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The Liaison Office

Public Perception of Climate Change in Afghanistan

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II. Executive summary

Afghanistan is experiencing some of the fastest rates of climate change in the world, with rising temperatures, erratic precipitation, and increasing frequency of extreme weather events. These climate pressures intersect with fragile governance, economic hardship, and resource dependency, creating a climate–conflict–migration nexus that threatens stability and livelihoods. This study examines Afghan public perceptions of climate change between January and July 2025. Afghanistan is among the most climate-vulnerable countries globally, with severe impacts on food security, livelihoods, migration, and conflict. This research report, based on household surveys, and focus group discussions (FGDs), across ten provinces, provides a comprehensive overview of public perceptions of climate change and its implications for conflict sensitivity, adaptation, and migration. Key findings show widespread awareness of climate change but limited technical understanding of adaptation. Communities face acute livelihood pressures, water scarcity, and rising conflict linked to environmental stress. The research emphasizes integrating community perspectives into adaptation planning and national climate strategies. The executive summary highlight's central themes and implications for resilience, policy, and education.

Key Findings

- Climate Perceptions and Awareness
  - ✓ Around three-quarters of respondents were aware of climate change and its impacts, though awareness was uneven across regions and demographics.
  - ✓ Women reported higher awareness of adaptation needs, reflecting their daily responsibilities in managing water, food, and fuel.
  - ✓ Education and media access strongly influenced awareness, with rural and low-literacy populations relying more on radio and local leaders.
- Climate Impacts and Livelihoods
  - ✓ Respondents identified major impacts on agriculture, water availability, and health, with droughts and erratic rainfall reducing crop yields and undermining food security.
  - ✓ Pastoralist groups reported shrinking grazing lands and disrupted seasonal migration routes, while farmers highlighted declining access to irrigation.
- Conflict Dynamics (Climate–Conflict Nexus)
  - ✓ Communities widely perceived that climate stress directly increases conflict risks, particularly over scarce water and fertile land. Drought-driven scarcity has led to disputes over irrigation canals, pasture use, and land ownership, while inconsistent rainfall has triggered competition between settled farmers and nomadic herders.

II. Executive summary

- ✓ Climate-induced migration is another conflict driver: new arrivals often compete with host populations for jobs, land, and services, raising tensions in already fragile areas.
- ✓ In this way, climate change acts as a “threat multiplier”, exacerbating pre-existing divisions and resource inequalities.

- Adaptation and Local Responses
  - ✓ Communities are developing autonomous adaptation strategies, including small-scale irrigation, drought-resistant crops, and community-led reforestation in Daykundi.
  - ✓ Despite emerging local adaptation practices, efforts remain constrained by widespread poverty, weak institutional capacity, and limited access to information and resources at the community level.
- Migration Risks
  - ✓ 27.9% of surveyed households reported considering migration as a direct response to climate impacts, particularly in drought-prone and conflict-affected provinces.
  - ✓ Migration decisions are shaped by both livelihood pressures and food security concerns, underscoring the need for integrated approaches.

Policy Implications

1. Conflict Sensitivity
   - ✓ Climate adaptation programs must integrate conflict analysis, especially in water and land interventions. Without such measures, adaptation investments could intensify local disputes rather than reduce them.
   - ✓ Mediation and inclusive governance structures are essential to prevent climate-driven resource competition from escalating into violence.
2. Adaptation Planning
   - ✓ Scale up community-led initiatives (e.g., reforestation, seed-sharing, irrigation) that are already delivering results.
   - ✓ Strengthen gender-responsive approaches, building on women demonstrated awareness and roles in managing climate risks.
3. Migration Management
   - ✓ Anticipate and plan for climate-induced migration to reduce social tensions.
   - ✓ Develop local integration strategies and livelihood alternatives in both sending and receiving areas.

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Acronyms & Abbreviations

AFG	Afghanistan
CC	Climate Change
COP	Conference of the Parties
CBD	Convention on Biological Diversity
CSA	Climate-Smart Agriculture
DAI	Development Alternatives Inc.
FAO	Food and Agriculture Organization
GLOF	Glacial Lake Outburst Flood
GHG	Greenhouse Gases
GII	Gender Inequality Index
ICV	I-CVI (Content Validity Index)
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
NEPA	National Environmental Protection Agency
NGO	Non-Governmental Organization
PA	Protected Area
RISK	Risk Management
SDGs	Sustainable Development Goals
TLO	The Liaison Office
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VCA	Vulnerability and Capacity Assessment
WWF	World Wildlife Fund
YED	Youth Environmental Department

1. Chapter One

1.1. Introduction

Afghanistan is increasingly recognized as one of the most climate-vulnerable countries in the world. The country faces intensifying environmental shocks, including prolonged droughts, erratic rainfall, and rising temperatures—that threaten agriculture, water scarcity, and rural livelihoods. These climate impacts are further compounded by existing socio-economic fragility, political instability, and limited institutional capacity. While international climate frameworks emphasize the importance of national adaptation planning, community-level perspectives remain under-documented in Afghanistan. This study addresses that gap by examining how Afghan citizens—across diverse geographies and demographics—perceive, interpret, and respond to climate change. By integrating both quantitative survey data and qualitative narratives, the research provides a bottom-up understanding of public awareness, vulnerability, and adaptive behaviors.

The findings are intended to inform locally grounded adaptation strategies that reflect lived experiences, support inclusive policy design, and enhance resilience-building efforts at community, institutional, and donor levels. Moreover, the emotional narratives from community members vividly illustrate the multidimensional impacts of climate change, extending beyond economic losses to include mental health issues and community disintegration. Their perceptions highlight the importance of community-driven and culturally sensitive adaptation measures that not only aim to improve living conditions but also foster social cohesion amidst growing environmental uncertainty.

Beyond agriculture and migration, climate change is now clearly implicated in broader human development outcomes. A recent study shows a nuanced relationship between climate change and dietary diversity, thereby suggesting that while higher temperatures may correlate with increased non-staple food diversity in some regions, these effects are uneven and unpredictable (Yolchi & Wang, 2025). Meanwhile, health risks from child malnutrition to waterborne disease outbreaks continue to increase, as warming intensifies and access to clean water declines (Safi et al., 2024).

and business meetings. Additionally, women-owned businesses face challenges entering male-dominated sectors and experience discrimination when seeking partnerships or collaborations (UNDP, 2020; ADB, 2018).

1.2. Purpose of the Study

This research aims to explore how Afghan communities perceive, experience, and respond to climate change. It focuses on these three core objectives:

1.3. Research objectives

1. **To evaluate the level of public awareness and understanding of climate change, including its scientific and socio-environmental drivers.**
2. **To investigate both the experienced and perceived effects of climate change on livelihoods, ecosystems, and community well-being.**
3. **To analyze local adaptive responses and identify key socio-economic, institutional, or environmental barriers to effective climate adaptation.**

1.4. Research Questions

1. **What is the level of public awareness and understanding of climate change and its scientific and socio-environmental drivers?**
2. **How do communities observe and perceive the impacts of climate change on their livelihoods, ecosystems, and well-being?**
3. **What adaptive strategies are being implemented, and what barriers impede their effectiveness?**

Afghanistan faces a complex set of interlinked challenges, including environmental degradation, livelihood vulnerability, and social instability. At the core of these issues is climate change, which has intensified the frequency and severity of droughts, disrupted seasonal patterns, and diminished natural resource availability. These climatic shifts have had cascading effects on agriculture, water scarcity, migration, and local conflict, particularly in rural and ecologically fragile provinces. Despite mounting evidence of climate stress, public understanding and policy integration remain limited. This study aims to explore how Afghan communities perceive and respond to climate change, and how those perceptions shape adaptation behavior and conflict dynamics across regions.

Despite contributing minimally to global emissions, Afghanistan ranks among the most affected by climate change. Over 80% of Afghans rely on natural resources, making them highly exposed to shocks in agriculture and water systems. Yet, a critical gap persists in understanding how Afghan communities perceive and respond to climate risks (Figure 1). Without this insight, interventions risk misalignment with local realities and reduce effectiveness.

Bridging this gap is essential, as understanding community perceptions and knowledge gaps directly influences the effectiveness of policy design and resilience planning. Accurate perceptions enable the development of culturally sensitive, locally accepted strategies that can foster community ownership and ensure sustainable adaptation outcomes. Without such data, interventions risk being ineffective or misaligned with community needs, ultimately hindering efforts to build climate resilience.

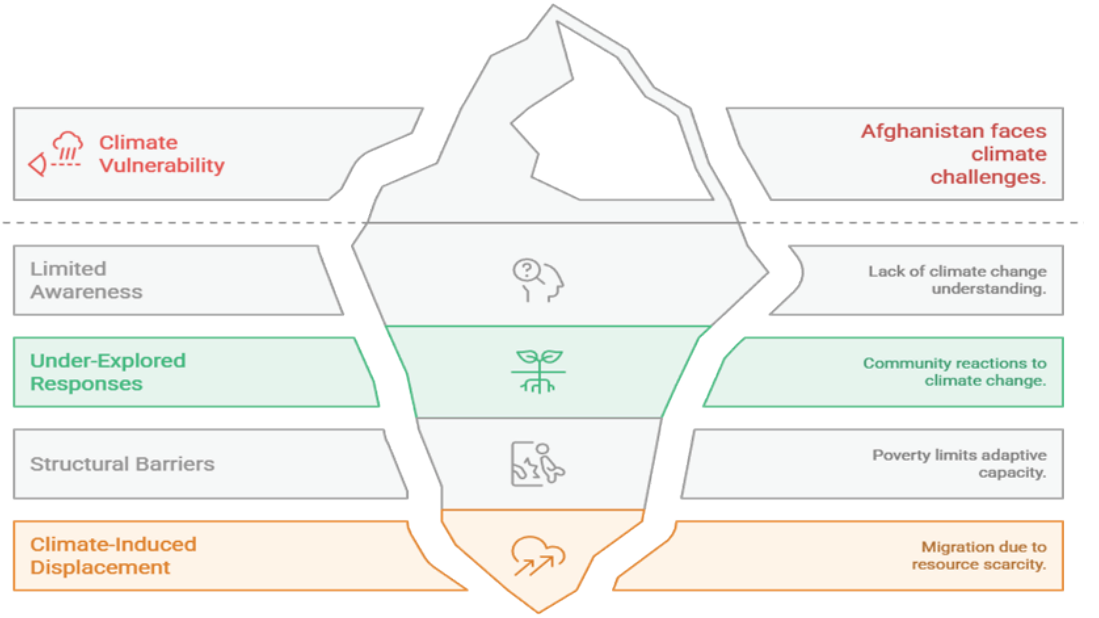


Figure 1: Gaps in Climate Change in Afghanistan: Unveiling the Public Perception

1.6. Conceptual (Theoretical) Framework

This study employs a mixed-methods framework to capture Afghan perceptions of climate change and their implications for resilience and policy planning. The framework (Figure 2) evaluates three interlinked dimensions: awareness, perceived impacts, and adaptive responses. Data were drawn from quantitative surveys (capturing broad awareness and impacts), qualitative FGDs (exploring local knowledge, coping practices, and community narratives), and secondary environmental reports.

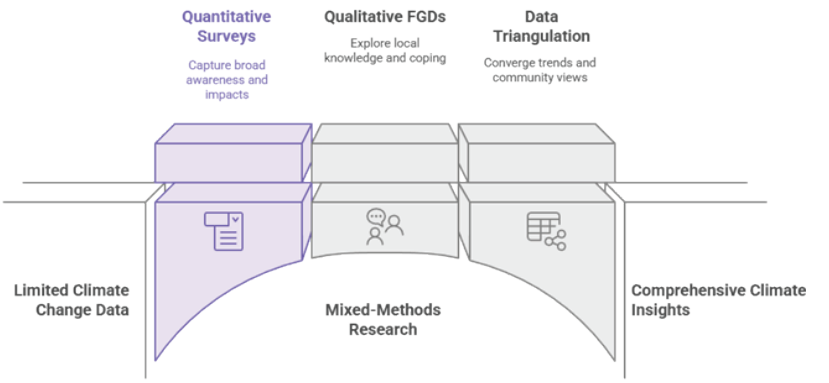


Figure 2: The Conceptual Framework

By integrating various sources through data triangulation, the approach combines quantitative rigor and qualitative depth, ensuring that conclusions reflect both measurable trends and lived experiences. Furthermore, the design incorporates varied viewpoints from farmers, women, youth, community leaders, and pastoralists to provide a holistic picture of how climate change affects different socioeconomic groups.

The theory focuses on how awareness drives adaptation behavior, connecting individual perceptions to group resilience. This establishes a link between public climate perceptions and policy-relevant suggestions, ensuring that adaptation methods are both evidence-based and socially anchored. Finally, this approach allows for a more comprehensive understanding of the climate-conflict-migration nexus, guiding interventions that are inclusive, conflict-sensitive, and long-term.

