



Joining forces against the impact of climate change in Afghanistan

NAC Climate Symposium
Kabul/Oslo 21-23 April, 2024

The Norwegian Afghanistan Committee

Founded in 1980, the Norwegian Afghanistan Committee (NAC) is a member-based solidarity organization with activities in Norway and Afghanistan and an elected Board and Secretariat based in Norway.

The purpose of the organization is to work together with the Afghan people to: contribute to the development of an independent, peaceful, and democratic Afghanistan; promote knowledge about Afghanistan in Norway; and promote friendship between the Norwegian and Afghan people.

Our Vision

NAC shall contribute to a peaceful Afghanistan, free from poverty, where rural communities are empowered and resilient, valuing equality and diversity.

Our Mission

NAC shall support the Afghan people in the development of a peaceful, just, and egalitarian society where universal human rights are respected. NAC shall be a nexus for knowledge of, interest in, and engagement with Afghanistan in Norway, promoting Afghan voices and perspectives in Norwegian public debate and advocating for informed and responsible policies towards Afghanistan.

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Table of Content

4	Executive summary
6	Main recommendations
	FOREWORD
9	Living with climate change
	INTRODUCTION
11	Joining forces
	GRASSROOTS PERSPECTIVES
14	Voices of the affected
	RESEARCH PRESENTATIONS
18	The economic consequences of climate change
22	Displacement, environmental degradation, and livelihood crises
21	The impacts of climate change on water availability
25	Sustainable water management
30	The drivers of food insecurity in Afghanistan: Insights and implications
	NGO AND DONOR PERSPECTIVES
32	Opportunities, challenges, and international cooperation
	GOVERNMENT PERSPECTIVES
38	Afghanistan's approach to climate change: Challenges and strategies
41	Findings and main recommendations

Executive Summary

The Norwegian Afghanistan Committee (NAC), in collaboration with Chr. Michelsen Institute (CMI) and the Afghanistan National Environmental Protection Agency (NEPA), organized a three-day climate dialogue and symposium on the consequences of climate change in Afghanistan. This event brought together a diverse group of stakeholders, including Afghan citizens, government officials, academics, UN agencies, donors, NGOs, and grassroots civil society members, to discuss current research and explore the impacts of climate change on the country.

Afghanistan stands at the forefront of the global climate crisis, facing severe impacts despite contributing minimally to worldwide emissions. As a landlocked nation with a complex topography, Afghanistan's vulnerability to climate change is particularly acute, ranking among the most affected countries globally. The country experiences extreme natural disaster events, including droughts, storms, floods, landslides, avalanches, and earthquakes, which have become more frequent and severe. These events are disrupting lives and livelihoods of millions across the country.

Temperature rises in Afghanistan outpace global averages, causing significant shifts in seasonal patterns. Springs and winters are arriving later, altering age-old agricultural rhythms. Precipitation patterns are changing dramatically, affecting soil moisture in the eastern regions and impacting glaciers and snowbanks in the north. These changes have far-reaching consequences on access to water, agricultural productivity, and food security.

Water scarcity and prolonged drought have become pressing concerns, leading to decreased agricultural yields and forcing many to abandon their homes. The country's rangelands are under severe stress. Flash flooding events cause significant damage to infrastructure and devastate rural communities. The melting of glaciers presents a double-edged sword, temporarily increasing water flow in some areas while raising the risk of catastrophic glacial lake outburst floods.

In urban areas, particularly Kabul and Ghazni provinces, substantial land subsidence due to groundwater depletion has been observed. This poses a significant threat to infrastructure and further complicates water management issues and raises conflict on water and distribution. The cascading effects of climate change touch every sector of Afghan society.

The health sector is also not immune to these changes. An increase in water-borne and vector-borne diseases, as well as respiratory issues have been reported. Heat-related illnesses are on the rise, and food insecurity is leading to increased rates of malnutrition. The mental health toll of displacement and livelihood loss compounds health challenges faced by the population.

The impacts of climate change in Afghanistan are not gender-neutral. Women and girls are disproportionately affected, exacerbating existing gender inequalities. In rural areas, climate-induced changes in crop yields and water availability significantly increase their workload and economic vulnerability. During climate-related disasters, women and girls face heightened vulnerabilities, including increased risks of gender-based violence.

Research presentations at the symposium highlighted several critical issues. Projections indicate a significant decrease in mean annual streamflow in the Kabul River Basin, underscoring the need



for adaptive water management strategies. Food insecurity and undernourishment were found to be increasing, with poverty identified as a major driver. The economic consequences of climate change are severe, with floods affecting annually about 100,000 people and resulting in losses of \$54 million USD, while droughts incur an average annual economic impact of about \$280 million USD.

The symposium also presented that climate change is driving significant socioeconomic changes. Rural-to-urban displacement and migration due to conflict and drought have led to unplanned urbanization and associated risks. Many people abandon traditional agricultural practices for urban-based jobs in construction, services, and the business sector. Due to limited work opportunities in those sectors poverty is increasingly taking hold in the cities. Urban households are now worse off in terms of food consumption than rural households.

While the challenges are significant, the symposium also identified potential opportunities. Traditional knowledge and practices can contribute to climate resilience, offering locally appropriate solutions. However, Afghanistan also has the potential to adopt clean technologies and sustainable development pathways, leveraging its rich renewable energy resources.

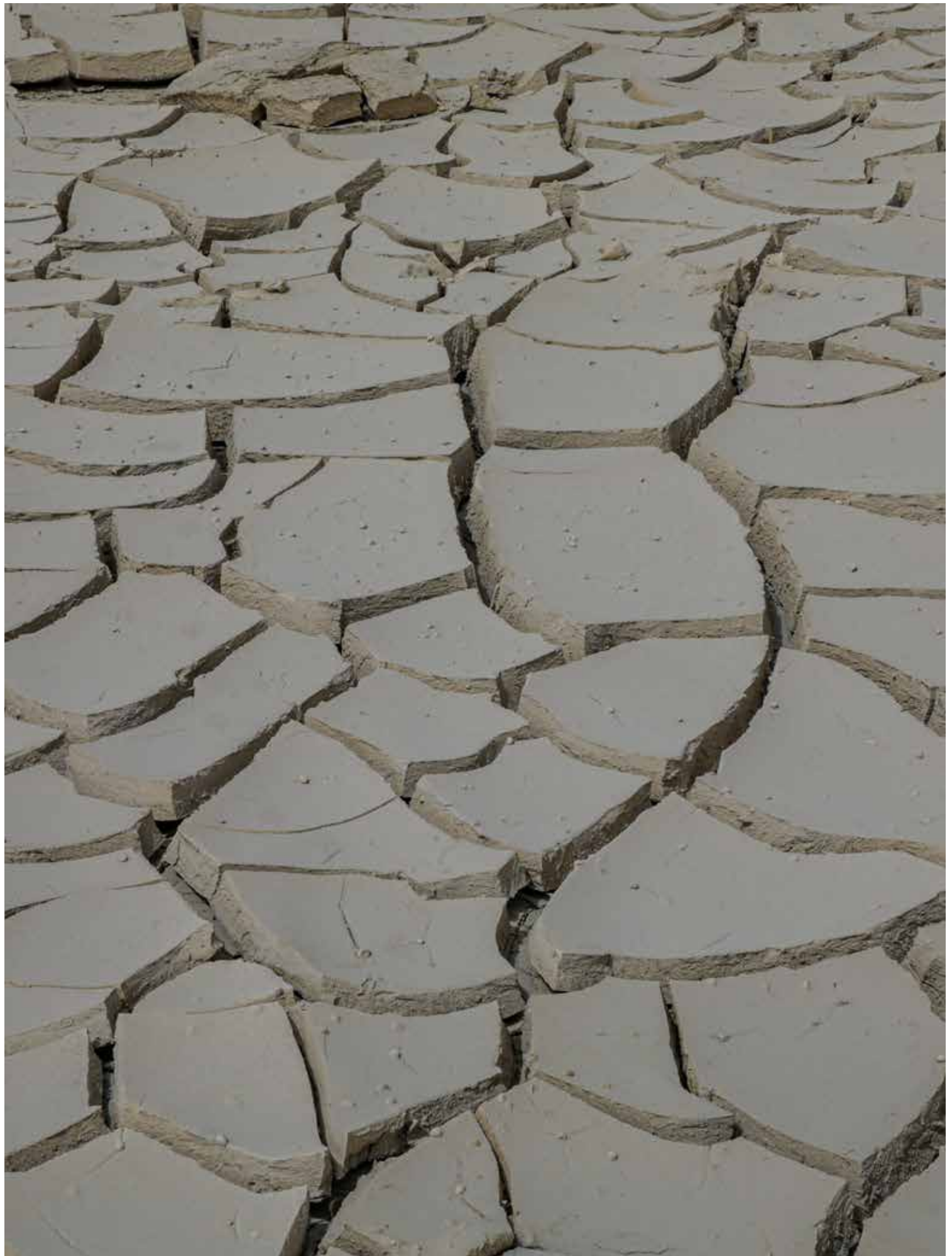
However, realizing these opportunities requires overcoming substantial hurdles. Limited financial resources and technical capacity, political instability, high dependence on climate-sensitive sectors, and difficulty accessing international climate finance mechanisms all pose significant challenges. Low levels of public awareness and the pressing need to address immediate humanitarian concerns often overshadow long-term climate strategies.

