change financing framework and annual planning and budgeting at the local government level.</li> </ul>
Key Stakeholder- Development Partners
<p><b>Prioritized activities:</b></p> <ul style="list-style-type: none"> <li>• Supporting province and local governments in developing climate change, environment and DRR policies and planning</li> <li>• Supporting Curriculum Development Centres (CDCs) in designing and implementation of courses on climate change at primary and secondary education system.</li> <li>• Supporting local governments in promoting climate resilient technologies, which are affordable-efficient-and safe to children and youths.</li> </ul>

**Key Stakeholder - Donors/funders****Prioritized activities:**

- Investing adequate financial resources for developing and implementing Child-centered climate actions.
- Supporting governments to undertake capacity development activities to promote climate-resilient infrastructure development and sustainable practices.

**Key Stakeholder - Community organizations****Prioritized activities:**

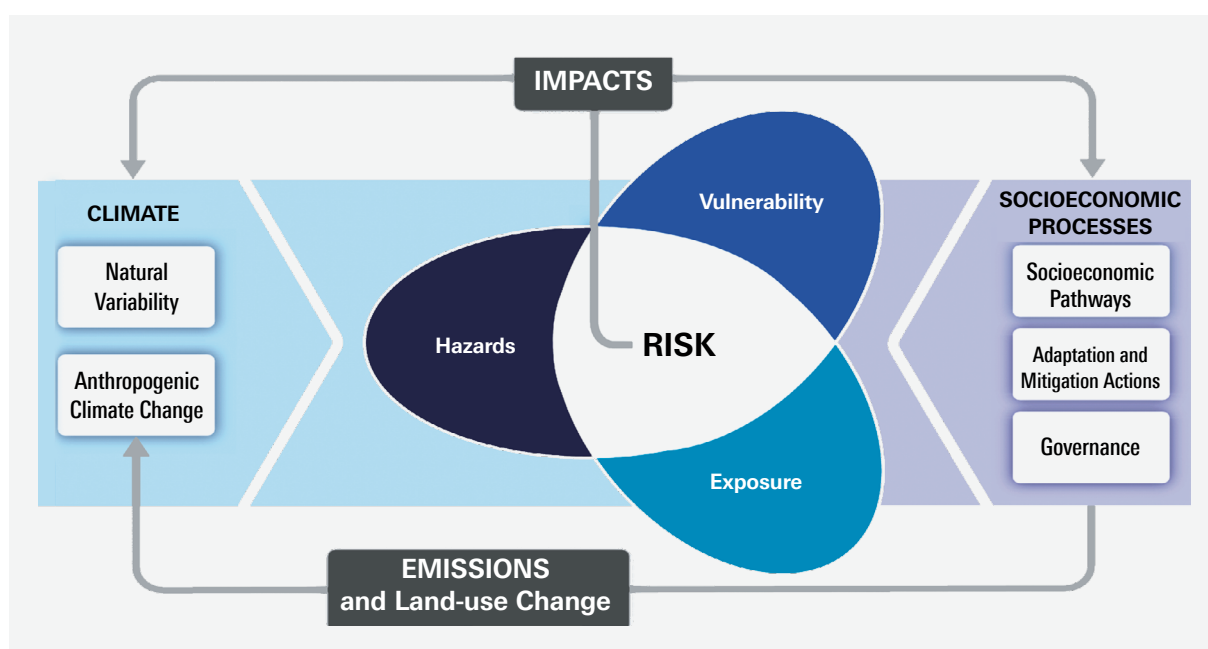
- Sensitizing communities for child-centered climate change planning, and adoption.
- Training child and youth clubs and child rights committees to develop child-centered climate change adaptation and environmental management plans and programmes.

# ANNEXURE-1: RESEARCH METHODOLOGY

## ► Research Methodology

The study adopted the IPCC (2014) Impact Risk Framework (Figure 29), and based on this, the research team carried out primary data collection and synthesis. The IPCC framework conceptualized that climate-related risks and impacts resulting from the interaction of climate hazards with the vulnerability and exposure of humans and natural systems. Therefore, the research explored the interactions between climate hazards and the social, economic and natural systems that ultimately affect children and youth.