2. Chapter Two

2.1. Literature Review (Background)

2.1.1. Climate Change in Afghanistan: Drivers, Impacts, and Public Perception

2.1.1.1. Current Climate Change Trends and its Drivers in Afghanistan

Afghanistan faces rapid and escalating climate change that threatens ecosystems, water resources, and human systems. Since the 1950s, average yearly temperatures have risen by 1.5°C to 1.8°C, which is faster than the global average (Akhundzadah, 2024; Safi et al., 2024). In provinces such as Daikundi and Kandahar, minimum temperatures are rising faster than maximums, narrowing the Diurnal Temperature Range and increasing heatwaves, especially in the south and west (Aliyar, 2024; Mujtaba et al., 2022). Precipitation patterns are shifting, with long-term declines in northern and southwestern regions, minor increases in central and eastern provinces, reduced spring rainfall, and inconsistent winter snowfall. These changes disrupt agriculture, water availability, and rural livelihoods, intensifying vulnerability across a resource-dependent population.

The drivers of Afghanistan's climate vulnerability are intertwined at global, regional, and domestic levels. Although contributing little to greenhouse gas emissions, Afghanistan is disproportionately affected by industrialized nations' emissions, which accelerate warming, glacier retreat, and precipitation shifts across South and Central Asia (Nasrin Faqiri, 2024). Regionally, Hindu Kush glacier loss, rangeland degradation, and watershed decline reduce resilience (Hosseini, 2024; Wafa, 2024). Domestically, decades of war, weak governance, unregulated groundwater extraction, deforestation, poor land management, and rapid urbanization exacerbate desertification, soil erosion, and ecological fragility (Safi et al., 2024; Stanikzai, 2024). With 70% of Afghans relying on agriculture and pastoralism, resource stress, poverty, and weak adaptation mechanisms heighten sensitivity to shocks (Hamdard et al., 2024; Quraishi, 2021). Together, these interacting factors underscore the urgency of local action, stronger institutions, regional cooperation, and global climate justice frameworks to address Afghanistan's mounting climate risks.

2.1.1.2. Impacts of Climate Change in Afghanistan

Climate change has placed severe stress on Afghanistan's water resources, agriculture, and health systems. Rising temperatures and shifting precipitation patterns have accelerated groundwater depletion and reduced surface water reliability, while inconsistent snowmelt disrupts streamflow needed for farming and household use (Ghulami, 2017; Shokory et al., 2023). The retreat of glaciers further threatens future water supply, and unregulated extraction has caused the loss of traditional systems like Karezes (Hosseini, 2024; Baidar et al., 2024). Water scarcity now undermines food security, public health, and development, while fuelling localized tensions over access (Azizi et al., 2024). Agriculture, on which 70% of Afghans depend on; faces heatwaves, droughts, and erratic rainfall that have cut yields of wheat and rice, while livestock herders confront shrinking pastures and disrupted migration routes (Azizi et al., 2024; Hosseini, 2024; Koshani & Hamdam, 2024; Aliyar et al., 2024).

The impacts extend beyond livelihoods to public health and social stability. Rising heat, poor air quality, and contaminated water have increased cases of diarrheal disease, respiratory illness, malaria, and dengue (Bawari et al., 2024; Safi, 2024). Malnutrition linked to crop failures is a leading cause of child morbidity and mortality (Azizi et al., 2024). Extreme events such as droughts and floods damage infrastructure, reduce access to clean water, and trigger displacement caused displacing nearly 400,000 people during the 2018–2019 drought alone (Safi et al., 2024). These stresses disproportionately affect women, children, and rural households, reinforcing climate change as a "threat multiplier" that deepens poverty, inequality, and fragility (Mehrad, 2020).

2.1.1.3. Climate Change Adaptation, Mitigation and Barriers to Implementation of Strategies in Afghanistan

Afghanistan has introduced several national frameworks to address climate risks, including the National Adaptation Programme of Action (NAPA), the Climate Change Strategy and Action Plan (CCSAP), and commitments under the UNFCCC, Kyoto Protocol, and Paris Agreement. These strategies prioritize agriculture, water management, disaster resilience, and institutional capacity (UNEP, 2017). Community-based adaptation initiatives, such as drip irrigation, solar-powered water pumps, and participatory vulnerability assessments, have shown promise in provinces like Helmand and Kunduz, where water efficiency improved by 30%–50% (Ghulami, 2017). Localized responses such as seed-sharing networks, reforestation, and Karez rehabilitation are also demonstrate the resilience and innovation of Afghan communities (Nasimi et al., 2020; Sayedi, 2024).

However, adaptation efforts remain fragmented and under-resourced. Decades of conflict, institutional fragility, and governance gaps undermine climate policy implementation (Safi et al., 2024; Stanikzai, 2024). Weak coordination across government agencies, food insecurity in rural areas, and limited public participation further erode capacity. Critical infrastructure, such as irrigation canals and early warning systems, is either outdated or absent in many regions, leaving communities exposed to recurrent droughts and floods (Hosseini, 2024). While NGOs and international partners have piloted climate education and capacity-building programs, these remain localized and difficult to scale due to financial and institutional constraints (Zia et al., 2024).

Another major barrier is the lack of reliable climate data. Afghanistan's meteorological and hydrological networks remain sparse, with decades of war destroying monitoring stations and leaving large areas without coverage (Ghulami, 2017). This gap reduces the accuracy of climate models, limiting the ability of policymakers to plan effectively or allocate resources efficiently (Hosseini, 2024). Combined with poverty, low literacy, and social or cultural constraints, these barriers mean that most communities rely on short-term coping strategies such as overharvesting forests, selling livestock, or migration are rather than long-term resilience building. Addressing these systemic challenges requires investment in data systems, inclusive governance, and the scaling up of community-led adaptation practices.

2.1.2. Public Perception of Climate Change in Afghanistan

Afghans' perceptions of climate change are shaped by lived experiences of droughts, erratic rainfall, and rising temperatures, yet scientific understanding remains uneven. While urban youth report increased awareness through media exposure, with 44.68% in Jalalabad gained climate knowledge via television and social media (Zia et al., 2024), while rural and low-literacy communities rely more on radio and personal observation (Saeed et al., 2024). Around three-quarters of survey respondents reported awareness of climate change and its impacts (Hakimi et al., 2024), though many associate it primarily with droughts, floods, or rising food prices. Limited literacy, weak institutional outreach, and reliance on oral traditions create gaps between scientific discourse and local interpretations (Lee et al., 2015; van Valkengoed & Steg, 2019).

Communication challenges reinforce these gaps. Radio and face-to-face dialogue with elders or religious leaders remain the most trusted sources in rural areas (Sadat et al., 2024), while social media use is growing among urban youth (Darwishean et al., 2024). Community responses are often localized and pragmatic: adjusting planting calendars, restoring Karezes, adopting drought-resistant crops, or sharing seeds through informal networks (Nasimi et al., 2020; Sayedi, 2024). Pastoralist Kuchi communities, facing reduced mobility and limited access to traditional grazing routes, increasingly shift to sedentary or non-livestock livelihoods (Weijer, 2007). NGO-led initiatives such as drip irrigation and solar pumps have improved water efficiency by up to 50% in provinces like Helmand and Kunduz, but most communities still rely on coping rather than sustainable adaptation due to limited resources and institutional support (Ghulami, 2017).

Perceptions are also shaped by gender and generational dynamics. Women, who shoulder household responsibilities for water, food, and fuel, are highly aware of climate risks but have limited opportunities to contribute to formal decision-making processes, despite evidence that their participation improves resilience outcomes by up to 25% (Jawid & Khadjavi, 2018). Youth, making up 63% of Afghanistan's population, demonstrate higher awareness and willingness to act through media engagement and local initiatives (Zia et al., 2024), though their role in governance remains marginal (Agbleze, 2021; Kwauk & Wyss, 2022). Intersectional vulnerabilities are evident, with adolescent girls facing compounded risks due to restricted mobility and early marriage (Devonald et al., 2022). Expanding climate education, promoting women's leadership, and integrating youth into adaptation planning are therefore central to strengthening public climate resilience (Andrijevic et al., 2020; Terry, 2009).

2.1.3. Communication and Information Gaps

Effective communication is essential for bridging the gap between scientific knowledge and public understanding. In Afghanistan, challenges such as low literacy rates, limited electricity access, and underdeveloped media infrastructure complicate information delivery—particularly in rural areas. Radio remains the most trusted and widely used source of information, especially among illiterate populations (Sadat et al., 2024). Studies also show that people trust face-to-face communication over digital or written forms, especially in communities where oral traditions and interpersonal trust remain strong (Saeed et al., 2024). At the same time, urban populations are increasingly turning to social media, such as X (formerly Twitter), for climate-related content despite limited digital access (Darwishean et al., 2024).

2.1.4. Community Responses and Adaptive Practices

Community-level responses are foundational to climate adaptation in Afghanistan, where formal state infrastructure remains limited, especially in rural and mountainous areas. Communities rely heavily on local knowledge, indigenous practices, and traditional coping mechanisms to respond to environmental challenges. These responses often emerge organically in the absence of formal support systems and can be both adaptive and resilient.

Agrarian and pastoralist communities have long histories of responding to environmental variability through migration, livestock diversification, and resource sharing. In the face of intensifying droughts and unpredictable rainfall, many farmers have adjusted planting schedules, implemented water-saving irrigation methods, and shifted to drought-tolerant or fast-maturing crop varieties (Aliyar et al., 2024; Omerkhil et al., 2020). In provinces like Bamyan and Daikundi, where the majority of households are subsistence farmers, localized initiatives, such as seed-sharing networks, community-based seed banks, and collective water management (e.g., Karez rehabilitation), have proven effective. These practices not only mitigate the impacts of climate variability but also build social cohesion (Nasimi et al., 2020; Sayedi et al., 2024).

Pastoralist (Kuchi) communities, who traditionally practiced seasonal transhumance, are increasingly challenged by land degradation, climate stress, and conflict. Restricted mobility due to insecurity and contested grazing rights limits their adaptive capacity. As a result, many Kuchis are settling permanently or transitioning to non-livestock-based livelihoods—a major socio-cultural shift (Weijer, 2007).

Community-based adaptation (CBA) models have been piloted across Afghanistan with mixed results. Initiatives led by NGOs, such as participatory vulnerability assessments, training in climate-resilient agriculture, and climate information dissemination, show promise. For example, solar-powered water pumps and drip irrigation systems introduced in Helmand and Kunduz improved water efficiency by 30%–50%. However, these responses are often reactive rather than strategic due to a lack of funding, institutional support, and technical extension services. Most community members lack formal training on climate adaptation and rely on short-term survival strategies like overharvesting forest resources, selling livestock, or migrating temporarily (Ghulami, 2017).

Afghan communities have long employed indigenous knowledge to manage environmental variability, especially those in agrarian and pastoral systems. With increasing climate shocks, many communities have adapted through localized and informal practices, including crop diversification, seasonal migration, and adjusted planting cycles (Aliyar et al., 2024). Farmers in mountainous regions, such as the Central Highlands, reported having changed to drought-resistant seed varieties and adopted new irrigation techniques to manage water scarcity (Omerkhil et al., 2020). However, the effectiveness of these strategies is often hindered by poverty, lack of technical support, and political instability. Adaptation is reactive and short-term, with most households focused on immediate survival rather than long-term resilience.

Community-based adaptation (CBA) initiatives show promise, especially when supported by NGOs and international agencies. These include solar water pumps, climate-resilient seed banks, and farmer-to-farmer knowledge exchanges. However, many of the aforementioned initiatives fail to scale without sustained funding and institutional backing.

2.1.5. The Role of Education in Building Climate Awareness

The intersection of climate change and education is crucial for building long-term resilience (Nusche et al., n.d.). Education plays a key role in raising awareness, shaping attitudes, and equipping individuals, especially youth, with the knowledge and skills needed to adapt to and mitigate climate impacts (Priatna & Khan, 2024). By integrating climate change into school curricula and community learning programs, people become more informed about environmental challenges and sustainable practices (Pal et al., 2023). In Afghanistan, however, climate change is largely absent from school curricula, and teachers are generally under-equipped to address it (Zia et al., 2024). NGOs and international development programs have launched pilot projects to integrate climate topics into secondary schools. Such efforts have been positively received but remain localized and underfunded. Expanding environmental education is critical for developing an informed generation that can participate meaningfully in Afghanistan's adaptation process.

2.1.6. Intersections and Opportunities

Gender and youth vulnerabilities are not isolated, and they intersect and compound. For instance, adolescent girls are particularly at risk due to their limited access to education, mobility restrictions, and early marriage practices, which reduce their autonomy in responding to climate-related shocks (Devonald et al., 2022). Policies that address these intersectional challenges through inclusive education, microfinance for women, and youth leadership initiatives can bridge the gap between policy and practice. Programs like the UNEP's youth-led climate workshops in Asia and CARE's women climate champions in Ethiopia provide replicable models for Afghanistan (Terry, 2009b, 2009a). Additionally, investing in climate education and leadership programs for girls in schools can empower a new generation to lead Afghanistan's climate transition. The Gender Inequality Index (GII) projections also show that bridging gender gaps is one of the most cost-effective ways to reduce national climate vulnerability (Andrijevic et al., 2020).