Farmers, scholars, civil society representatives, donors and diplomats spent three days discussing the various consequences of climate change in Afghanistan and how to respond to them.

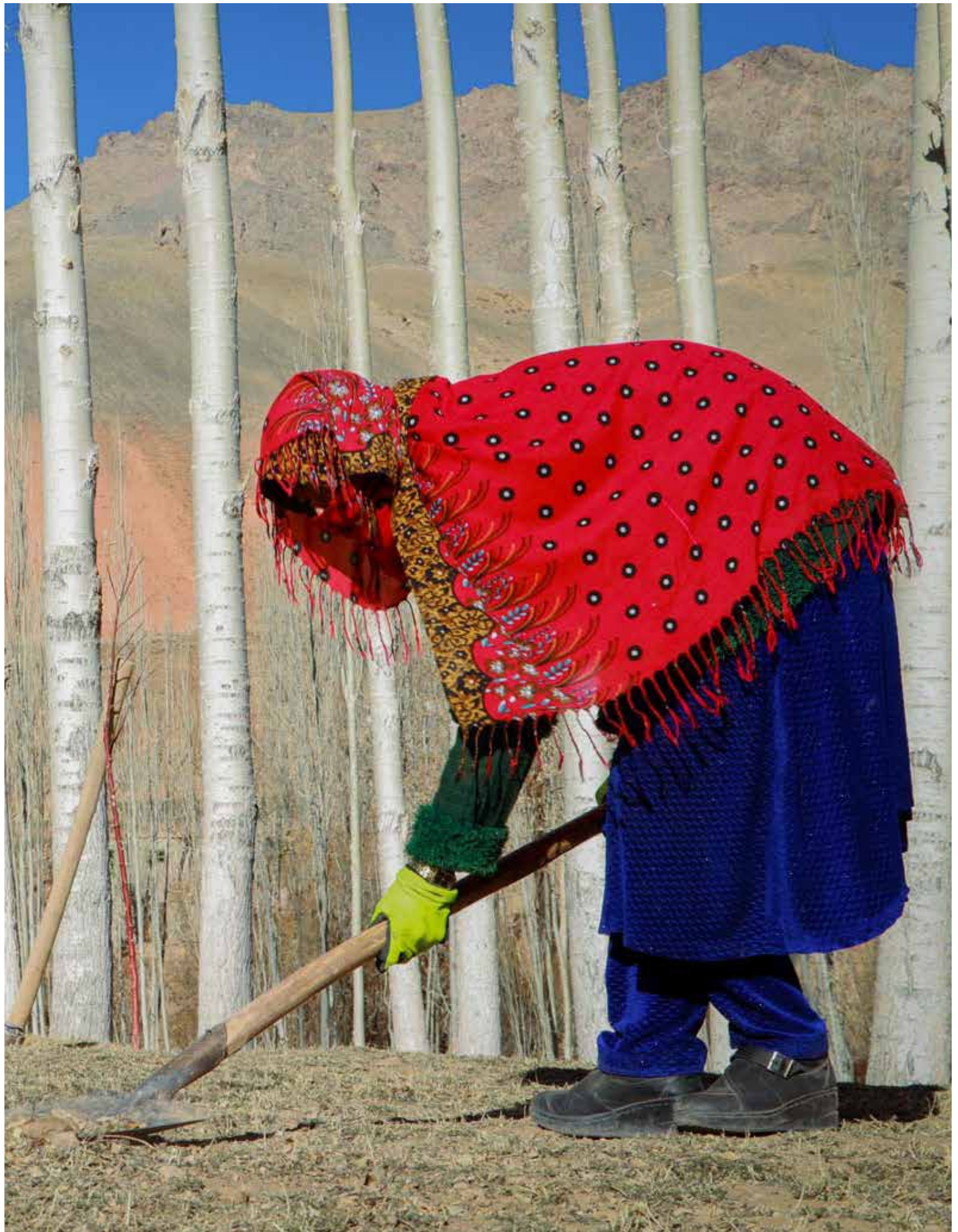
The path forward for Afghanistan in addressing climate change is complex but crucial. It requires a delicate balance between meeting immediate needs and investing in long-term resilience. The global nature of the climate crisis demands collective action, and international support and cooperation will be crucial in helping Afghanistan navigate the challenges ahead. As the country works to build its resilience and contribute to global climate goals, it offers a powerful reminder of the urgency of climate action and the interconnectedness of our shared environment.

Main recommendations

1. Increase investments in long-term solutions and comprehensive development efforts, including reforestation to protect slopes, conserve soil, protect riverbanks to reduce erosion and loss of arable land – Complex problems require systematic, comprehensive, knowledge-based, and sustainable interventions
2. Increase cooperation between academia, governance structures, and farmers to promote practical and applicable knowledge-based solutions, including action research and other participatory research approaches and development of school curricula on climate change to inform, mobilize, and empower children and youth
3. Develop comprehensive policies on NRM, environmental protection, and effective systems for climate change adaptation and mitigation
4. Increase invest in protective and productive infrastructure, including comprehensive water-shed management systems – Ensure sustainability through establishment and support for grassroots NRM and DRR committees
5. Invest in post-harvest infrastructure to increase income for farmers, reduce food insecurity levels, and reduce food waste
6. Train farmers in climate smart agriculture, including drip-irrigation and other water saving technologies – Ensure that new and innovative approaches are anchored in Universities and Agriculture TVET Schools = Institutionalize innovation
7. Introduce drought resistant crops to increase yields while reducing water consumption and work towards changing food habits (e.g., increase pulse, soy, and other plant-based protein sources) and reduce the reliance on wheat
8. Explore funding options through educational institution, NGOs, international bodies, or private organizations to conduct scientific research to understand the problems and propose practical, affordable, and sustainable solutions



Consecutive droughts are a major threat to livelihoods and food security of ordinary Afghans. Effective water management is of the essence.