**Figure 29** Core concept of climate change risk and impacts (IPCC, 2014)



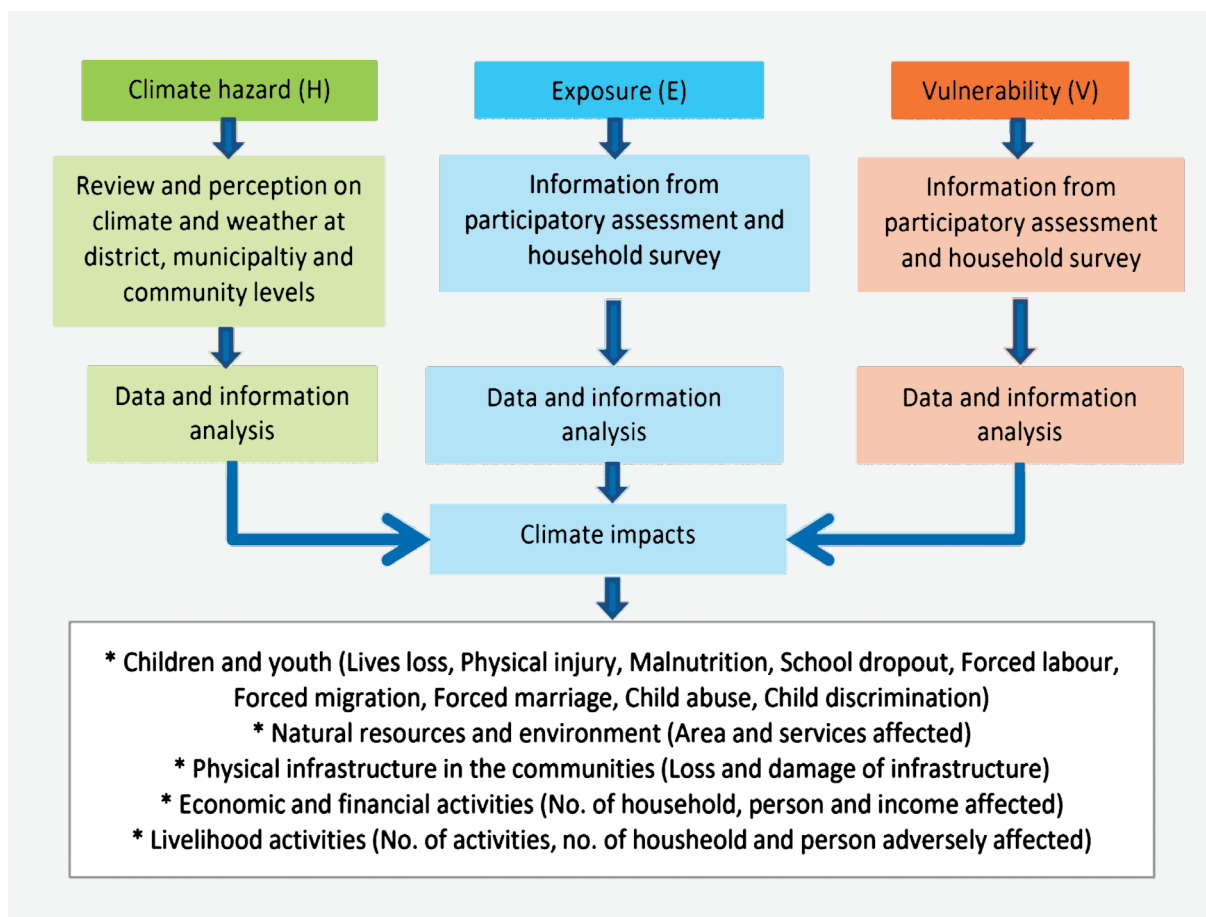
The report uses an emerging terminology, 'climate crisis.' There is no clear definition of the term 'climate crisis' in the IPCC glossary. For the purpose of this research, the term 'climate crisis' is defined as a situation where the level of anticipated risk and the felt impact exceeds the capacity of humans and natural processes to respond and adapt.