3. Chapter Three

3.1. Methodology

3.1.1. Study Area

The research was conducted across 30 districts in 10 provinces of Afghanistan, selected to represent the country's environmental, socio-economic, and geographic diversity. The provinces included both urban and rural settings, with areas identified as highly vulnerable to climate risks such as drought, flooding, glacial retreat, and agricultural production decline.

he selected provinces—Kabul, Nangarhar, Kunduz, Badakhshan, Balkh, Daikundi, Ghazni, Kandahar, Helmand, and Herat, as shown in (Figure 3), reflect a broad spectrum of climatic zones, livelihood systems, and institutional access. This geographical scope enabled a comprehensive understanding of public perception across different ecological and socio-political contexts.

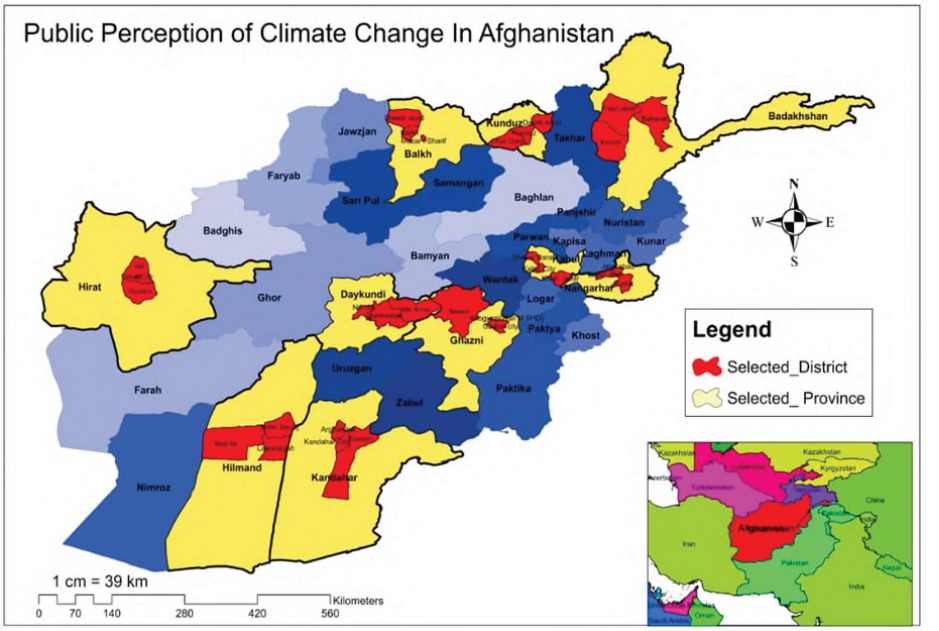


Figure 3: Study Area

3.1.2. Data Collection Approach

This research utilized a mixed-methods approach, combining quantitative surveys with qualitative group discussions (FGDs) to gather robust and contextually grounded data.

3.1.3. Quantitative Data

A structured, closed-ended questionnaire was designed to capture data on key thematic areas:

- ✓ Awareness and understanding of climate change
- ✓ Perceived impacts on daily life
- ✓ Climate adaptation and mitigation responses
- ✓ Links between climate change and conflict
- ✓ Climate education needs and future outlook

The questionnaire underwent pilot testing with 5%–10% of the total sample and was validated by a panel of academic and field experts. Reliability was confirmed using Cronbach's Alpha to ensure internal consistency across scales.

3.1.4. Qualitative Data

To complement the survey, 11 FGDs were held across the study provinces. Each group included 8–10 participants, purposively selected to ensure representation across gender, age, occupation, and geographic location. The FGDs explored:

- ✓ Local knowledge and observations of climate
- ✓ change
- ✓ Coping strategies and barriers
- ✓ Perceptions of institutional response
- ✓ Educational needs and community engagement

Participants included farmers, pastoralists, youth, women, community elders, religious leaders, and representatives from government, NGOs, and academic institutions. Transcripts were analyzed using thematic coding supported by manual validation.

3.1.5. Target Groups and Sampling

The target population consisted of community members from diverse socio-economic and ecological backgrounds. The sampling strategy was designed to maximize geographic and demographic representativeness, with special emphasis on:

- ✓ Rural and resource-dependent populations
- ✓ Women, youth, and other vulnerable groups
- ✓ Provinces with known climate risks (e.g., high drought index)

A stratified random sampling technique was employed, proportionally distributing the sample based on population size and climate vulnerability. The total sample size of 2,400 respondents as shown in (Table 1) and (Figure 4), which determined using the (Krejcie et al., 1970) formula with a 95% confidence level and 5% margin of error. The sampling frame ensured a balanced representation across:

- ✓ Gender (with deliberate inclusion of female respondents)
- ✓ Age groups (from 18 to 64+)
- ✓ Education levels (literate and illiterate)
- ✓ Occupation types (farmers, laborers, students, civil servants).

Table 1: Summary of Data Collection Strategies and Purposes

Characteristic	Purpose	Sample	Sampling Method	Data Analysis	Ethical Considerations
Quantitative Surveys	Capture awareness, perceptions, impact, adaptation, practices, and conflict linkages	2,400 respondents across 30 districts	Stratified random sampling based on population size, climate risk, and demographics.	Descriptive and inferential statistics (SPSS).	Informed verbal consent, anonymity, gender-sensitive facilitation.
Qualitative FGDs	Explore local knowledge, coping strategies, institutional support, and education needs	11 FGDs across nine provinces 8-10 participants per group	Participants selected for diversity in gender, age, and livelihoods.	Thematic coding of transcripts	Informed verbal consent, anonymity, gender-sensitive facilitation.

Figure 4: Method and Data Collections

3.2. Validity and Reliability

To ensure accurate measurement, the questionnaire's validity and reliability will be assessed. Validity ensures the tool measures what it intends to, using content, face, criterion, and construct validity. Content validity will be confirmed by field experts, with a benchmark of >90%. Reliability refers to the consistency of results and will be tested through a pilot study involving 5–10% of the sample, focusing on stability, internal consistency, and equivalency. A lack of reliability weakens data quality and overall validity. Both validity and reliability checks are essential to ensure the questionnaire yields a credible and consistent.

Pearson's correlation analysis was conducted to assess the validity of items falling under conflict management (Table 2). The results indicated that all three items were significantly associated with the composite variable 'conflict management' ($p < 0.001$). Hence, validity has been achieved.

Table 2: List of The Experts for The Questionnaire Validity

No	Experts Name	Position
1	Sayed Mohammad Tamim Hashimi	Assistant Professor: Natural Resource Management, Kabul University
2	Kawoon Sahak	Head of Environmental Department, Kabul University
3	Mujeeb Ullah Mujeeb	Head of Natural Resource Management, Kabul University
4	Sharifullah Peroz	Head of Natural Disasters Management of Kabul University
5	Rohullah Amin	Climate change directorate, NEPA
6	Qiamuddin Qiam	Expert in Disaster Management, ANDMA
7	Lutfullah Safi	Dean of the Environment Faculty

Cronbach's alpha was conducted to assess the reliability of variable 'conflict assessment'. Results in (Table 3 & 4) indicated that the variable 'conflict assessment' had a Cronbach's alpha of 0.711, reflecting acceptable reliability. The variable 'conflict assessment' reported a mean of 5.53 and standard deviation of 2.387 respectively, indicating moderate increase with small variability within the scores of composite variables 'conflict assessment'.

Table 3: Validity Test

Items	Correlation r (p-value)
Increased conflicts for access to drinking water	0.747*** (< 0.001)
Increased conflicts for access to agricultural water	0.827*** (< 0.001)
Increased conflicts for land ownership and use	0.684*** (< 0.001)

Table 4 Reliability Test

No	Various	Item	Cronbach's alpha
1	Conflict Assessment	3	0.711

3.3. Fieldwork Supervision and Data Quality Control

To ensure consistency and reliability in data collection, field teams received structured training on the study tools, interview protocols, and ethical procedures prior to deployment. Supervisors were assigned to oversee data collection activities across all districts, providing real-time support and quality assurance. Daily debriefings were conducted to address field challenges, clarify any misunderstandings, and maintain uniform application of the questionnaire and discussion guides. Data from completed surveys and focus group sessions were regularly reviewed for completeness, accuracy, and consistency before being entered into the analysis system. Where applicable, spot checks and back-checks were carried out to validate responses and minimize reporting bias.

3.4. Ethical Considerations

The research adhered to the highest ethical standards for social research. Participation was fully voluntary, and all respondents were briefed on the study's objectives, scope, and confidentiality measures.

- ✓ Informed verbal consent was obtained prior to any survey or discussion.
- ✓ Anonymity was ensured—no personal identifiers were collected.
- ✓ Cultural sensitivity was prioritized, particularly in female and rural engagements.
- ✓ Data collection was conducted in accordance with local norms, religious considerations, and security protocols.

4. Chapter Four

4.1. Results and Discussion

This section presents a comprehensive analysis of the empirical findings derived from both quantitative survey data and qualitative focus group discussions. It explores variations in public perception of climate change across socio-demographic variables and geographical locations, focusing on awareness, perceived impacts, adaptation, conflict, education needs and future-outlook.

4.1.1. Demographic Characteristics

Frequency distribution was computed to describe the frequency and percentage of respondents across different demographic characteristics (Table 5). The results indicated that most of the respondents had an age between 25 to 34 years old (27.2%), followed by between 18 to 24 years old (23.6%), and between 35 to 44 years old (19.0%). Furthermore, four-fifth of the respondents were male (82.0%). Most of the respondents had no formal education (33.9%). However, those who had formal education had high school education (22.2%) and bachelor's degree (16.8%). Moreover, most of the respondents were farmers by occupation (27.0%). More than half of the respondents were living in rural areas (60.2%), and belonged in Kandahar (10.3%), Herat (11.8%), Balkh (11.4%), Nangarhar (10.9%), and Kunduz (10.1%).

Table 5: Demographic Characteristics

Characteristics	Categories	Frequency	Percentage
Age	Under 18 years old	76	3.2%
	Between 18-24	564	23.6%
	Between 25-34	649	27.2%
	Between 35-44	454	19.0%
	Between 45-54	376	15.7%
	Between 55-64	270	11.3%
Gender	Male	1960	82.0%
	Female	428	18.0%
Education Level	No formal education	810	33.9%
	Primary education	279	11.7%
	Secondary education	162	6.8%
	High School	531	22.2%
	Vocational	50	2.1%
	Bachelors	402	16.8%
	Masters	41	1.7%
	Madrasa	86	3.6%
	Darul Hufaz	18	0.8%
	Darul Uloom	10	0.4%
Occupations	Farmer	646	27.0%
	Business Owner	220	9.2%
	Laborer	343	14.4%
	Govt. employee	211	8.8%
	Students	231	9.7%
	Unemployed	405	17.0%
	Other	332	13.9%
Residence Type	Rural	1438	60.2%
	Urban	731	30.6%
	Semi-Urban	220	9.2%

Provinces	Kabul	236	9.9%
	Kandahar	245	10.3%
	Herat	283	11.8%
	Balkh	273	11.4%
	Nangarhar	261	10.9%
	Daikundi	192	8.0%
	Badakhshan	218	9.2%
	Kunduz	242	10.1%
	Helmand	236	9.9%
	Ghazni	203	8.5%

4.1.2. Awareness

Frequency distribution was computed to describe the frequency and percentage of awareness of climate change (Table 6). The results indicated that nearly third-fourth of the respondents had knowledge of climate change (75.2%) and perceived its potential impact on Afghanistan through droughts, floods, or rising prices (75.6%). More than half of the respondents learned about climate change on Television (51.3%), following by radio (40.6%), and friends and family (36.6%).

Variables	Categories	Frequency	Percentage
Knowledge of Climate Change	Yes	1799	75.2%
	No	590	24.7%
Perceived Effect of Climate Change on Afghanistan through Droughts, Floods, or Rising Prices	Yes	1805	75.6%
	No	584	24.4%
Source of Awareness	Television	1225	51.3%
	Radio	970	40.6%
	Newspaper	236	9.9%
	Facebook	721	30.2%
	X (Formerly Twitter)	137	5.7%
	Other social media platforms	431	18.0%
	School or university	555	23.2%
	Madras and Islamic centers e.g. Mosque	335	14.0%
	Community meetings	617	25.8%
	Friends and family	875	36.6%
	Other religious leaders	239	10.0%
	Government sources or announcements	166	6.9%
	Others	**90**	**3.8%**

Table 6: Frequency Distribution – Awareness

4.1.3. Perceived Impacts of Climate Change

Figure 5., presents a breakdown of the climate-related environmental changes that respondents observed in their communities over the past year. The most cited changes included higher temperatures (13.6%), more frequent droughts (12.8%), water shortages (12.4%), and changes in crop yields (10.0%). These were followed by reports of flash floods (9.5%), dust storms (7.9%), pollution (7.8%), and changes in rainfall patterns (6.9%). Other notable changes mentioned were deforestation and land degradation (3.0%), glacier melt (1.9%), landslides (1.2%), and shifts in local wildlife populations (5.4%).