As livelihood opportunities are decreasing, Afghans rely increasingly on agriculture to put food on the table. At the same time, agriculture is becoming less productive with the impacts of climate change.

FORWORD

Living with climate change



Arne Strand
Senior Researcher,
Chr. Michelsen Institute

Citizens of Afghanistan are acutely aware of how climate change is impacting their community lives. The climate consultation, involving an equal number of male and female participants, demonstrates a unified understanding of the challenges Afghans are confronted with.

Communities report that they increasingly experience droughts, scarcity of water, higher temperature, hot and cold waves and untimely rain and snow. These factors not only affect agriculture, food security and livelihoods, but also their health situation and access to education. Afghans are looking for knowledge on how to mitigate the severe effects they already are facing, but also to be better prepared for the future. From the dialogue it is clear that a holistic approach is needed, and that a range of factors should be taken into consideration. Among these are human displacement, urbanization and shifting socio-economic factors influencing on people's livelihoods.

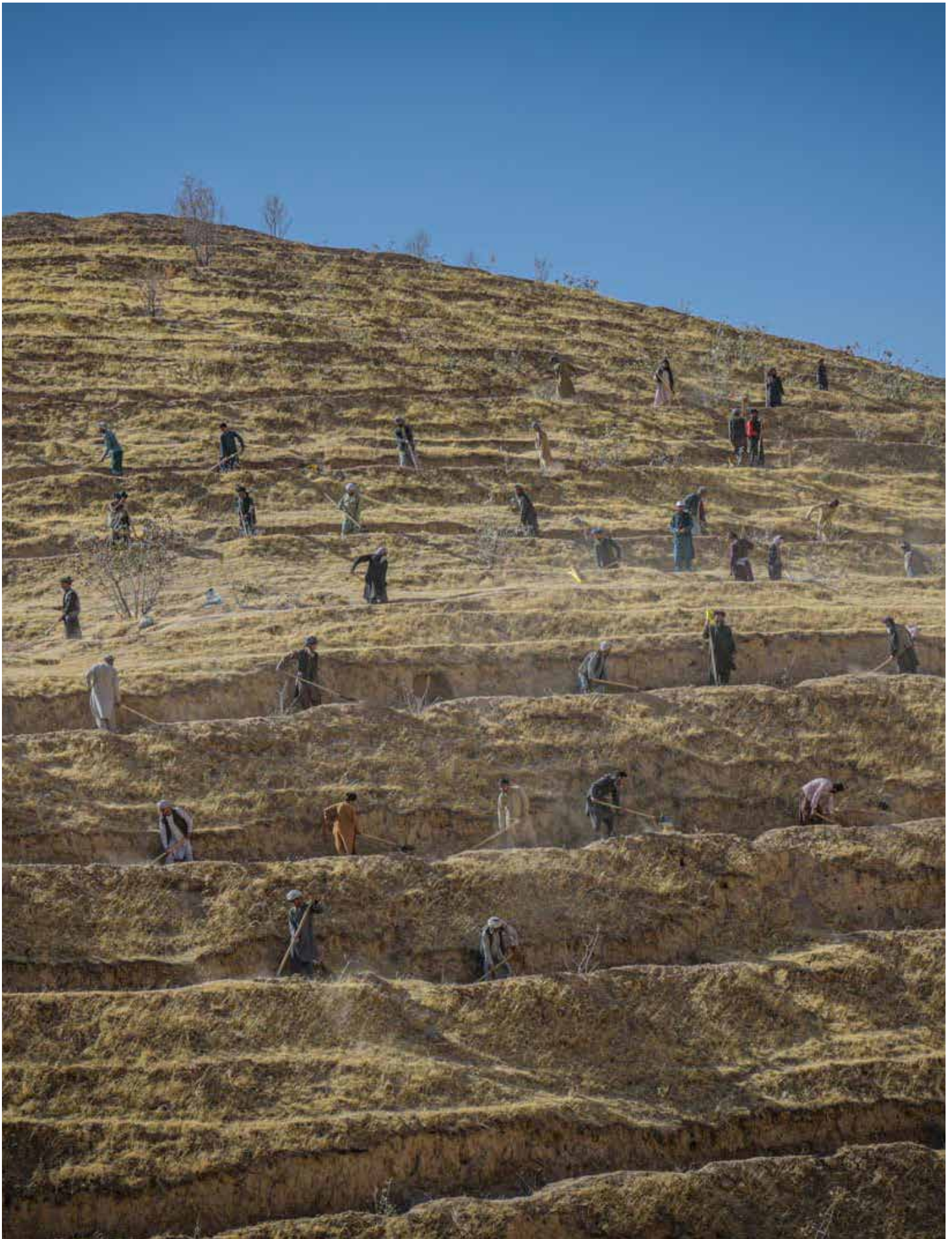
While changes in the landscape and environment are easier to spot at this stage, weather assessments predict how climate change will influence on precipitation patterns and ground water levels and seasonal variations, inflicting large economic losses. There is no doubt that the temperature in Afghanistan is rising. Groundwater is down and water sources are dwindling. There is no doubt that food production in Afghanistan is declining while the population is increasing. The increased return migration from Pakistan and Iran will likely add to that burden.

While poverty has always been a concern in rural areas, poverty has increasingly taken hold in the cities. Urban communities have less access to land and fewer option to engage in agricultural production. These are real life concerns. Afghanistan is one of the world's most climate vulnerable countries, but also among the countries with least readiness to meet the climate change. Again, alarming signals for Afghans. The message is consistent across Afghan regions and communities, and we, Afghans and the international community, need to develop a joint response.

Research provides needed knowledge. Knowledge can be used to identify and test coping strategies and suggest different and more sustainable ways forwards. If you don't use knowledge to set policies, policies might turn counterproductive. While research produces knowledge, communities and local understanding could, however, add valuable insights that researchers might not have thought of. It is therefore of outmost importance that research findings and suggested solutions are communicated to and accepted by Afghan women and men and supported and promoted by Afghan authorities.

This report aims to capture both the local and research perspectives to help develop accepted and workable solutions.

While research produces knowledge, communities and local understanding could, however, add valuable insights that researchers might not have thought of.



Community members dig trenches to capture and absorb rain water. The immediate effect is to prevent floods, but the water will ultimately replenish the underground water level.

INTRODUCTION

Joining forces

Climate change is here, and Afghanistan is one of the hardest hit countries in the world. It is clear that policy changes are required to address the impact of climate change in Afghanistan in an effective and sustainable manner. It is equally clear that actions taken must be knowledge-based.

From April 21st-April 23rd 2024, The Norwegian Afghanistan Committee (NAC), in collaboration with Chr. Michelsen Institute (CMI) and the National Environmental Protection Agency (NEPA), spearheaded a three-day climate dialogue and symposium on the negative consequences of climate change in Afghanistan. The impact of climate change is emerging as the primary threat to food security and livelihoods of the Afghan population, and it is crucial that any effort to address it must be knowledge-based.

The symposium comprised of a climate dialogue with 15 women and 15 men from 14 provinces, followed by two days of discussion and research panels in Oslo and Kabul, joined by video link. Around the tables in Kabul and Oslo sat scholars, representatives of grassroots organizations, international NGOs, UN agencies, diplomats and donors to explore how existing knowledge can be translated into effective policy steps to enhance the country's resilience and ability to adapt to ongoing climate changes.

Common ground

This report presents the plethora of perspectives, solutions and recommendations that were shared, and we have consciously sought to convey the plurality as well as the common ground regarding what needs to be done. With this, we express our warm regards to the grassroots representatives who travelled to Kabul to take part in the dialogue as well as all the other stakeholders who made the time to come together in mutual respect to exchange perspectives and knowledge.