Application of the IPCC Risk and Impact Framework involves the following sequence (Figure 30 below):

- Assessment of climate hazards
- Assessment of exposures of social, economic, physical, natural, and institutional elements to the hazards
- Assessment of vulnerability of the exposed elements

- Assessment of risk and impacts based on the information derived from the assessment of hazards, exposure and vulnerabilities.
- The assessment process takes note of the scale or level of hazards, exposures, vulnerabilities, and impacts.

**Figure 30** Application of IPCC risk framework



### ► Research Design

The study used a non-experimental research design with descriptive analysis of key variables. Both qualitative and quantitative methods were used to collect data. The qualitative component originates from individuals' perceptions and knowledge about climate hazards, exposures, vulnerabilities, and impacts. The confidence in the perceptions of individuals and groups are measured with five levels where possible. The qualitative component derives from the different types and levels of perceptions from individuals participating in Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs). The household survey (HH) collected quantitative information, which is analyzed and presented. Additionally, reviews of various literature and policies were also carried out.

## ► Qualitative Sampling (Focus Group Discussions and Key Informant Interviews)

There were no pre-determined sampling techniques and sample sizes set to guide FGD and KII structures and the selection of participants. The FGDs functioned in the designated district communities, where the HH surveys were also conducted, and participants were identified through a community selection process. In each district, three FGDs were organized: one for the child group, one for the youth group and one for parents. The number of participants in each FGD averaged around 10. The KIIs consisted of interviews with five informants in each district, selected for their work at district and municipal levels and their knowledge and experience of children, youth and climate change.

## ► Focus Group Discussion

Altogether 18 FGDs (Table 30) were conducted, with three FGDS in each district: one with parents, one with children and one with youths. The outcomes of FGDs were compiled, assessed and synthesized.

**TABLE 30: Participants of FGDs (no.)**

District	Children	Youth	Parents
Sankhuwasabha	6	6	6
Mahottari	6	6	7
Kaski	6	9	24
Bardiya	17	15	17
Jajarkot	13	12	17
Bajhang	6	6	6

## ► Key Informants Interview (KII)

A total of 21 interviews were conducted with key informants in the six districts. Key informants included government staff working in environment, disaster, education, social welfare and health-related matters, as well as municipality chairs, ward (the smallest political unit of a municipality) chairs and relevant representatives from civil society. At the national level, KIIs were conducted with eight experts in climate change, disaster management and youth and children's issues. Key informants included staff from the government and non-governmental organisations.

## ► Quantitative Sampling (household sampling)

The design of household survey procedures was based on stratified random sampling methods to address gender, age and geographical differences. The sample population of children and youth was determined according to the population data of the selected districts using 2011 census data from the Central Bureau of Statistics (CBS, 2014). A district with a high population will then represent a higher number of households in the sample (Table 31).

The household sample size determination is based on a simple random sampling method for household surveys. The method focuses on determining the total sample size at a 95 percent confidence level and a 0.049 margin of error (MOE). The sample size is 400 for each of the two groups, children and youths, for statistical and scientific sample representation in the study, making a total of 800 individuals.

The formula applied for the household sample size is as below:

$$\text{Sample size, } n = Z^2 \cdot P \cdot Q / (\text{MOE})^2$$

Where  $Z = 1.96$ ,  $P = 0.5$ ,  $Q = 1 - P$ ,  $\text{MOE} = 0.049$

Below are the population figures and the breakdown of the sample by gender and age based on the district population according to the 2011 census (CBS 2014). A district with a higher population has a higher number of sampled households.