This wide range of reported environmental impacts illustrates the complex and multifaceted nature of climate change in Afghanistan. Respondents are witnessing both gradual, long-term changes—such as rising temperatures, altered precipitation patterns, and declining water availability—and acute, sudden events like flash floods and dust storms. These localized and lived experiences of climate change not only validate broader climatic trends but also underscore the urgency of developing region-specific adaptation strategies.

The diversity of observed changes across ecological, hydrological, and agricultural systems signals a pressing need for integrated climate responses that are tailored to the specific vulnerabilities of different regions and livelihoods in Afghanistan. These findings reinforce the importance of including community perspectives in climate policy and planning.

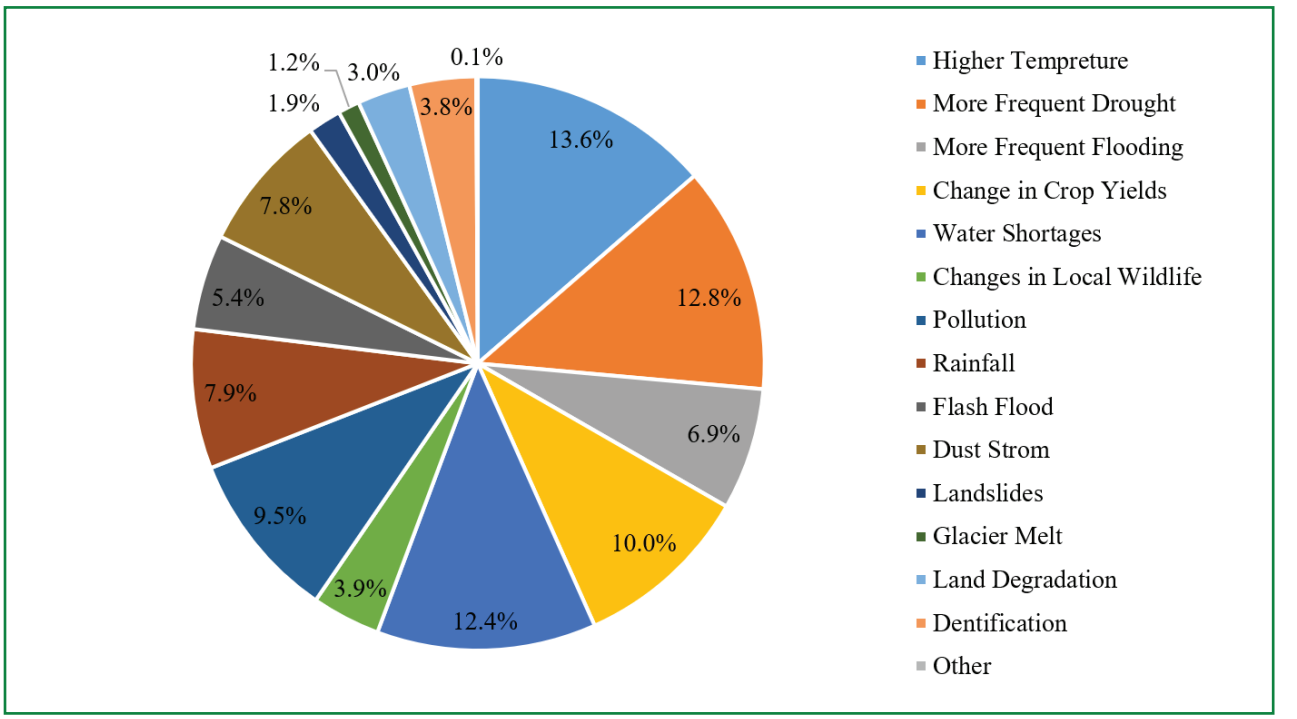


Figure 5: Perceived Impact of Climate Change

4.1.4. Awareness of Climate Change & Loss of Livelihoods

Chi-square test of association was calculated to assess the association between awareness of climate change and loss of livelihoods (Table 7). Results indicated no significant association between the variables. This inferred that having awareness of climate change did not cause in loss of livelihood.

Table 7: Association between Awareness of Climate Change & Loss of Livelihoods

Loss of Livelihood	Awareness of Climate Change		^{2} (p-value)
	No – n (%)	Yes – n (%)	
No	152 (6.4%)	486 (20.3%)	2.075 (0.150)
Yes	369 (15.4%)	1382 (57.8%)	

* $p < 0.05$

4.1.5. Concerns of Climate Change

Figure 6., illustrates a range of climate-related concerns as perceived by communities across Afghanistan. The data shows that water shortage is the most pressing concern, reported by 18.68% of respondents. This aligns with widespread drought conditions, drying wells, and declining access to drinking and irrigation water—especially in provinces like Herat, Daikundi, and Helmand. The centrality of water to both household survival and agricultural productivity explains its prominence. The second-highest concern, cited by 17.33% of participants, is the impact of climate change on livelihoods. Given that over 70% of Afghans depend on farming and pastoralism, the increasing unpredictability of rainfall, reduced pasture availability, and crop failures have deeply affected income and food security. These concerns are more pronounced in rural and agrarian communities where employment is directly tied to the land.

A significant portion of respondents also identified increased extreme weather events (14.58%) and the risk of displacement (14.52%) as major concerns. This reflects growing awareness of how erratic climatic patterns—including floods, heatwaves, and prolonged droughts—are disrupting traditional settlement patterns and forcing internal migration. These concerns support findings from focus group discussions that link environmental stress with population movements, particularly from vulnerable provinces like Helmand and Daikundi. Other areas of concern include uncertainty about the future (9.85%) and threats to family health (9.46%), which highlight the broader social and psychological effects of climate change. Respondents also pointed to deforestation (8.89%) as a contributing environmental issue, though its ranking may reflect lower visibility compared to direct livelihood or health impacts. Finally, loss of wildlife (6.71%) was the least cited concern, suggesting that biodiversity issues are less prioritized at the household level compared to immediate survival needs.

Overall, this breakdown reveals that Afghan communities perceive climate change most urgently through its direct, tangible impacts on water, food, shelter, and mobility. While broader ecological issues are acknowledged, they remain secondary to everyday existential challenges. This calls for climate responses that are localized, livelihood-focused,

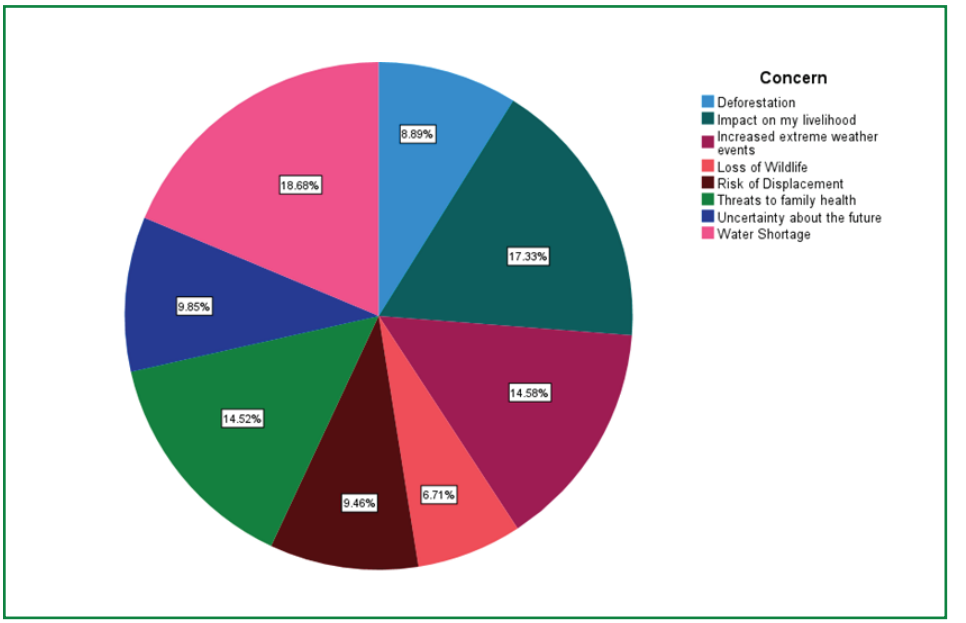


Figure 6: Concerns of Climate Change

4.1.6. Climate Change Education

Figure 7., illustrates respondents' preferences for the most effective ways to deliver climate change education in their communities. The most frequently selected method was workshops and hands-on training for farmers, herders, and labourers (14.4%), followed closely by school-based education for children and youth (14.0%). Community outreach initiatives, such as village meetings and mosque-based talks, were also valued (13.0%), along with media awareness campaigns (12.5%) and religious or cultural messages that link environmental care to Islamic values (11.4%). Additionally, special training programs for local leaders, teachers, and decision-makers (11.4%), and mobile education units for remote areas (9.9%) were also considered effective by a significant portion of respondents. Printed educational materials in local languages (8.6%) and mobile-based information (4.6%) were less frequently mentioned but remain relevant, especially in areas with limited literacy or internet access. Only 0.2% of respondents selected "Other."

These results highlight a clear demand for localized, practical, and culturally relevant education methods. The preference for workshops and media engagement reflects a need for accessible, action-oriented learning, while the strong support for youth education and religious messaging underscores the importance of integrating climate awareness into schools and faith-based platforms. Together, these preferences signal a strong desire for community centered climate learning tailored to the Afghan context.

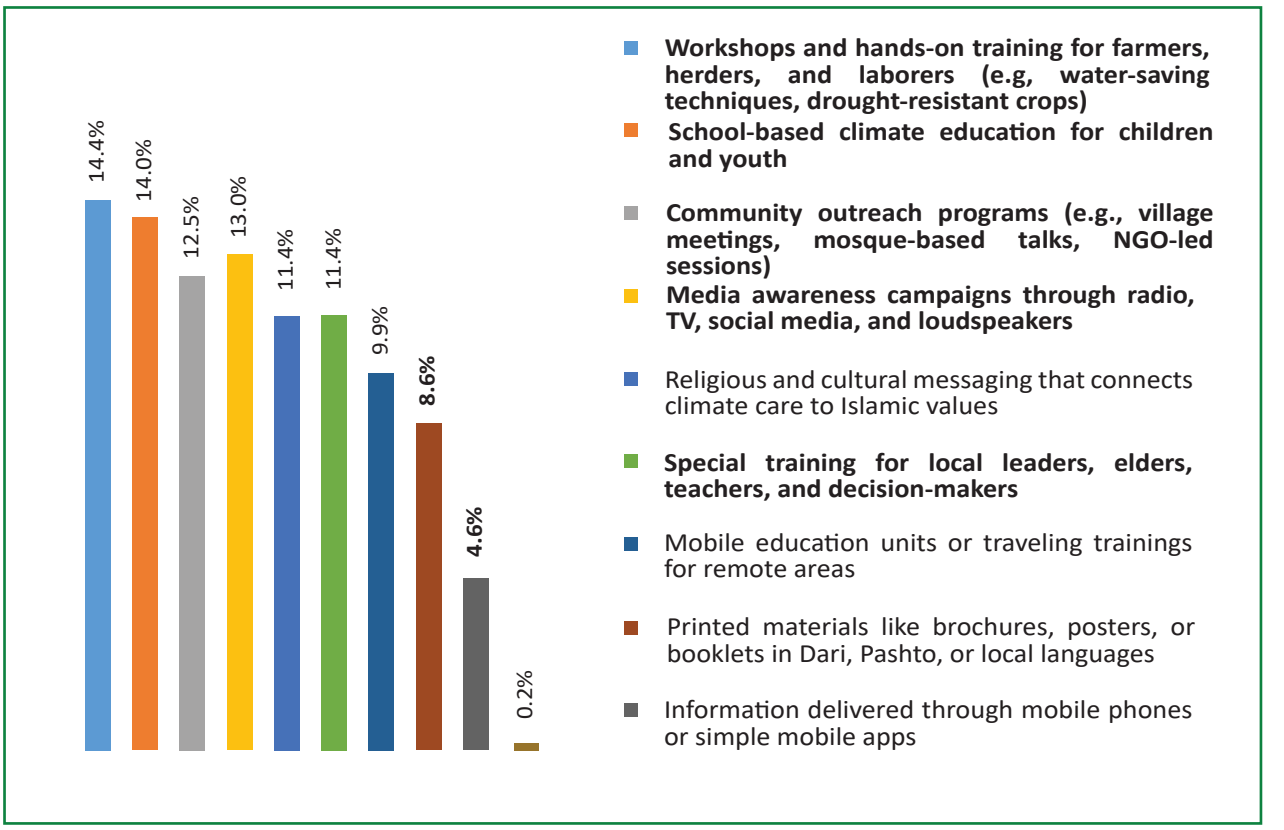


Figure 7: Climate Change Education

4.1.7. Linking between Climate Change Education & Future Potential Impacts of Climate Change

Chi-square test of association was calculated to assess the association or linkage between climate change education and future potential impacts of climate change (Table 8). The results revealed a significant association, suggesting that each educational strategy has its own challenges. Most of the climate change education practices most frequently faced more economic problems (like crop loss, higher prices, or fewer jobs). However, only a small proportion of the respondents faced the challenges of leaving or moving into the area because of climate-related issues or conflict over land, water, or pasture, which further vary across different educational practices.