The consolidated set of recommendations brought forward towards the end of the report have already been presented to the Norwegian Ministry of Foreign Affairs, other donor countries and UN agencies in Doha on 1 August. This was the first of many steps to follow up on and bring forward the result of our joint effort.



Liv Kjølheth
Secretary General



Terje Magnussønn
Watterdal
Country Director

In order to make a durable impact, interventions must be knowledge-based, community-led and tailored to the Afghan and regional context.

Afghanistan needs access to climate financing, which has largely stalled since the Taliban's takeover.

The current crisis

Afghanistan is heavily impacted by changing precipitation patterns, melting glaciers, floods and erosion, as well as drought and declining groundwater levels. The UN estimates that Afghanistan is the world's sixth most vulnerable country to climate change. A comprehensive living conditions survey conducted by the NAC in seven particularly vulnerable provinces in November 2023 shows that drought has now surpassed lack of security as the primary cause of income loss. With the caveat that Afghanistan is a vast country with marked regional differences, the findings are indicative of how critical the climate issue has become also for the country as a whole.

NAC has worked with food security, disaster risk management and natural resource management for decades in Afghanistan. Our experience is that good results can be achieved through providing small farmers with training and inputs to adopt climate-smart farming methods and construct infrastructure that conserves water and protects against floods and landslides.

Locally led development

NAC has consistently tailored its assessments, programs and evaluations based on consultations with the local communities. All our programs and projects are locally led. This approach has given us first-hand knowledge of the very serious consequences of climate change on food security and livelihoods. We have also ramped up our internal systems for knowledge management and are actively reaching out to academic institutions to contribute to and draw on the common body of knowledge. Our firm belief is that this fusion of traditional and local knowhow with state-of-the-art research will enable efficient and high-quality projects with tangible and durable results.

Sound programming, however, depends on sound donor policies. A systemic approach is needed, and environmental and climate projects need to plug into knowledge-based Afghan national plans and strategies. Adapting and preparing Afghanistan for climate change cannot be a task solely for NGOs and civil society.

Need for Climate Financing and Expertise

During the time of the former republic the international community supported projects to develop water management capacities and improve Afghanistan's ability to adapt to climate change by building and maintaining dams, improving irrigation and developing infrastructure for renewable energy. Institutions such as the National Disaster Management Agency (ANDMA) and the Environmental Protection Agency (NEPA) played a central role in the development of national plans. Donors and diplomats should ensure that this effort continues.

National strategies need to be knowledge-based and implemented. The country needs access to climate finance, which has largely stalled since the Taliban takeover in 2021. Afghanistan particularly needs expertise and capacity to address climate change at a systemic level. In short: There is a need to introduce an exemption from the sanctions in the climate and crisis preparedness field.



Knowledge starts in the local communities. Traditional and local knowledge might prove valuable and surprising insights to supplement and inform to scientific research.

Preserving common global goods

Climate change does not accommodate regimes or national borders. How natural resources, particularly water, are managed has a regional dimension with significant potential for conflict. In order to preserve global common goods, the impact of climate change in Afghanistan and its neighbouring countries must be elevated on the international development agenda. This requires institutional cooperation, research and the adoption of comprehensive national plans.

We trust that the reader will find this conference report thought-provoking. We hope it will lead to increased climate support based on the realization that adaptation can be practical as well as cost-effective, provided timely action is taken.

GRASS ROOTS PERSPECTIVES

Voices of the affected

On 21 April, 15 women and 15 men gathered at NAC's offices in Kabul to discuss how climate change in Afghanistan affects their daily lives. Their concerns and proposals form the basis for this article.

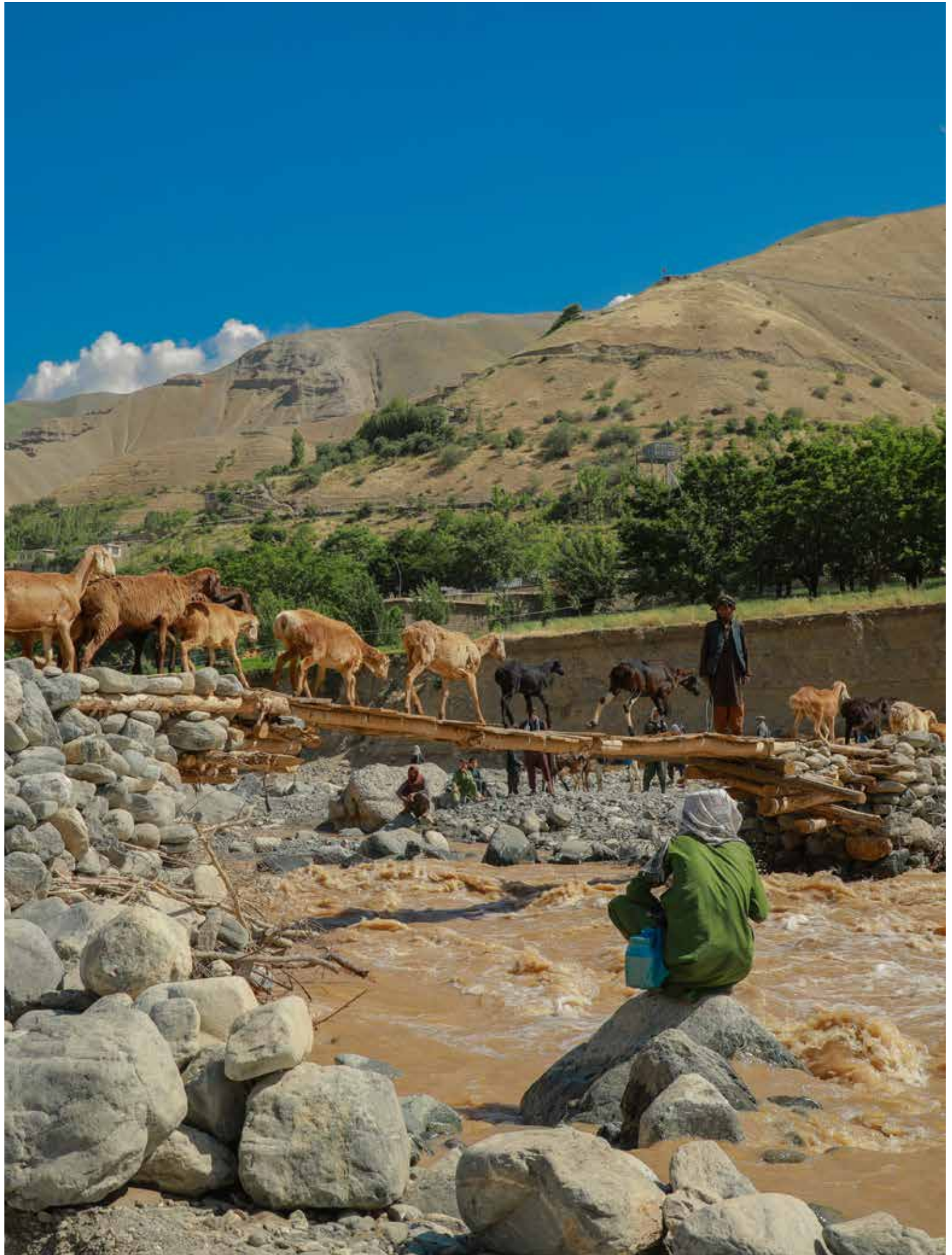
As the shared use of natural resources has connected community members, the scarcity of it can cause division and conflict if not properly managed.