**TABLE 31: District-wise sample size of children and youth representative households**

District	Age group	Gender		Total
		Male	Female	
Sankhuwasabha	Child (Below 18 years)	15	15	30
Mahottari		73	55	128
Kaski		42	40	82
Bardiya		40	42	82
Jajarkot		19	20	39
Bajhang		19	20	39
		<b>Subtotal Child</b>	<b>208</b>	<b>192</b>
Sankhuwasabha	Youth (18 - 24 years)	14	15	29
Mahottari		46	49	95
Kaski		58	61	119
Bardiya		45	43	88
Jajarkot		18	14	32
Bajhang		21	16	37
		<b>Subtotal Youth</b>	<b>202</b>	<b>198</b>
Sankhuwasabha	Total (child + youth)	29	30	59
Mahottari		119	104	223
Kaski		100	101	201
Bardiya		85	85	170
Jajarkot		37	34	71
Bajhang		40	36	76
		<b>Grand Total</b>	<b>410</b>	<b>390</b>



The methodologies advanced through stages of identifying research districts and communities; collecting data and information covering the elements of risks and impacts as hazard, exposure, and vulnerability; analysing data and information; and reporting the findings.

### ► Identification of research districts, municipalities, wards and communities

The six districts were selected based on a literature review using broad indicators or criteria related to high climate hazards, high exposures and high vulnerabilities for children and youth. Besides, attributes such as frequency and intensity of rainfall, temperature, Human Development Index, Gross National Income, vulnerability/adaptive capacity of children/youth and other climate events – both according to observed changes and future scenarios are also considered.