Table 8: Linking between Climate Change Education & Future Potential Impacts of Climate Change

Climate Change Education	Future Potential Impacts of Climate Change					
	It will cause more economic problems (like crop loss, higher prices, or fewer jobs)		More people will leave or move into the area because of climate-related issues-		There will be more conflict over land, water, or pasture	
	n	**%**	**n**	**%**	**n**	**%**
Workshops and hands-on training for farmers, herders, and laborers (e.g., water-saving techniques, drought-resistant crops)	1648	72.1%	1252	54.7%	1006	44.0%
School-based climate education for children and youth	1594	69.7%	1213	53.0%	983	43.0%
Community outreach programs (e.g., village meetings, mosque-based talks, NGO-led sessions)	1434	62.7%	1087	47.5%	867	37.9%
Media awareness campaigns through radio, TV, social media, and loudspeakers	1486	65.0%	1117	48.8%	933	40.8%
Religious and cultural messaging that connects climate care to Islamic values	1310	57.3%	993	43.4%	820	35.9%
Special training for local leaders, elders, teachers, and decision-makers	1318	57.6%	983	43.0%	814	35.6%
Mobile education units or travel trainers for remote areas	1143	50.0%	870	38.0%	684	29.9%
Printed materials like brochures, posters, or booklets in Dari, Pashto, or local languages	999	43.7%	846	37.0%	648	28.3%
Information delivered through mobile phones or simple mobile apps	524	22.9%	419	18.3%	341	14.9%
χ^2	1060.655***					
p-value	< 0.001					

4.1.8. Association between Adaptation & Community's Climate-Related Conflicts

Pearson's correlation analysis was computed to assess the association between adaptation practices and community climate-related conflicts (Table 9). Two measures assessed adaptation: (i) adaptation potential toward climate change, and (ii) adaptation via household or community support toward climate change. Three different forms of conflicts arisen due to climate change were inquired: (i) access to drinking water, (ii) access to agricultural water, and (iii) land ownership and use. The results indicated that adaptation potential towards climate change were significantly associated with conflict of land ownership and use ($r = -0.074$, $p < 0.001$). Similarly, household or community support for adapting towards climate change were significantly associated with conflict of access to agricultural water ($r = 0.109$, $p < 0.001$) and conflict of land ownership and use ($r = 0.087$, $p < 0.001$). Hence, adaptation strategies can be implemented to rectify the climate-related conflicts in Afghanistan.

Table 8: Linking between Climate Change Education & Future Potential Impacts of Climate Change

			1	2	3	4	5
1	Adaptation Potential toward Climate Change	r	1				
		p-value					
2	Adaptation via Household or **Community Support toward** Climate Change	**r**	**0.045***	1			
		p-value	0.043				
3	**Community Conflict due to** Climate Change: Access to **drinking water**	**r**	0.059**	-0.028	1		
		p-value	0.004	0.215			
4	Community's Conflict due to Climate Change: Access to agricultural water	r	0.014	0.109**	0.469**	1	
		p-value	0.506	< 0.001	**< 0.001**		
5	Community Conflict due to Climate Change: Land ownership and use	r	-0.074**	0.087**	0.197**	0.394**	1
		p-**value**	**< 0.001**	**< 0.001**	**< 0.001**	**< 0.001**	
*** p < 0.001, ** p < 0.01, * p < 0.05							

4.1.9. Impact of Climate Change on Community

Figure 8., presents how Afghan communities perceive the broader impacts of climate change on their surroundings. The majority of respondents—43.50%, believe that climate change will lead to more economic problems, such as crop failure, higher food prices, and reduced job opportunities. This reflects widespread concern over the deteriorating state of agricultural livelihoods, which are the backbone of rural Afghanistan's economy. As rainfall becomes erratic and droughts intensify, food systems are increasingly stressed, making these economic fears highly grounded in lived experience.

A further 30.84% of respondents expressed that climate change would increase migration, either through displacement or the arrival of people fleeing climate impacts in other regions. This perception reinforces the finding that migration is becoming a survival strategy, not just an economic decision. Communities recognize that environmental pressure can overwhelm water, housing, and job availability, driving both inward and outward population movements.

Lastly, 25.66% of respondents expect greater conflict over land, water, or pasture due to climate change. This links environmental degradation to social instability, especially in resource-scarce areas. As productive land diminishes and water becomes less accessible, competition may intensify among farmers, pastoralists, and displaced families. This finding supports the broader climate–conflict–migration nexus explored throughout the report

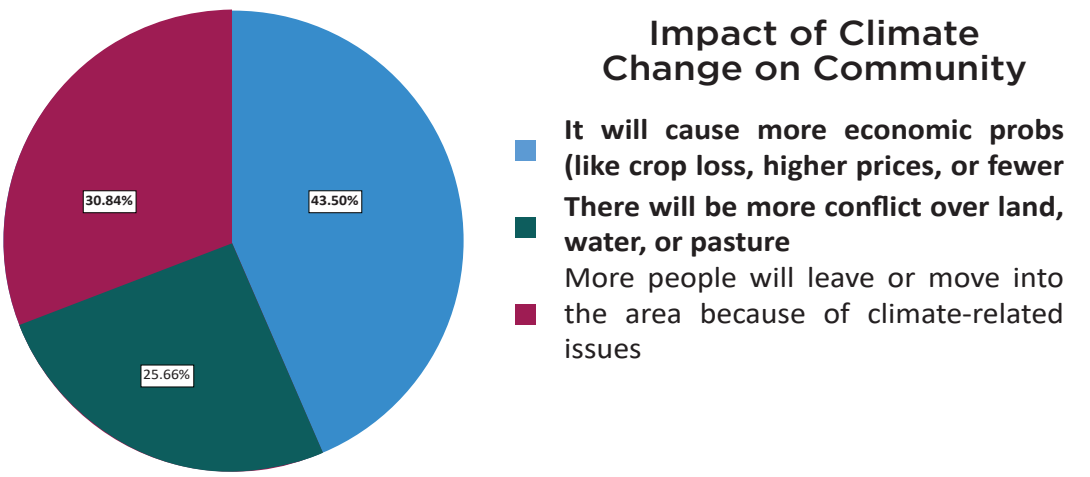
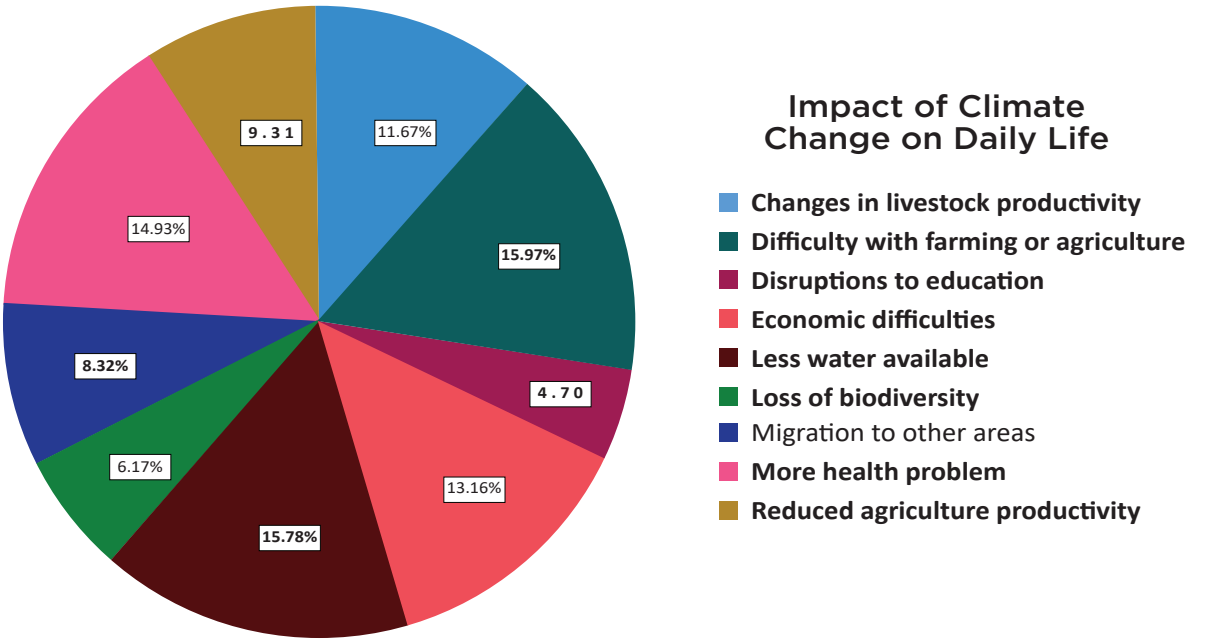


Figure 8: Impact of Climate Change on Community

4.1.10. Impact of Climate Change on Daily Life

Figure 9., represents the possible impact of climate change on daily life. The results indicated that the most frequent identified impacts of climate change on daily life included difficulty with farming or agriculture (15.97%), less water available (15.78%), more health problems (14.93%), economic difficulties (13.16%), and changes in livestock productivity (11.67%). This inferred that climate change also perceived to bring in minor impacts on daily life, including reduced agriculture productivity (9.31%), migration to other areas (8.32%), loss of biodiversity (6.17%), and disruptions to education (4.70%).



4.1.11. Conflict Types due to Climate Change

Figure 10., shows that disputes over water access are the most common climate-related conflict in Afghanistan, cited by 32.78% of respondents. This reflects widespread water scarcity due to drought and poor irrigation infrastructure. Conflicts over grazing land (21.08%) and agricultural resources (16.45%) also rank high, especially in rural areas where farming and livestock depend on shared natural resources. Disputes over rangeland access (15.76%) and land tenure (13.93%) further highlight how climate stress intensifies pressure on land ownership and usage rights. Together, these findings emphasize the urgent need for better resource governance and climate-sensitive conflict prevention

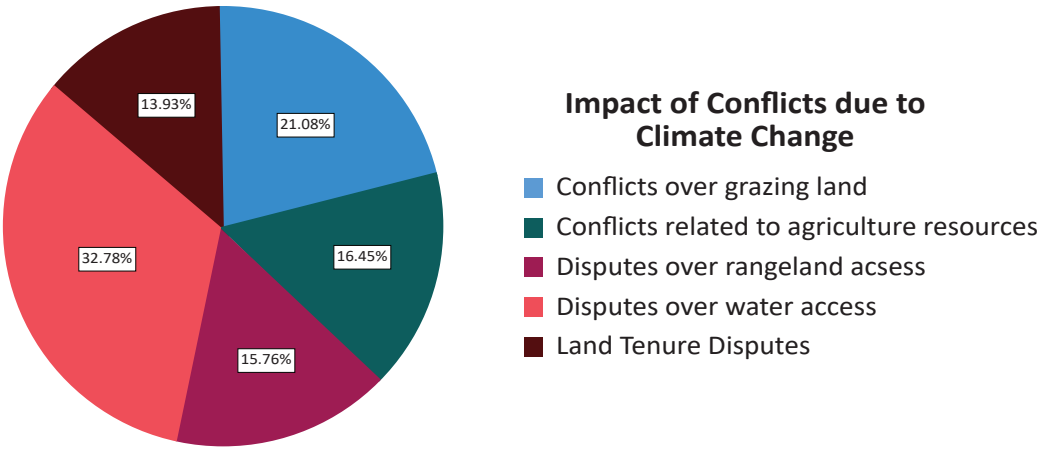


Figure 10: Types of Conflicts due to Climate Change

4.1.12. Thematic 1: Climate Perceptions (Qualitative Data)

Qualitative analysis adds detailed, context-specific insights to quantitative data on Afghan communities' climate change views, experiences, and responses. Survey data showed that 74% of respondents reported awareness of climate change, though depth of understanding varied widely across provinces. Awareness was highest in Kabul (82%) and lowest in Helmand (61%), reflecting disparities in education and media access. Women consistently reported higher adaptation awareness than men, a finding echoed in FGDs where they described the burden of securing water, food, and energy. Media played a crucial role: 44.7% of respondents in Jalalabad cited television and social media as their main sources, while rural populations relied more on radio and local leaders. Yet, awareness did not always translate into accurate knowledge—many respondents equated climate change solely with drought or seasonal shifts, reflecting limited scientific literacy. Qualitative narratives underscored that perceptions are deeply rooted in lived experiences of environmental stress, not abstract climate science. The main elements of discussion can be summarized in (Figure 11) and (Table 10) below.