The NAC dialogue approach is based on understanding, not judgment, to capture ideas and perspectives of the grassroots level participants. Active listening is key. 38 participants from 14 provinces (Badakhshan, Bamyan, Farah, Faryab, Ghazni, Logar, Kabul, Kandahar, Helmand, Nimruz, Parwan, Samangan, Urzgan, Wardak) were invited to take part in the dialogue. Of these, 50 percent were women, and 50 percent men. The participants were selected by NAC, The Afghan National Environment Protection Agency (NEPA), Resilience, Environment and Humanitarian Aid (REHA), and Environmental Protection, Trainings and Development Organization (EPTDO). Participants had had a variety of backgrounds, including, teachers, farmers, elders, community leaders etc.

The first day of the climate change dialogue consisted of four parts. The first hour was spent in dialogue with the participants about the impact of climate change in their lives. After the groups had raised their concerns, participants were divided into groups to come up with suggestions and solutions. For the third part, a four-corner exercise was held to identify who should be the respondents. At the end, all groups reported back.

Challenges to agriculture and food security

Challenges listed by the participants are in line with what research has already told us: drought, scarcity of water, hot and cold waves, untimely rain and snow, and flood. This hits rural communities hard as arable land and infrastructure is destroyed and agricultural productivity is reduced. A decreasing water table means there is less water to drink and less for irrigation. Flood and drought also take their toll on animals as pastures are destroyed and there is an increase in animal and crops disease. Another disheartening factor is the potential for increased conflict if the use of water and other natural resources is perceived as unjust.



Floods can destroy valuable pasture and lead to increased animal and crop disease.

In some areas where it was previously possible to cultivate rice, it is now only possible to cultivate wheat.

As agriculture has become less productive, income from agriculture and livestock has been reduced. Additionally, arable land and agro-related infrastructure has been destroyed. This leads people to shift livelihood strategies from on-farm to off-farm activities. However, people do not necessarily have the skills required to adapt to the new realities, and employment opportunities are scarce. That being said, even access to market infrastructure is limited.

On top of these challenges, the costs related with animal husbandry have increased. Due to crop changes following from drought and lack of water meals have become less diversified. For instance, in some areas where it was previously possible to cultivate rice, it is now only possible to cultivate wheat.

Effects on health

Limited access to diversified food makes it difficult for households to meet their nutritional needs, increasing the risk of malnutrition, vitamin deficiencies, and generally reduced wellbeing.

Participants in the climate dialogue highlighted health issues such as skin diseases, malaria, diarrhea, and dengue fever. NAC's baseline assessment identifies additional challenges, particularly related to lack of access to health facilities. More than a third of the of respondents reported maternal or newborn deaths in their households within the past three years, a tragedy potentially linked to restricted healthcare access in regions vulnerable to climate-induced catastrophes.

Counterproductive strategies

KEY FIGURES FROM NAC BASELINE SURVEY (2023)

Findings from the dialogues are corroborated by an NAC baseline study conducted in seven provinces that are deemed by NAC as particularly vulnerable. The geographical areas targeted in this study covered 236 communities in 28 districts across Badakhshan, Daikundi, Faryab, Ghazni, Kapisa, Paktia, and Takhar provinces. It should be noted that there are great variations both between and within provinces, and statistics provided are subsequently not representative for the entire country.

Agriculture, livestock and livelihoods

- 54 % rely solely on farming production as their only source of income
- 71% of smallholder farmers experience decreased agricultural productivity
- 83 % percent refer to drought as the main reason for loss of income
- 53 % report limited access to irrigation water

- 99-100 % refer to flood as a main threat to agricultural land
- 71 % of smallholder herders cited animal diseases
- 72 % reported the lack of fodder/animal feed as a significant constraint for their livestock's productivity

Main reasons for leaving land uncultivated

- lack of rain (61 %)
- scarcity of irrigation water (53 %) largely due to irrigation system inefficiency
- insufficient seeds (38 %)
- poor soil fertility (37 %)

Coping strategies

- relying on less preferred foods (95 % of households)
- borrowing food (80 %)
- limiting portion sizes (63 %)
- restricting consumption by adults to enable children to eat (57 %)
- reducing meals (39 %)



Distribution of drought-resilient seeds can contribute to increased food diversification. Here, wheat is harvested.

The negative impact of climate change indirectly impacts education. As a result of reduced income, families send their children to work for parts of or the entire school week. It has also become a challenge to provide books, school supplies, clothes, bikes and so on for the children. Students in higher education migrate to other countries in order to find jobs and other sources of income.

Loss of livelihoods forces a string of counterproductive strategies, such as selling off assets like land, livestock or home appliances. An unfortunate side effect is that farmland that is sold, is sometimes used to the development of residential areas rather than food production.

Others take out loans or end up actually moving. One example brought forward is that in one of the districts in Ghazni, 70 % of the population have migrated to Iran in order to deal with their families' economic problems. There is also migration and climate related displacement within Afghanistan, between villages, from rural areas to the cities and other districts.

Farmland
that is sold,
is sometimes
used to the
development of
residential areas
rather than food
production.



Flash floods is a main reason for the destruction of agricultural land.

«Previously, I used to get a yield of over 1,800 KGs of wheat from my farmland, but this year due to drought my yield reduced to only 63 KGs.»

Smallholder farmer - FGD participant, Daikundi

Division of responsibility

During the Four Corners exercise, it was argued that both the government and the population need to pay attention to natural resource management and strengthen the control of irrigation and agricultural waters. Natural resources need to be managed on community, provincial and district level.

The Ministry of Agriculture, Irrigation and Livestock (MAIL) is seen as responsible for bringing new and drought-resistance crops. Participants expect MAIL to support farmers with agricultural inputs such as improved seeds, fertilizers and tools. They also see it as a public responsibility to ensure that agriculture lands are not turned into residential areas.



«In our village (Imam Sahib), nearly all the farmers own more than 10 Jeribs of agricultural land. However, because of water shortages, approximately 80% of this land remains unused...there are no other opportunities available, and I can sadly say that the majority of farmers are now jobless!»

Smallholder farmer, Pashton Kot, Faryab

«On one hand, we are facing severe drought, and on the other hand, we do not have a proper irrigation canal, causing us to lose a considerable amount of water before it reaches our agricultural land.»

Smallholder farmer, Jaghori, Ghazni

Solutions

After having shared and discussed concerns, participants were asked to propose solutions to their challenges. The following suggestions were made:

- Awareness raising on Climate change impact (adaptation and mitigation)
- Improve agro-based productive and protective infrastructures
- Natural resource management
- Promote access to renewable/ clean energy
- Extension of drought resistance crops
- Support farmers with agriculture inputs
- Avoiding shifts of pasture and agriculture lands into residential areas

It was also pointed out that the population needs services beyond water and food. Programs should also make it a point to enhance the quality of life of ordinary Afghans.



Dr.-Ing. Assem Mayar

Leibniz Centre for Agricultural
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Areas of expertise:
water management, flood and drought
risk assessment, climate change
adaptation and governance

To shield local
impoverished
populations from
climate change
repercussions, it is
required to direct
climate adaptation
funds to Afghanistan.

RESEARCH PRESENTATION

The economic consequences of climate change

Climate change, with a severity surpassing previous years, continues to affect Afghanistan. However, the country does not receive financial support for adaptation and mitigation. Decentralized financial mechanism is enabling fund transfers to Afghanistan under current circumstances. Adaptation projects focused on disaster risk reduction and community involvement can enhance resilience and livelihoods.

Communities bear the brunt of climate change through its social and economic ramifications, primarily manifested in natural disasters. Climate change is the primary catalyst behind the escalating frequency and intensity of weather-related calamities. Afghanistan experiences a range of such disasters, including floods, droughts, landslides, avalanches, heatwaves, forest fires, sandstorms, and hailstorms. Additionally, climate change precipitates slow-onset consequences such as snowfall converting to rainfall, early snowmelt which results in lack of water in summer, glacier retreat, reduced groundwater recharge, and urban water scarcity,

exacerbating its impact.