The selection criteria also considered the provincial and physiographic distribution of the research districts across the country. The selection process assigned equal weight to each of the criteria. The underlying justification includes multiple criteria ranging from climate variables to climate impacts and one criterion assigned a value for interrelated factors.

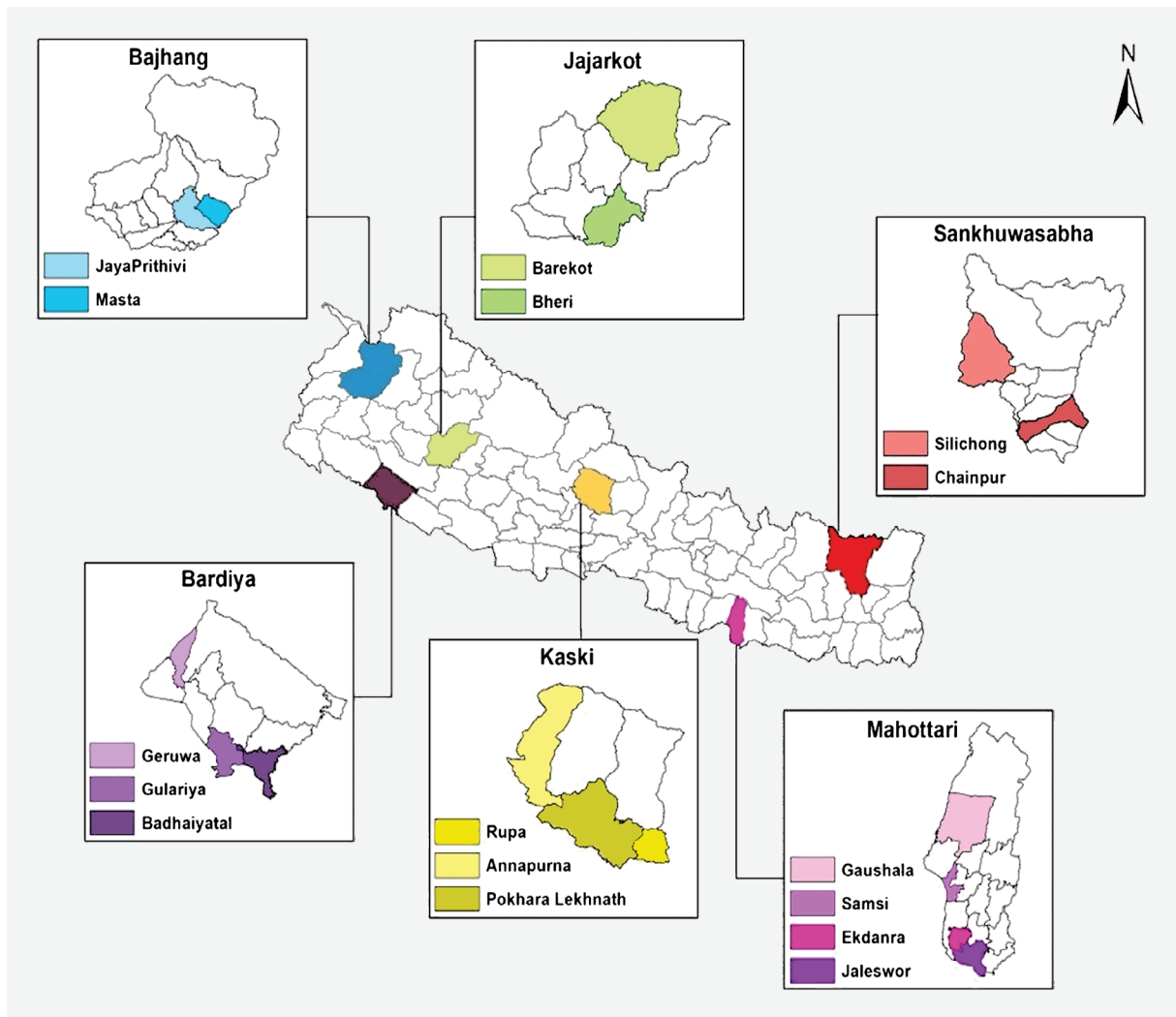
The district selection process included reviews of policy papers, technical papers and grey literature related to climate change, children and youth (NPC, 2014; GoN, 2021; Practical Action, 2009; MoE, 2010b; DHM, 2017; MoFE, 2019b; NHRC, 2017; CBS, 2019). A detailed table comparing the districts is in Annex 1. Furthermore, members of the Child-Centred DRR and Climate Change (CDCC) Consortium – Plan International Nepal, Save the Children, UNICEF and World Vision International Nepal– were consulted during the district identification process, as well as the Chief and other officials of the Climate Change Division of the Ministry of Forest and Environment (MoFE). The districts with the most cumulative marks based on the criteria and geographical representation were selected for the research.