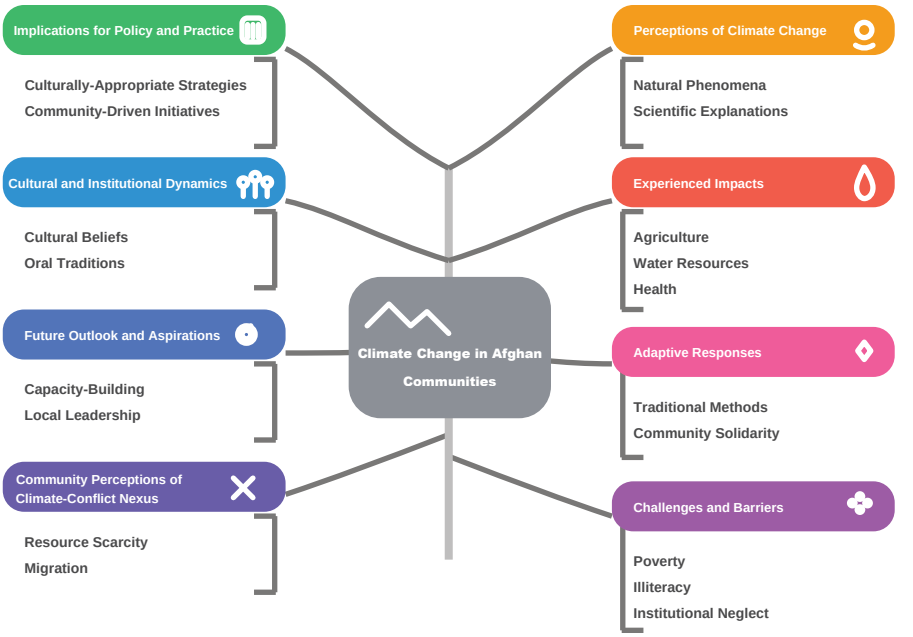


Figure 11: Summary of Perception and Responses on Climate Change in Afghan Communities.

Table 10: Key Elements

Key Elements	Details
Climate Change Perceptions and Drivers	Participants regularly see climate change as a real issue rooted in droughts, irregular rainfall, and rising temperatures. Many attribute these shifts to natural or divine causes, reflecting cultural and traditional worldviews. In rural and low-literacy areas, some community members recognize scientific explanations and human actions, although this awareness is limited. Culturally responsive education is crucial to bridging scientific knowledge and local beliefs.
Perceived and experienced effects	Communities deeply feel the effects of climate change on agriculture and water resources. Farmers blame climate change for agricultural output, soil deterioration, and water problems. These views match quantitative data but are generally presented through emotional and experiential narratives that emphasize the severity and urgency of these difficulties. Malnutrition and waterborne infections are also listed as climate change's multifaceted effects.
Adaptation and Traditional Coping	Traditional adaptive responses include rainwater harvesting, drought-resistant crop use, and alternate livelihoods. These strategies generally come from indigenous knowledge systems and are inherited. Participants relied on community solidarity and oral traditions for these practices without institutional backing. Some communities have developed novel methods, but socioeconomic constraints limit their efficacy.
Problems with Effective Adaptation	Poverty, illiteracy, infrastructure shortages, and institutional neglect hinder adaptation, according to participants. Many feel marginalized and helpless, especially in remote or mountainous locations with little government support. Though community people are typically unaware of the links between climate change, migration, and violence, natural resource disputes, exacerbated by climate-induced displacement, become important issues.

Key Elements	Details
Community Climate Conflict Nexus Views	Some responders know resource shortages can cause conflicts, but few understand the intricate relationship between climate change, migration, and societal stability. This knowledge gap encourages focused informative initiatives and community dialogues to better comprehend these interrelated issues.
Future-Plans and Goals	Most residents worry about environmental degradation yet are resilient and adaptable. They want capacity-building, technical training, and institutional participation. Many stressed local leadership and community involvement in building sustainable adaptation methods, following participatory development concepts.
Institutional and cultural dynamics	The narratives show that cultural beliefs and oral traditions shape climate perceptions and responses. Trust in community leaders, elders, and religious figures affects new ideas and practices. Understanding these cultural elements is crucial to creating effective communication and intervention programs that reflect local beliefs.
Impact on Policy and Practice	Qualitative findings show that Afghan climate adaptation measures must be culturally relevant, community-driven, and aware of local knowledge systems. Interventions should incorporate social, cultural, and institutional contexts to promote ownership and sustainability. Awareness of climate-conflict links and local capacity building can boost resilience.

4.1.13. Thematic 2: Conflict Dynamics (Land, Water and Migrations)

Most respondents, 68%, believed that climate change was leading to increased conflict risk. More than 70% of reported clashes involved water and land concerns. Farmers emphasized disagreements over irrigation access, while pastoralists highlighted increased tensions with agriculturalists due to shrinking rangeland. FGDs in regions such as Daikundi and Balkh found that extended droughts reactivated the long-standing grievances about water distribution. Migration has also emerged as a source of conflict, with 22% of respondents reporting problems between host and migrant households, mainly over jobs, land, and pasture rights. While climate change was rarely viewed as the only cause of violence, it was repeatedly cited as a "threat multiplier" that exacerbated existing inequities and weakened fragile governance frameworks.

4.1.14. Thematic 3: Adaptation and Resilience (Gendered insights and community practices)

Despite structural problems, Afghan communities have demonstrated resilience. 61% of households reported implementing some form of adaptation, which ranged from modifying planting timings to using drought-resistant seeds. Local initiatives were highlighted such as in Daykundi, FGDs detailed community-led forestry campaigns, while seed-sharing networks were mentioned in Kunduz. Women's roles were especially important with 58% of female respondents reported modifying family behaviors such as fuel consumption and water management, compared to 41% of men. However, their contributions were undervalued in formal decision-making. Youth engagement was especially noteworthy when two-thirds of respondents under 30 reported exposures to climate discourse via social media, indicating a growing possibility for youth-led initiatives. Nonetheless, many adaptive solutions remained short-term coping mechanisms, such as selling livestock or seasonal migration, demonstrating both community inventiveness and structural vulnerability.

4.1.15. Thematic 4: Migration Risks (Key tensions and Counterfactuals)

In terms of coping strategies, migration was a major response with 27.9% of households that were polled indicated that they were considering migration owing to the implications of climate change. Because of the persistent droughts and crop failures that were observed in Herat and Kunduz, the inclination to move was highest in those two regions. As a result of the FGDs, migration decisions were shown to be very conditional. Households frequently said that they would remain in the area provided water or employment opportunities were available. On the other hand, host communities have reported feeling a growing amount of strain. Thirty-one percent of respondents in high-receiving areas regarded migrants as competitors for land and jobs, which has resulted in new social struggles. The importance of local opportunities was brought to light by counterfactual narratives, such as "If water were available, we would not migrate," or "If jobs existed locally, people would stay." These findings demonstrate that migration is not a given but rather is influenced by factors such as the availability of resources, the capacity of governance, and the various possibilities for livelihood. For planning that considers potential conflicts, anticipating these dynamics is essential.

Table 11: Summary of Thematic Findings

Thematic Are	Key Statistic	Core Narrative	Policy Implication
1. Climate Perceptions	**74%** of respondents aware of climate change; women report higher adaptation awareness than men.	Awareness is shaped by daily struggles (water, food, fuel), with women demonstrating stronger recognition of adaptation needs. Media access matters: TV/social media dominate in cities; radio and local leaders in rural areas.	Expand climate education via **trusted local channels** (radio, religious/community leaders) and ensure **gender-responsive communication strategies**.
2. Conflict Dynamics (Land, Water, Migration)	**68%** link climate stress to conflict; **>70%** of reported disputes involve **water and land.**	Climate stress fuels disputes over irrigation, rangeland, and land tenure. Migration also increases tensions: **22%** noted host–migrant conflicts over resources. Climate acts as a **"threat multiplier."**	Integrate **conflict analysis** into climate programming. Prioritize **inclusive resource governance** (water-sharing, land-use agreements).
3. Adaptation & Resilience	**61%** of households reported adaptation; **58%** of women vs**. 41%** of men adjusted practices.	Local strategies include **reforestation** (Daykundi), seed-sharing (Kunduz), and water management. Women and youth are active but under-recognized in formal decision-making. Many strategies remain short-term coping.	Scale up **community-led and gender-responsive initiatives**. Support youth engagement and provide institutional backing for long-term resilience.
4. Migration Risks	**27.9%** of households considering migration due to climate impacts; **31%** in host areas see migrants as competitors.	Migration is conditional: households would stay if water and jobs were available. Host–migrant tensions add to fragility. Counterfactuals stress that migration is preventable with local opportunities.	Develop **migration-sensitive policies**: invest in local livelihoods, manage host–migrant relations, and plan for climate mobility scenarios.

5. Chapter Five

5.1. Conclusion and Recommendations

5.1.1. Conclusion

This study shows that Afghanistan is among the most vulnerable to climate change despite contributing little to global greenhouse gas emissions. Droughts, irregular rainfall, rising temperatures, and resource scarcity affect livelihoods, water security, and social stability, especially in rural and agrarian communities that depend on natural resources. Radio and face-to-face encounters are the most trusted sources of knowledge regarding climate change in Afghanistan, highlighting the importance of human experiences and traditional communication methods. In rural and low-literacy areas, scientific understanding and access to climate information are still limited by infrastructure challenges including poor media penetration and digital divide. Communication constraints impede community engagement and adaptation.

Community resilience relies on traditional coping mechanisms and creative techniques like rainwater collecting, but poverty, illiteracy, and lack of institutional backing limit their effectiveness. Although the links between migration, conflict, and environmental change among local populations are still unclear, climate-induced displacement can hamper adaptive attempts and lead to conflicts over scarce resources. Gender and youth perspectives shape adaptive responses. Women often carry greater responsibilities in managing household needs—such as water, food, and fuel—which increases their exposure to climate-related challenges. When engaged meaningfully, their participation can strengthen project outcomes and enhance household resilience. Likewise, youth represent a critical force for change and equipping them through education and climate programs is essential to building long-term community resilience.

Overall, the research recommends improving environmental education, localized communication tactics, and gender and youth perspectives in policy frameworks. Climate adaptation requires addressing institutional and budgetary restrictions, encouraging community-driven solutions, and raising awareness. Afghanistan needs a holistic, inclusive approach to build resilience that empowers vulnerable populations, bridges knowledge gaps, and matches local realities with global climate objectives. Afghanistan can only minimize some of the worst climate change impacts and achieve sustainable development in a fragile environment with extensive, context-sensitive actions see (Figure 12).

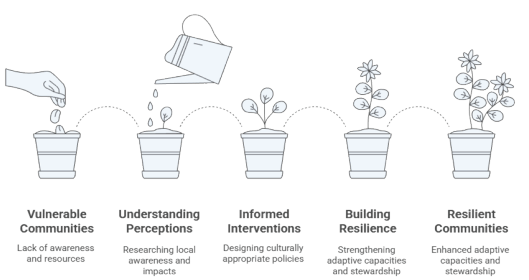


Figure 12: Climate Change Adaptation Strategy Milestones and Efforts

5.1.2. Recommendations

Based on the findings and analysis presented in the report, the following comprehensive recommendations are proposed to enhance Afghanistan's climate resilience and foster sustainable development:

Climate change poses profound risks to Afghanistan, with cascading impacts on food, water, health, and social systems. Public perception reflects strong awareness but limited adaptive capacity. To achieve resilience, adaptation strategies must integrate community perspectives, strengthen education, and build inclusive governance. This research provides evidence to inform responsive, culturally appropriate, and sustainable climate action in Afghanistan. Based on the study the recommendation can be summarized in (Figure 13.).

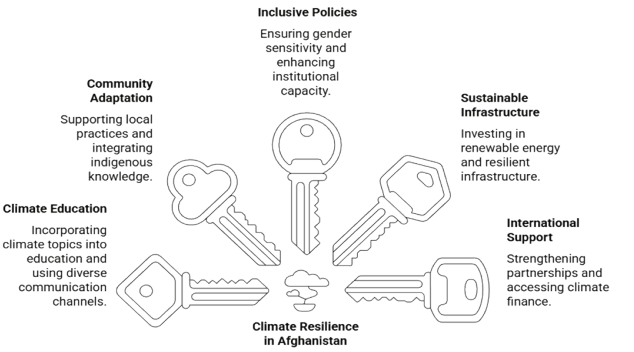


Figure 13: Enhancing Afghanistan Climate Resilience

Framing climate resilience around five enhancement points, aligned with the four thematic findings are as follows:

I. Enhance Climate Awareness and Education (linked to Thematic 1: Climate Perceptions)

✓ Expand climate literacy campaigns using trusted rural channels (radio, elders, mosques) and urban/youth platforms (TV, social media).

✓ Design gender-sensitive messaging that builds on women's higher adaptation awareness.

✓ Integrate climate change education into schools, literacy programs, and religious/community dialogues.

II. Strengthen Inclusive Resource Governance (linked to Thematic 2: Conflict Dynamics)

✓ Embed conflict sensitivity into all water and land-related interventions.

✓ Establish local conflict resolution mechanisms for disputes over irrigation canals, rangelands, and farmland.

✓ Involve youth, and marginalized groups in decision-making bodies managing natural resources.

III. Support Community-Led Adaptation and Resilience (linked to Thematic 3: Adaptation & Resilience)

✓ Scale up autonomous practices already in place: Daykundi reforestation, Kunduz seed-sharing, small-scale irrigation.

✓ Provide technical and financial support to transform short-term coping into long-term resilience

strategies.

Recognize and institutionalize women's and youth roles in adaptation planning.

IV. Anticipate and Manage Climate-Driven Migration (linked to Thematic 4: Migration Risks)

Invest in local livelihood opportunities to reduce pressure for out-migration.
Where migration occurs, implement host-migrant integration strategies to minimize tensions.
Use scenario-based planning with counterfactual insights: "If jobs and water were available locally, people would stay."