Assessing the comprehensive economic fallout of climate change is a daunting task. However, the repercussions of major climate-induced disasters are quantifiable, as illustrated by the World Bank's Disaster Risk Profile of Afghanistan. For instance, floods affect annually about 100,000 people and result in losses of \$54 million USD. A severe flood event can inflict damages exceeding \$500 million USD, significantly affecting the agricultural sector and food security in Afghanistan.

Droughts, affecting millions of people, incur an average annual economic impact of about \$280 million USD, with significant droughts causing losses of up to \$3 billion USD. Furthermore, assets worth approximately \$6 billion USD are vulnerable to landslides, including 400 schools and 300 health facilities, while assets worth about \$4 billion USD are exposed to avalanches, encompassing 10,000 km of roads. These disasters have been recurrent over the past two decades.

Projections indicate a considerable increase in these risks due to climate change scenarios by 2050. However, climate adaptation projects have stalled since the collapse of the Afghan Republic government in August 2021. Many of these projects targeted agriculture, disaster risk reduction, and water resources rehabilitation. Afghanistan's intended nationally determined contribution, devised in 2015, envisaged to receive \$10,785 billion USD for adaptation between 2020-2030 and \$662 million USD for mitigation.

The primary recipients of climate change consequences are rural residents dependent on agriculture and water resources, not the de facto administration officials, who now derive income from alternative sources. To shield local impoverished populations from climate change repercussions, it is required to direct climate adaptation funds to Afghanistan. The current climate finance framework permits the accreditation of non-governmental organizations (NGOs) as national implementation entities, offering a conduit for channelling climate change funds to the country. Consequently, adaptation projects could be tailored towards disaster risk reduction to mitigate losses, followed by initiatives aimed at enhancing food production, resource management, and lifestyle improvements. NGOs can execute adaptation projects through the Community Development Council framework, fostering local stakeholder involvement to leverage indigenous knowledge and enhance the efficacy of small-scale interventions.

Key takeaways:

- Climate change exacerbates natural disasters in Afghanistan, imposing significant economic and social costs, particularly on rural communities reliant on agriculture and water resources.
- Capacity building is crucial as many Afghans lack understanding of climate change and its adaptation strategies. Providing accessible resources can bridge this knowledge gap effectively.
- International research organizations face barriers in covering Afghanistan in their climate research projects due to sanctions and recognition issues. Removing these restrictions would enable monitoring and understanding of climate change impacts in Afghanistan.
- Afghanistan urgently needs to catch up on submitting required reports to the UNFCCC to stay aligned with global efforts. Donors should prioritize supporting Afghanistan in fulfilling these obligations, as they are essential for informed decision-making and accessing further assistance.
- Quantifiable losses from climate-induced disasters underscore the urgent need for climate adaptation measures.
- Redirecting climate adaptation funds to Afghanistan, facilitated through NGOs or a decentralized mechanism, can help mitigate the impact on vulnerable populations and foster sustainable development.
- Implementing adaptation projects focused on disaster risk reduction and community involvement can enhance resilience and livelihoods, leveraging local knowledge and resources for effective outcomes.

Other research by Assam Mayar

In June 2024, Mayar was a guest writer for Afghan Analysts Network. Download his report on floods in Afghanistan here: [Before the Deluge: How to mitigate the risk of flooding in Afghanistan](#)



Yograj Gautam

Chr. Michelsen Institute

Areas of expertise: Human Geography, with expertise in livelihood studies, migration, climate change adaptation, poverty, and food security.

RESEARCH PRESENTATION

Displacement, environmental degradation, and livelihood crises

Afghanistan is experiencing significant livelihood constraints related to land and resources. Using fine grained empirical data, we analyse how mutually intersecting socioeconomic, political, and environmental changes have influenced this crisis over time.

Poverty, food insecurity, and livelihood crises are widespread in Afghanistan. Although there is a complex interplay of socioeconomic, political, and environmental stressors, policies have mostly overlooked the intersecting complexities and been driven by macro-scalar approaches and a linear understanding of livelihood crises in the context of enduring conflict. Our research examines how mutually intersecting socioeconomic, political, and environmental factors have shaped and sustained livelihoods crises over time. Applying a multidisciplinary approach, we performed i) a time-series analysis of satellite imagery to map land use and landcover change (LULC) in Kabul between 1995 and 2022 and ii) integrated this with qualitative data, encompassing life histories, focus group discussion and interviews with experts and local communities to capture the long durée of livelihoods and environmental transformation in the area.

Our results emphasize three major socio-ecological processes jointly contributing towards the disruption of local livelihoods: i) conflict, insecurity and consequent rural-to-urban population displacement and migration, ii) urban landscape transformation and employment transition, and iii) depletion of water resources and water crisis.

**Other research by
Anwesha Dutta and
Yograj Gautam**

CMI Report Number 1,
May 2023: [Examining poverty and food insecurity in the context of long-term social-ecological changes in Kabul, Afghanistan](#), co-authored by Dutta and Gautam

Over the last four decades, conflict led insecurity has been the major factor of rural-to-urban population displacement that caused dispossession of the agrarian populations of land and livelihoods, who ended up in cities devoid of economic and social capital. We find that rural-urban population movement in later years, starting around early 2010s, to be more significantly linked to climatic variabilities coupled with disasters, mainly drought and floods. Most of our respondents who migrated to the cities within the last decade attributed their migration decision to drought-induced rural agricultural crisis. The agricultural impacts of drought have also been aggravated by changing water management regimes. The introduction of private wells have largely replaced the traditional communal irrigation systems like the Karez system. Getting gradually motorized after the introduction of electricity in the early 2010s and more recently that of solar panels in these peri-urban areas, these wells enabled farmers to accelerate the use of water for irrigation causing serious depletion of groundwater. In this context, once droughts hit, as has been a common case in the last decade, water shortage becomes a critical issue for irrigation and agriculture-based livelihoods are acutely affected.

Linked to displacement and migration, livelihoods have also been affected by the long-term landscape transformation and employment shift in urban areas. Our remote sensing analysis shows forest (including rangeland) and agricultural area to have shrunk by 45% and 11 % respectively between 1995 and 2022, while built-up area has expanded by 44% in the same period. This shift corresponded with changes in



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Areas of expertise: Conflict and Development Studies, with expertise in political ecology, environment, notably socio-ecological approaches to forestry, biodiversity conservation, resource extraction, and governance.