The municipalities, groups and individuals analysed in the districts were selected according to the same criteria. The process adopted consultation with stakeholders at district and municipality levels to identify the municipalities and the communities within the municipality with high numbers of climate-related events and with high exposure and high vulnerability from children and youth perspectives.

By following the above-mentioned selection process and criteria, the districts listed in the Table 31 above were identified as the most appropriate – with Sankhuwasabha and Bajhang representing mountains, Kaski and Jajarkot representing hills and Mohottari and Bardiya representing the Terai. Their geographical distribution is illustrated in Figure 31 below.

Once municipalities and rural municipalities were selected, as shown in Figure below, the executive members of the municipalities and rural municipalities and the staff helped identify wards.

At the ward level, the ward chair and staff members in the ward office were consulted to identify the research communities.

**Figure 31** Research districts with participating municipalities

### ► Selection of Households

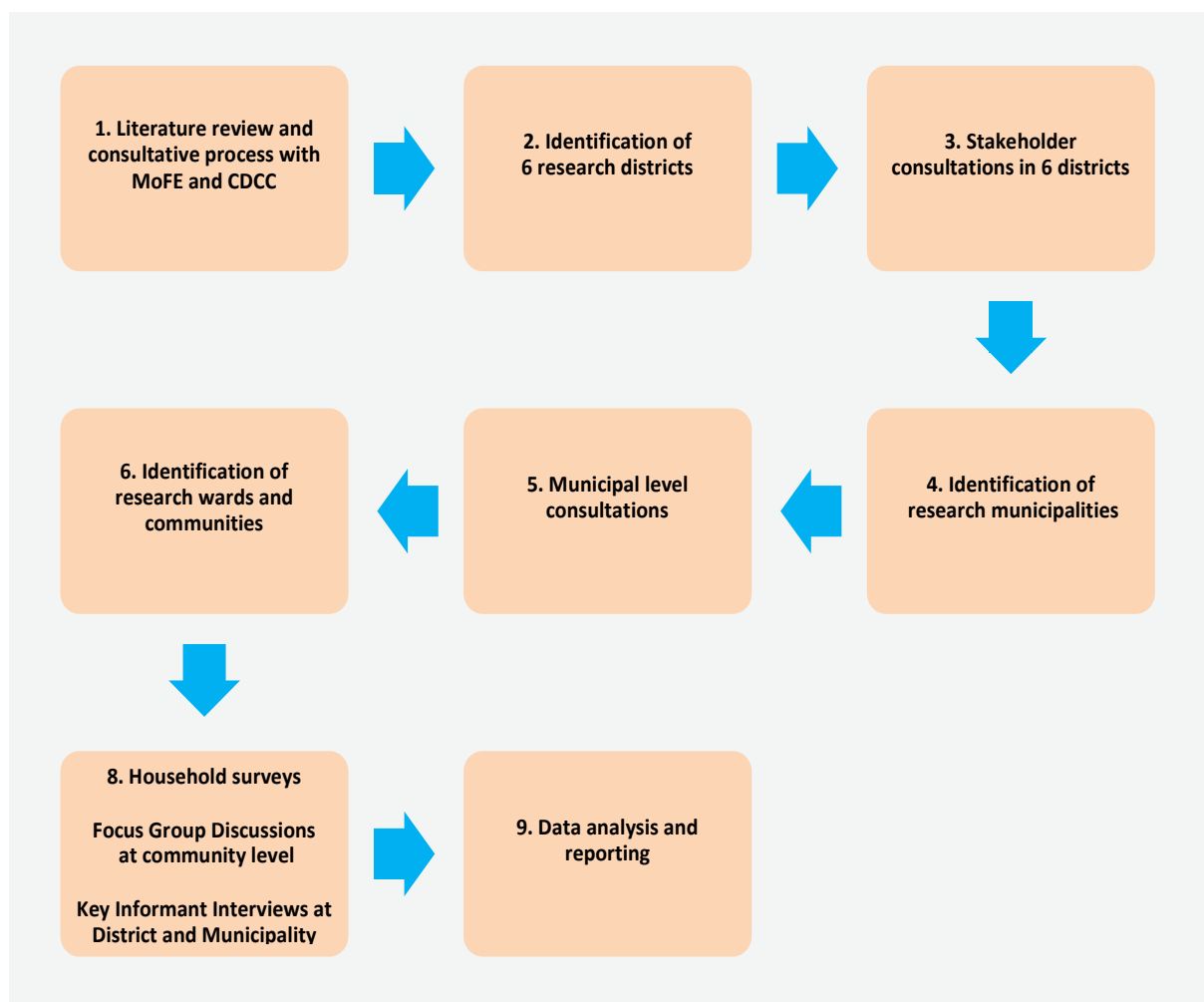
The HH surveys were conducted by interviewing children and youths from participating households. During the interviews, aimed at getting answers for the questionnaires, the children and youths were accompanied by family members. Parents represented the children in most cases. There was no defined minimum age of children. Therefore, when the households were randomly selected, a child's age could be as low as one year. Such sampling allowed the mother to speak for the child about the effects of a relevant hazard or disaster.

The individual households with young people were randomly selected during the survey phase by moving clockwise to get the next household that met the criteria – child or youth, male or female, and vulnerability to climate hazards. This process involved consultations with interviewed and neighbouring households to identify other potential households for interview.

The information from the household survey was transferred to a custom-designed spreadsheet by the District Coordinators with support from the enumerators.

The full development process for conducting the research is mapped in Figure 32 below.

**Figure 32** Steps adopted for conducting the research.



### ► Ethical considerations

The household questionnaire includes a consent form. The enumerators read the information to the interviewees in order to obtain their verbal consent for the interview.

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