V. Build an Integrated Climate–Conflict–Migration Nexus Framework (crosscutting across all thematics)

Treat climate change as a threat multiplier, not only an environmental issue.
Mainstream the nexus lens into national climate, development, and peacebuilding strategies.
Encourage regional cooperation (on water and rangeland systems) and advocate for global climate justice frameworks to support low emitting but highly vulnerable states like Afghanistan.

Significance of the research

This research is crucial to filling a knowledge gap in Afghan communities' climate change perceptions. Afghanistan is one of the most climate-vulnerable nations, and its environmental issues are often overlooked locally. This research examines how communities perceive, feel, and respond to climate variability, which can inspire more effective and focused policy interventions. The findings also enable culturally sensitive and community-specific adaptation techniques. Understanding local beliefs, indigenous coping strategies, and socio-cultural context makes interventions more acceptable, sustainable, and effective. Long-term effectiveness requires community engagement and ownership of climate resilience programs.

The research also helps policymakers and development practitioners. It emphasizes poverty, illiteracy, and institutional weakness that inhibit adaptive responses. Knowing this, policies may be better planned to meet these difficulties, distribute resources efficiently, and enhance institutional capacities to implement climate plans. The study's findings on climate literacy gaps and misunderstandings can also inform targeted educational and awareness programs. Community climate awareness is essential for proactive action and resilience to future climate shocks.

This research also lays the groundwork for future research on climate perception dynamics, notably gender and youth perspectives, and adaption practices in varied Afghan contexts. It expands the global discourse on climate adaptation in fragile and conflict-affected settings and may apply to other vulnerable regions. Overall, this research advances academic knowledge and policymaking. It is a crucial step toward inclusive, culturally relevant, and sustainable climate resilience initiatives adapted to Afghanistan's socio-environmental landscape.

Limitations

This study sheds light on how Afghan communities view and adapt to climate change, but it has numerous limitations. Self-reported impressions and experiences may be altered by interpretation, local knowledge gaps, or social desirability bias. These replies provide context but are not objective measurements of climate impacts or adaptation outcomes. Due to transportation, cultural, and security issues, women and distant or conflict-affected people were underrepresented. The study used stratified sampling to ensure demographic and geographic diversity, but practical constraints limited participation in some places. Although rich in qualitative information, focus group discussions were molded by participant experiences and did not touch all subjects equally across sites. Finally, data collecting may not fully reflect how perceptions will change when climatic and socio-political dynamics change. Finally, resource and time restrictions may limit study, especially in integrating national or regional policy frameworks with local opinions. Despite these limitations, the study provides a solid framework for understanding Afghan community-level climate perception and suggests future research.

References

Agbleze, L. (2021). Gendered Perspective: Climate Change Adaptation Strategy in Malawi. In Social-Ecological Systems (SES). https://doi.org/10.1007/978-3-030-76247-6_6

Ahmed, S., & Fajber, E. (2010). Climate Change and Gender Justice. Practical Action Publishing. https://doi.org/10.3362/9781780440088

Akhundzadah, N. A. (2024). Analyzing Temperature, Precipitation, and River Discharge Trends in Afghanistan's Main River Basins Using Innovative Trend Analysis, Mann–Kendall, and Sen's Slope Methods. Climate, 12(12). https://doi.org/10.3390/cli12120196

Aliyar, Q. (2024). Investigating the Trends of Climate Change Parameters in Mountainous Areas of Afghanistan. European Journal of Theoretical and Applied Sciences. https://doi.org/10.59324/ejtas.2024.2(6).21

Aliyar, Q., & Esmailnejad, M. (2022). Assessment of the change of trend in precipitation over Afghanistan in 1979–2019. Időjárás. https://doi.org/10.28974/idojaras.2022.2.2

Aliyar, Q., Keshavarz, M., Salari, M. W., Haro-Monteagudo, D., Esmaelnejad, M., & Collins, N. (2024). Perceptions of and Adaptation to Climate Change in Mountainous Agro-Pastoral Communities: The Case of the Afghan Central Highlands. Climate Risk Management. https://doi.org/10.1016/j.crm.2024.100639

Andrijevic, M., Crespo Cuaresma, J., Lissner, T., Thomas, A., & Schleussner, C. (2020). Overcoming gender inequality for climate resilient development. Nature Communications, 11. https://doi.org/10.1038/s41467-020-19856-w

Asim, K., Muhammad, A., Ullah, S., Rahmati, J., & Ghaforzai, A. (2024). The Impacts of Climate Change on Rural Areas of Afghanistan: A Comprehensive Review. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.222

Azizi, M. I., Xu, B., Kamara, M., & Rahmani, B. (2024). Impacts of Climate Change in Afghanistan and an Overview of Sustainable Development Efforts. European Journal of Theoretical and Applied Sciences. https://doi.org/10.59324/ejtas.2024.2(4).42

Baidar, K., Ihsan, I., Zahid, S., & Nabavi, S. A. (2024). Climate Change and Its Impact on Water Resource and Ground Water in Afghanistan. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.235

Bawari, N., Khan, Z., Wadeer, S., Niazi, M. J., Nazar, N. M., & Aftab, S. U. (2024). Chemical Perspectives on the Impact of Climate Change in Afghanistan: A Comprehensive Review. Turkish Journal of Computer and Mathematics Education (TURCOMAT). https://doi.org/10.61841/turcomat.v15i2.14650

Darwishean, S. E., Rahil, M. Y., & Ehsas, M. S. (2024). Exploring Climate Change Communication in Afghanistan on the X Platform over the Last Six Months of 2024. Sprin Journal of Arts, Humanities and Social Sciences. https://doi.org/10.55559/sjahss.v3i7.374

Devonald, M., Jones, N., Gebru, A. I., & Yadete, W. (2022). Rethinking climate change through a gender and adolescent lens in Ethiopia. Climate and Development, 16, 176–186. https://doi.org/10.1080/17565529.2022.2032568

Ghulami, M. (2017). Assessment of Climate Change Impacts on Water Resources and Agriculture in Data-Scarce Kabul Basin, Afghanistan.

Ghulami, M., Gourbesville, P., & Audra, P. (2020). Assessing Future Water Availability Under a Changing Climate in Kabul Basin. In Lecture Notes in Civil Engineering (pp. 647–657). Springer. https://doi.org/10.1007/978-981-15-5436-0_50

Hakimi, H., Safi, M. A. H., & Momand, I. (2024). Public Awareness, and its Impacts on Climate Change. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.244

Hamdard, M. N., Atif, A. N., Mansoor, Z. G., & Zia, A. (2024). Assessment of Climate Change Impacts on Wild Animals in Afghanistan. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.306

Hasin, M., & Ejaz, M. (2025). Evaluating the Effectiveness and Challenges of Climate Change Policies in Afghanistan. Environmental Quality Management. https://doi.org/10.1002/tqem.70086

Hayat, E., & Tayfur, G. (2023). Meteorological drought and trend effects on transboundary river basins in Afghanistan. Theoretical and Applied Climatology, 154, 1253–1275. https://doi.org/10.1007/s00704-023-04602-1

Hosseini, S. A. (2024). At the Crossroads of Physics and Climate: A Comprehensive Review of Climate Change in Afghanistan. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.280

Islam, Z., Kokash, D., Babar, M., Uday, U., Hasan, M. M., Rackimuthu, S., Essar, M. Y., & Nemat, A. (2021). Food security, conflict, and COVID-19: Perspective from Afghanistan. The American Journal of Tropical Medicine and Hygiene, 106, 21–24. https://doi.org/10.4269/ajtmh.21-1058

Jawid, A. (2021). Farmers' perception of climate change, its impact, and the risk of extreme weather events: Evidence from the Central Highlands of Afghanistan. SSRN. https://doi.org/10.2139/ssrn.3896258

Jawid, A., & Khadjavi, M. (2018). Evaluating the Impacts of a UNEP Climate Change Adaptation Project by Propensity Score Methods: Evidence from the Central Highlands of Afghanistan.

Jones, L., Ludi, E., & Levine, S. (2014). Evaluating community-based adaptation and resilience initiatives in Nepal and Ethiopia. Climate Risk Management. https://doi.org/10.1016/j.crm.2014.06.001

Koshani, B., & Hamdam, K. H. (2024). Climate smart agriculture opportunities and challenges in Afghanistan. Journal of Natural Science Review, 2(Special, 451–464. https://doi.org/10.62810/jnsr.v2iSpecial.Issue.144

Krejcie, R., V.Morgan, & W., D. (1970). "Determining sample Size for Research Activities", Educational and Psychological Measurement (1970). International Journal of Employment Studies, 18(1), 89–123.

Kwauk, C. T., & Wyss, N. (2022). Gender equality and climate justice programming for youth in low- and middle-income countries. Environmental Education Research, 29, 1573–1596. https://doi.org/10.1080/13504622.2022.2123894

Lane, R., & McNaught, R. (2009). Building gendered approaches to adaptation in the Pacific. Gender & Development, 17, 67–80. https://doi.org/10.1080/13552070802696920

Leduc, B. (2010). Climate Change and Gender Justice. Climate and Development, 2, 390–392. https://doi.org/10.3763/CDEV.2010.0054

Lee, T. M., Markowitz, E. M., Howe, P. D., Ko, C.-Y., & Leiserowitz, A. A. (2015). Predictors of public climate change awareness and risk perception around the world. Nature Climate Change, 5(11), 1014–1020. https://doi.org/10.1038/nclimate2728

References

Mehrad, A. T. (2020). Assessment of climate change impacts on environmental sustainability in Afghanistan. E3S Web of Conferences, 208. https://doi.org/10.1051/e3sconf/202020801001

Mihran, R. (2011). Rural Community Vulnerability to Food Security Impacts of Climate Change in Afghanistan Evidence from Balkh , Herat , and Nangarhar Provinces.

Mujtaba, R., Zainullah, H., & Mustafa, M. (2022). Analysis of Air Temperature and Precipitation Trends in Kandahar city, Afghanistan from 1990–2019. Kardan Journal of Engineering and Technology. https://doi.org/10.31841/kjet.2022.24

Nasimi, M., Sagin, J., & Wijesekera, N. (2020). Climate and Water Resources Variation in Afghanistan and the Need for Urgent Adaptation Measures. International Journal of Food Science and Agriculture. https://doi.org/10.26855/er.2020.02.009

Nasrin Faqiri, and A. F. F. (2024). A Study of Greenhouse Gas Emissions in Afghanistan. International Journal of Emerging Science and Engineering, 12(5). https://doi.org/https://doi.org/10.35940/ijese.e2568.12050424

Nusche, D., Rabella, M. F., & Lauterbach, S. (n.d.). Rethinking education in the context of climate change : Leverage points for transformative change. 307.

OlawoyeJanice, E. (2010). Gender Issues in Adaptation to Climate Change. Nigerian Journal of Rural Sociology, 10.

Omerkhil, N., Kumar, P., Mallick, M., Meru, L. B., Chand, T., Rawat, P. S., & Pandey, R. (2020). Micro-level adaptation strategies by smallholders to adapt climate change in the least developed countries (LDCs): Insights from Afghanistan. Ecological Indicators, 118. https://doi.org/10.1016/j.ecolind.2020.106781

Pal, I., Joseph, J., Editors, A., Sukwanchai, K., & Das, B. (2023). Multi-hazard Resilience of higher educaional institutions in Asia pacific.

Priatna, D., & Khan, S. M. (2024). The importance of education and role of educational institutions in climate change mitigation and achieving UN SDG 13 " Climate Action ." August. https://doi.org/10.33751/injast.v5i1.10559

Quraishi, R. (2021). Impact of climate change on food security in Afghanistan. Addaiyan Journal of Arts, Humanities and Social Sciences, 3(8), Article 2. https://doi.org/10.36099/ajahss.3.8.2

Raoufi, H., Jafari, H., Sarhadi, W. A., & Salehi, E. (2024). Assessing the impact of climate change on agricultural production in central Afghanistan. Regional Sustainability, 5(3).