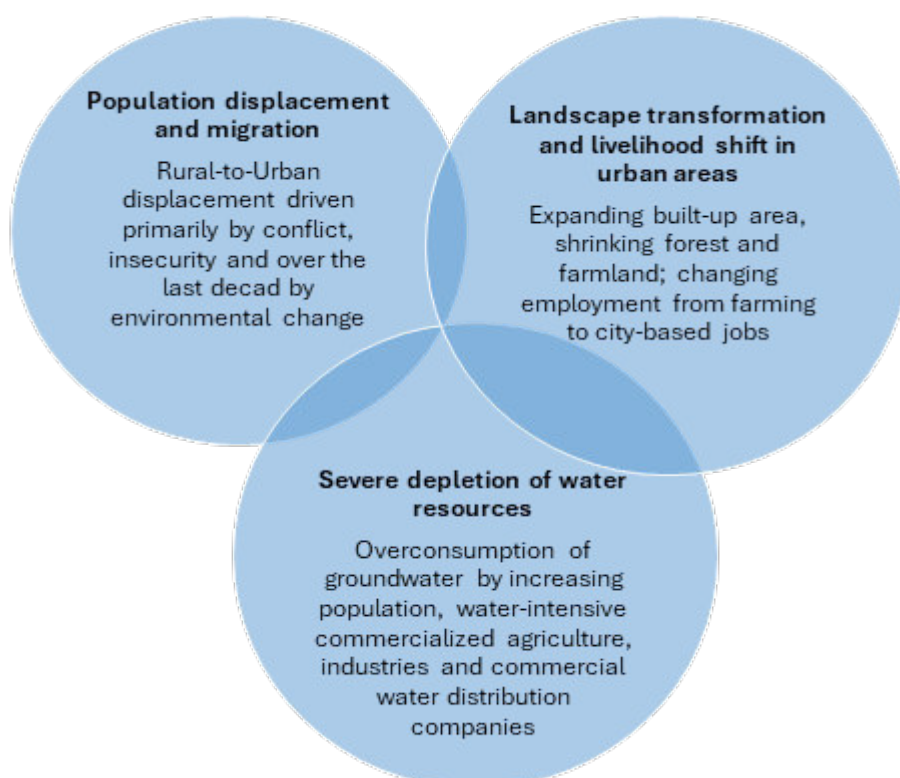


Figure 1. Three major dimensions of social and environmental changes underlying livelihood crisis in Kabul

Key takeaways:

- Environmental degradation and livelihood crises in Afghanistan stem from complex socioeconomic and ecological factors.
- International aid-driven economic development and evolving livelihood patterns, including the shift from agriculture to urban-based jobs in construction, services, and the business sector, as well as the mechanization and commercialization of agriculture, have significantly contributed to environmental degradation and livelihood crises.
- While short-term humanitarian aid is crucial for meeting basic needs particularly linked to food and nutrition, long-term solutions need to be emphasised, involving multi-sectoral investments tailored to local socio-ecological contexts.
- Prioritizing good governance and inclusive institutions can foster community participation, environmental sustainability, and human well-being.

employment patterns from agriculture to urban-based service sector, small businesses, and construction and manufacturing sector. With the economic crisis following the formation of the new de-facto government in 2021, livelihood stress is compounding because urban jobs have severely dwindled and the option to resort back to farming has also ceased because farmland has been lost during the rapid urbanization process.

While water scarcity has caused people to leave rural areas, water has also been an everyday stressor for the communities in the urban areas. Our remote sensing analysis reveals a 69% decrease in surface water in Kabul area, while interviews uncover heightened groundwater depletion due to a sudden surge in population, increased water-use by industries, and commercialisation of farms through intensive vegetable farming. Our respondents recounted the drastic decline in water tables, from around 20 meters a decade ago to more than 100 meters presently, resulting in the drying-up of the usual private wells, leading to forced and increased reliance on water distribution companies, exacerbating household economic strain.

Inability to cope and adapt to socio-environmental changes is another dimension of livelihood vulnerability. Our results reveal several attempts of short-term coping and longer-term adaptive responses communities resort to, to improve wellbeing. These include seasonal cross-border job migration, accessing food aid and attempting to revitalize agriculture, in case of the IDPS, in their place of origin. However, while newly imposed cross-border mobility restrictions by neighbouring countries and recurrent droughts hinder both external migration and the revitalization of rural agriculture, dwindling food aid transfers too has affected many families' food access. As a result, a majority of the households continue to acutely endure significant socio-economic and nutritional deprivation.

RESEARCH PRESENTATION

Sustainable water management

The latest Afghan-wide subsidence map highlights concerning levels of groundwater use in urban and agricultural areas, driven by droughts and heightened groundwater pumping from 2015 to 2022. The widespread deployment of solar panels in farmlands signals increased groundwater extraction, intensifying groundwater use. Urgent action is needed to implement sustainable water management practices and protect Afghanistan's crucial groundwater resources.

Political instability in Afghanistan has long dictated access to freshwater resources, exacerbated by population growth and climate change. The adoption of modern irrigation techniques has amplified groundwater extraction, leading to its depletion and severe ground subsidence in urban and agricultural areas.

Analyzing radar satellite data from 2015 to 2022, we observed substantial subsidence, such as 31.2 cm over six years in Kabul city and 77.8 cm over seven years in Ghazni agricultural province. In Kabul, the highest subsidence occurs near the city center, while peripheral districts, reliant on shallow aquifers, face significant water well depletion. In Ghazni, excessive groundwater use for agriculture has led to extensive surface cracks. Droughts in 2020 and 2021, coupled with widespread installation of electrical water pumps since 2016, have accelerated groundwater depletion and subsidence since 2018. Urgent measures are imperative to address this escalating crisis and safeguard Afghanistan's water resources.



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Earthquake:
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Effective irrigation water management systems enhance agricultural productivity and food security.

The adoption of modern irrigation techniques has amplified groundwater extraction, leading to its depletion and severe ground subsidence in urban and agricultural areas.

The countrywide InSAR rate maps for 2015-2022 highlight regions with significant subsidence, such as the Kabul urban area (~150 km²), where the highest subsidence location reached 6.3 cm/yr between 2016-2019 and 3.4 cm/yr between 2020-2022. Similarly, the agricultural region of Ghazni (~1,420 km²) experienced notable subsidence rates, peaking at 2.6 cm/yr between 2015-mid-2018, 13.2 cm/yr between mid-2018-2020, and 26.9 cm/yr between 2021-2022. These areas, densely populated or agriculturally exploited, exhibit anthropogenic ground subsidence primarily due to excessive groundwater extraction. Subsidence is less pronounced in the rainfed agriculture of north Afghanistan compared to the irrigated agriculture of south Afghanistan.

Zooming into Kabul and Ghazni provinces, we observe significant subsidence trends. Kabul's northeastern and southern city centers exhibit notable subsidence, correlating with population density and urban extent. Water table in peripheral Kabul have dropped significantly since 2013, roughly outlining the spatial extent of subsidence. In Ghazni's agricultural region, expansion of irrigated agriculture supported by groundwater extraction has led to substantial subsidence and large tensile desiccation cracks. Analysis of InSAR subsidence rates compared to solar panel density reveals interesting correlations, suggesting localized impacts of land use activities on subsidence patterns.

Moreover, in Kabul, subsidence rates vary across different districts. The densely populated Provincial Districts Darul Aman (PD6) and Taimani (PD4) exhibit the strongest subsidence, whereas the less populated southeastern part of the city is less affected. This spatial variability highlights the complex interplay between urban development, groundwater extraction, and subsidence.

Additionally, wells'-water level variations across Kabul further illustrate the relationship between groundwater depletion and subsidence. Peripheral Kabul witnesses a substantial drop in surface-water levels since 2013, closely corresponding to the spatial extent of subsidence. The southern city center experiences the most significant subsidence, accompanied by a notable decline in surface-water levels along Kabul River and Logar River.

Furthermore, in Ghazni's agricultural region, the expansion of irrigated agriculture over the past decade has significantly contributed to subsidence. The InSAR time-series reveal an alarming increase in subsidence rates, particularly between 2021 and 2022, coinciding with extensive solar panel installations and groundwater extraction. Field observations confirm the presence of large desiccation cracks, indicating severe land subsidence in this agriculturally vital area.

These findings underscore the urgent need for sustainable water management practices in Afghanistan, particularly in urban and agricultural areas facing rapid subsidence. Effective measures must be implemented to mitigate further depletion of groundwater resources and safeguard against the escalating risks posed by subsidence and groundwater use. Collaboration between governmental agencies, local communities, and international organizations is essential to address this multifaceted challenge and ensure the long-term sustainability of Afghanistan's water resources and socio-economic development.