Raoufi, H., Jafari, H., Sarhadi, W. A., & Salehi, E. (2024). Assessing the impact of climate change on agricultural production in central Afghanistan. Regional Sustainability, 5(3). https://doi.org/10.1016/j.regsus.2024.100156

Rehana, S., Reddy, P. K., Reddy, L. N., Daud, A., Saboory, S., Khaksari, S., Tomer, S., & Sowjanya, U. (2021). Observed Spatio-Temporal Trends of Precipitation and Temperature Over Afghanistan. In Water Resources Management and Sustainability (pp. 377–392). Springer. https://doi.org/10.1007/978-3-030-64202-0_33

Sadat, S. A., Shinwari, A. S., & Jabarkhil, K. (2024). Exploring the Most Effective Mass Media Tools for Creating Awareness of Climate Change: A Study. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.247

Saeed, A., Saeedi, S. S., & Malal, H. (2024). Climate Change News: Assessing the Awareness of Farmers in Nangarhar Province, Afghanistan. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.249

Safi, L., Mujeeb, M., Sahak, K., Mushwani, H., & Hashmi, S. K. (2024). Climate change impacts and threats on basic livelihood resources, food security and social stability in Afghanistan. GeoJournal, 89(2), 1–18. https://doi.org/10.1007/s10708-024-11077-8

Sayedi, S. A., Mohammadi, N., Fazli, E., & Baray, S. M. (2024). A Review on Coping Strategies to Current Climate Change Effects on Agricultural Sector of Afghanistan. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.167

Shokory, J. A. N., Schaefli, B., & Lane, S. (2023). Water Resources of Afghanistan and Related Hazards Under Rapid Climate Warming: A Review. Hydrological Sciences Journal, 68, 507–525. https://doi.org/10.1080/02626667.2022.2159411

Stanikzai, I. U., Hamdard, W., Sereet, A. H., & Aryan, F. (2024). Addressing the causes and effects of climate change in Afghanistan: Mitigation strategies and solutions for a sustainable future. International Journal of Environment, Engineering and Education, 6(2), 84–95. https://doi.org/10.55151/ijeedu.v6i2.129

Straughn, J. B. (2015). Contemporary Sociology : A Journal of Reviews (Issue September). https://doi.org/10.1177/0094306112438190g

Terry, G. (2009a). Climate Change and Gender Justice. Practical Action Publishing. https://doi.org/10.3362/9781780440088

Terry, G. (2009b). No climate justice without gender justice: an overview of the issues. Gender & Development, 17, 15–18. https://doi.org/10.1080/13552070802696839

Tessema, Y. A., Aweke, C. S., & Endris, G. S. (2019). Enhancing Resilience to Climate-Induced Shocks Through Indigenous and Integrated Knowledge in Ethiopia. Climate Risk Management. https://doi.org/10.1016/j.crm.2019.100215

van Valkengoed, A. M., & Steg, L. (2019). Meta-analyses of factors motivating climate change adaptation behaviour. Nature Climate Change, 9(2), 158–163. https://doi.org/10.1038/s41558-018-0371-y

Wafa, S. (2024). The Impacts of Climate Change on Agriculture in Afghanistan: A Review. Journal of Natural Science Review. https://doi.org/10.62810/jnsr.v2ispecial.issue.133

Weijer, F. de. (2007). Pastoralism and Conflict in Afghanistan. https://doi.org/10.2139/ssrn.987169

Yar, F. G. M., & Sail, E. U. (2024). The impact of climate change on food security and adaptation strategies in rural areas of Afghanistan. Eduvest - Journal of Universal Studies, 4(11). https://doi.org/10.59188/eduvest.v4i11.44724

Yar, F. G. M., & Zarghani, S. H. (2024). Investigating the consequences of climate change and its impact on Afghanistan's security. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.276

Yolchi, J., & Wang, H. (2025). The impact of climate change on household dietary diversity score (HDDS) in Afghanistan. Climate Risk Management, 40, 100687. https://doi.org/10.1016/j.crm.2025.100687

Zia, M. N., Mohammadi, K. A., & Zia, A. (2024). Climate Change Awareness among Young Mass Media Users; Jalalabad, Afghanistan. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.248

Zirman, M., & Rahimi, F. (2024). The warming conflict: Climate change and its impacts on Afghanistan's ongoing conflicts. Nangarhar University International Journal of Biosciences. https://doi.org/10.70436/nuijb.v3i02.239

Appendices

Appendix A: Provincial Level Sample Size

No	Province (Region)	Total Provincial Population	Total Sample Size
1	Kabul (Central)	5,766,181	288
2	Nangarhar (Eastern)	1,805,087	259
3	Kunduz & Badakhshan (Northeast)	2,319,396	438
4	Balkh (North)	**1,525,690**	**269**
5	**Daikundi (Central Highlands)**	**543,961**	**193**
6	**Ghazni (Southeast)**	**1,436,361**	**202**
7	**Kandahar & Helmand (South)**	**3,023,854**	**482**
8	**Herat (West)**	2,283,146	282
Total		**18,703,676**	**2,413**

Appendix B: District Level Sample Size

Province (Region)	District	District Population	Sample Size
Kabul (Central)	Kabul city	5,140,606	176
	Khaki Jabar	17,366	48
	Shakar Dara	99,639	61
Nangarhar (Eastern)	Jalalabad city	308,789	117
	Rodat	83,697	64
	Surkh Rod	145,900	76
Kunduz & Badakhshan (Northeast)	Kunduz city	403,816	96
	Dashti Archi	102,857	76
	Char Dara	88,963	70
	Fayzabad city	83,750	65
	Kishim	97,931	74
	Baharak	34,874	55
Balkh (North)	Mazar city	550,291	118
	Balkh	146,318	86
	Dawlat Abad	82,322	64
Daikundi (Central Highlands)	Nili city	45,889	58
	Shahrestan	86,504	64
	Mir Amur	92,163	70
Ghazni (Southeast)	Ghazni city	201,978	84
	Khogyani (W. Shaheed)	24,341	47
	Nawar	114,585	70
Kandahar & Helmand (South)	Kandahar city	711,470	120
	Daman	41,991	56
	Arghandab	75,014	69
	Lashkar Gah	187,573	99
	Nahr-i-Sarraj	24,587	54
	Nad Ali	184,934	82

Herat (West)	Herat city	652,268	118
	Anjeel	296,213	88
	Guzara	177,785	75
Total		**10,304,414**	2413

Appendix C: Focused Group Discussion (FGDs)

No	Province (Region)	No. of FGDs
1	Kabul (Central)	3
2	Nangarhar (Eastern)	2
3	Kunduz & Badakhshan (Northeast)	2
4	Balkh (North)	1
5	Daikundi (Central Highlands)	1
6	Ghazni (Southeast)	1
7	Kandahar & Helmand (South)	2
8	Herat (West)	1
	Total	**13**

Appendix D: Questionnaire

Public Perception of Climate Change in Afghanistan

Introduction

This survey aims to understand how people in Afghanistan perceive climate change, its impacts on their lives, and its association with community conflicts. Your responses will contribute valuable insights to this research.

Part 1: Demographic Information

1. Age:

- Under 18 [ ]
- 18-24 [ ]
- 25-34 [ ]
- 35-44 [ ]
- 45-54 [ ]
- 55-64 [ ]
- 65 and above [ ]

2. Gender:

- Male [ ]
- Female [ ]

3. Education Level:

- No formal education
- Primary education
- Secondary education
- High school (Grades 10–12)
- Vocational/technical training (post-secondary, non-university)
- Completed bachelor's degree
- Completed master's degree or higher
- Madrasa only (basic religious education without formal academic curriculum)
- Darul Hufaz (Qur'an memorization school)
- Darul Uloom / Darolom

4. Occupation:

- Farmer [ ]
- Business owner [ ]
- Laborer [ ]
- Government employee [ ]
- Student [ ]
- Unemployed [ ]
- Other (please specify) [ ]

5. Residence:

- Rural area [ ]
- Urban area [ ]
- Semi-urban area [ ]

6. Province:

- Kabul
- Kandahar
- Herat
- Balkh
- Nangarhar
- Daikundi
- Badakhshan
- Kunduz
- Helmand
- Ghazni

7. District:

- _____ (please specify)

Part 2: Awareness and Understanding of Climate Change

8. Have you heard of climate change?

- Yes [ ]
- No [ ]

9. How would you describe your knowledge of climate change? How well do you understand what climate change is?

1. I do not understand it at all
2. I understand it a little
3. I understand it somewhat
4. I understand it well

10. Where did you learn about climate change?) (How do you get information about climate change?) (Select all that apply

1. Television
2. Radio
3. Newspapers
4. Facebook
5. X (formerly Twitter)
6. Other social media platforms
7. School or university
8. Madras and Islamic centers e.g., Mosque
9. Community meetings
10. Friends and family
11. Other religious leaders
12. Government sources or announcements
13. Other (please specify)

Part 3: Perceived Impacts of Climate Change

11. Do you think climate change is affecting Afghanistan?

- Yes
- No
- Unsure

12. What's specific effects of climate change have you observed in your area? Which climate-related changes have you noticed in the last year **in your village or district/city/town??** (Select all that apply)

- Higher temperatures [ ]
- More frequent droughts [ ]
- More frequent flooding [ ]
- Changes in crop yields [ ]
- Water shortages [ ]
- Changes in local wildlife [ ]
- Pollution [ ]
- Rainfall [ ]
- Flash flood [ ]
- Dust storm [ ]
- Landslides [ ]
- Glacier melt [ ]
- Land Degradation [ ]
- Dentification [ ]
- Other (please specify) [ ]

13. How have these climate changes affected your daily life? (Select all that apply)

- Difficulty with farming or agriculture
- Changes in livestock productivity
- More health problems
- Less water available
- Economic difficulties (e.g., loss of income)
- Disruptions to education (e.g., school closures due to extreme weather)
- Migration to other areas
- Loss of biodiversity
- Reduced in agricultural productivity
- Other (please specify)

14. What is your biggest concern regarding climate change? What worries you the most about climate change?
(You can select more options)

- Impact on my livelihood (e.g., loss of crops, income)
- Increased extreme weather events (e.g., droughts, floods)
- Threats to my family's health
- Water shortages
- Deforestation
- loss of wildlife
- Risk of displacement or forced migration
- Uncertainty about the future
- Other (please specify)
-

Part 4: Climate Adaptation:

15. How well do you understand the idea of adapting to climate change in your village district/city/ or town?

1. Not at all – I have never heard of this idea
2. A little – I have heard of it, but don't really understand
3. Somewhat – I understand a little, but can't explain it
4. Well – I understand it and can give some examples
5. Very well – I understand it clearly and follow related efforts

16. Has your household or community done anything to deal with the effects of changing weather or climate?

1. Yes – we have taken several actions
2. Yes – we have taken a few actions
3. Not yet – but we are planning to take action
4. No – we have not taken any action
5. I don't know

Part 5: Climate Change and Conflict

17. Have local conflicts in your community, such as disputes over land or water, increased due to climate change?

- Yes [ ]
- No [ ]

- **18. What specific types of conflicts have increased due to climate change in your community? (Select all that apply)** [ ]
  - Disputes over water access [ ]
  - Conflicts over grazing land [ ]
  - Land tenure disputes
  - Disputes over rangeland access [ ]
  - Conflicts related to agricultural resources [ ]
  - Other (please specify) [ ]
- **19. To what extent do you believe climate change has intensified competition over natural resources in your area?**
- o Not at all [ ]
- o Slightly [ ]
- o Moderately [ ]
- o Significantly [ ]
- **20. How often do conflicts in your community escalate due to climate change's impact on resources?**
  - o Never [ ]
  - o Rarely [ ]
  - o Sometimes [ ]
  - o Often [ ]
  - o Always [ ]
- **21. Have you noticed an increase in disputes over the following resources due to climate change?**
- Rate from 1 (Not at all) to 10 (Significant increase):
  - Access to drinking water: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10
  - Access to agricultural water: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10
  - Land ownership and use: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10
- **22. How does water scarcity, linked to climate change, contribute to local conflicts in your area?**
- o Not at all [ ]
- o Slightly [ ]
- o Moderately [ ]
- o Significantly [ ]
- **Part 6: Educational Needs**
- **23. What type of climate change education would be most beneficial? In your opinion, what kinds of education or information about climate change would be most helpful for your village district/city/ or town?**
- (Select all that apply)
  - Workshops and hands-on training for farmers, herders, and laborers (e.g., water-saving techniques, drought-resistant crops)
  - School-based climate education for children and youth
  - Community outreach programs (e.g., village meetings, mosque-based talks, NGO-led sessions)
  - Media awareness campaigns through radio, TV, social media, and loudspeakers
  - Religious and cultural messaging that connects climate care to Islamic values
  - Special training for local leaders, elders, teachers, and decision-makers
  - Mobile education units or traveling trainers for remote areas
  - Printed materials like brochures, posters, or booklets in Dari, Pashto, or local languages
  - Information delivered through mobile phones or simple mobile apps
  - Other (please specify):_____

24. What should be the main focus of climate change education? In your opinion, what should be the main focus areas of climate change education in your village or district/city/town? (Select all that apply)

- What climate change is and how it works
- How climate change is affecting us (like droughts, floods, or rising prices)
- How to protect ourselves and our land from climate problems
- Teaching children to care for nature
- How to reduce damage to the environment (like saving water or planting trees)
- How to reduce pollution (like keeping air and water clean, managing waste)
- Solving problems between people over water, land, or pasture
- Working together as a community to deal with climate issues
- Learning what help is available from the government or aid groups
- Other (please specify): _____

Part 7: Future Outlook

25. How do you think climate change will impact your community in the next year? In the next one year, how do you think climate change will affect your village or district/city/town? (Select all that apply)

- It will cause more economic problems (like crop loss, higher prices, or fewer jobs)
- More people will leave or move into the area because of climate-related issues
- There will be more conflict over land, water, or pasture
- There will be no major changes caused by climate change
- Other (please specify): _____

26. Do you believe climate change will affect migration patterns in Afghanistan in the next year?

- Yes, significantly
- Yes, somewhat
- No
- Undecided

27. If you would like to be contacted regarding this survey, please provide your contact information.