Collaboration between governmental agencies, local communities, and international organizations is essential to address this multifaceted challenge and ensure the long-term sustainability of Afghanistan's water resources and socio-economic development.

Factors Driving Groundwater Depletion

- Climate change, surface water disappearance, population increase, political instability, and inadequate surface water management infrastructure have collectively contributed to groundwater depletion in Afghanistan.
- Notable Subsidence Figures: Kabul (31.2 cm), Ghazni (77.8 cm), and Helmand (85.6 cm) are experiencing significant subsidence, highlighting the severity of the issue across various regions of the country.
- Impact of Electrical Water Pumps: The dramatic increase in the use of electrical water pumps for groundwater extraction is exacerbating subsidence rates, particularly in agricultural areas where they facilitate the conversion of barren land into irrigated fields.
- Importance of Monitoring Wells: Monitoring wells play a crucial role in tracking groundwater levels and subsidence patterns, providing essential data for informed decision-making and effective resource management strategies.
- Surface Water Management: Effective management of surface water resources is essential to supplement groundwater supplies and reduce pressure on aquifers, offering a potential solution to mitigate subsidence. This is very possible to apply in Ghazni and use the Kariz network as recharge points during winter.
- Need for Research Funding: Adequate research funding is necessary to support comprehensive studies on groundwater depletion, subsidence monitoring, and sustainable water management practices in Afghanistan, facilitating evidence-based policy formulation and implementation.

RESEARCH PRESENTATION



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It is crucial for the ruling regime in Kabul to critically evaluate the impacts of climate change, identify the most risky areas, and synchronize their investment plans accordingly.

The impacts of climate change on water availability

The impacts of climate change on the Kabul River Basin reveal significant projected effects on water resources. The results indicate a decrease in mean annual streamflow by 15-16% under RCPs 4.5 and 8.5, underscoring the need for adaptive water management strategies. This also highlights the risk to water availability in Afghanistan, which could severely impact food security and present challenges to both surface and groundwater resources.

This study conducted in the Kabul River Basin (KRB) using the Soil and Water Assessment Tool (SWAT) under changing climate scenarios reveals critical insights. The study projected a significant decrease in mean annual streamflow by at least 15-16% under RCPs 4.5 and 8.5 by 2045, with the maximum annual streamflow expected to decrease by 17.2–41.8%. Given the projected decline in streamflow and the decreasing trend in groundwater storage, there is an urgent need for integrated water resource management (IWRM) strategies. These strategies must encompass both surface water and groundwater management, considering their interconnectedness and the impact of anthropogenic

interventions. This integrated approach is essential to address the complexities of water management in the KRB, especially under the influence of climate change.

Afghanistan, a country significantly vulnerable to the impacts of climate change, contributes minimally to global greenhouse gas emissions. Yet, it faces severe consequences from climate-related changes, exacerbating its water scarcity and agricultural challenges.

The study region's heterogeneity, characterized by substantial elevation differences and significant contributions from snowmelt, amplifies its vulnerability. Despite limited arable and irrigated lands, climate change severely affects land and water productivity. This is evident in the considerable reduction in water during peak demand periods and the increasing dependence on groundwater withdrawal for supplemental irrigation. Moreover, the changing precipitation pattern—specifically, the reduction in winter precipitation as snow and the increase in spring and summer (Monsoon) rainfall—heightens the risk of flooding, causing erosion of fertile soil layers and infrastructure damage.

In light of these challenges, creating awareness among the population about the “new normal” conditions of climate change and streamflow in Afghanistan is crucial. Educating communities on the expected changes and their implications can foster better preparedness and adaptive practices. Adaptive agricultural practices are essential to cope with changing streamflow patterns. This includes rearranging irrigation schedules and cropping patterns to align with periods of lower water availability, particularly at the beginning and middle of the cropping season. Utilizing facilities for runoff storage can mitigate water scarcity during peak demand periods, ensuring a more reliable water supply for agricultural and ecological needs.

Investing in infrastructure for water storage and management is vital to mitigate the impacts of reduced water availability. The construction of facilities such as reservoirs, check dams, and retention ponds can capture and store excess runoff, providing a buffer during periods of low water availability. This infrastructure would support agriculture and ecological needs during peak demand periods, enhancing the resilience of water resources against climate variability.

It is crucial for the ruling regime in Kabul to critically evaluate the impacts of climate change, identify the most risky areas, and synchronize their investment plans accordingly. The findings of this study underscore the critical need for comprehensive water management strategies across all the river basins of Afghanistan. The projected decline in streamflow exemplifies the situation of water availability in the country and therefore, necessitates an integrated approach that combines surface water and groundwater management, adaptive agricultural practices, and infrastructure investments. By adopting these strategies and fostering awareness, the KRB and other basins can better manage their water resources, ensuring sustainability and resilience in the face of climate change.

Key takeaways:

- Projected decreases in mean annual streamflow by 15-16% and up to 41.8% in maximum annual flow in the future highlight the need for improved water management in the Kabul River Basin (KRB).
- Afghanistan, despite its minimal contribution to global greenhouse gas emissions, faces severe climate change impacts, worsening water scarcity, and agricultural challenges.
- Raising awareness about the new climate conditions and streamflow changes is crucial for better community preparedness and adaptation.
- Adjusting irrigation schedules and cropping patterns is essential to manage reduced water availability and shifting precipitation.
- Developing water storage infrastructure, such as reservoirs and retention ponds, is vital to buffer against reduced water availability and support agriculture.
- It is important for the relevant entities in the country to critically assess climate change impacts, identify high-risk areas, present it at the international platforms to assist Afghanistan and align their investment strategies accordingly.

Read interview with Fazullah Akhtar: [The future of science in Afghanistan – Dead-end or rays of hope?](#)

RESEARCH PRESENTATION



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The drivers of food insecurity in Afghanistan: Insights and implications

The drivers of food insecurity are dynamic, complex and context oriented. Afghanistan is exposed to a wide range of triggers of food insecurity, and comprehensive actions across different sectors are required to address this pervasive development issue.

The drivers of food insecurity are dynamic, complex and context oriented. Afghanistan is exposed to a wide range of triggers of food insecurity, and comprehensive actions across different sectors are required to address this pervasive development issue. Food insecurity is not merely concerned about food, it requires access to, inter alia, drinking water, sanitation, hygiene and education. The purpose of this study is to understand the prevalence of food insecurity and undernourishment; and analyze major macro-level drivers of food insecurity in the country.

Prevalence of undernourishment, and moderate and severe food insecurity increased by about 10% and 35% during 2014–2022, respectively. Although food insecurity is more prevalent in rural areas, undernourishment is higher among urban households. This is supported by the changing pattern of absolute poverty in detriment of urban households in the recent years. The upward trends of undernourishment and food insecurity imply increasing vulnerability of Afghan households and disequilibrium between severity of the problem and extent of response by different stakeholders including the government. An analysis of factors affecting the four pillars of food insecurity revealed its major macro drivers in the country. Population growth, agricultural productivity, absolute poverty, climate change and natural disasters, and price volatility are among the major drivers of food insecurity analyzed in this study.

The imbalance between the annual growth of population (2.59%) and domestic food production (1.40%) resulted in a continuous decline of per capita food production (-1.16%) during 1961–2022. Hence, the country relies on food imports which accounted for about 24% of total imports during 2020–2022. Such huge dependence on food imports sometimes destabilizes domestic food markets through spillover effects. Moreover, agriculture and animal husbandry are still largely subsistent and conventional. Although total factor productivity experienced a lower annual growth of 1.21% during 1961–2020, it is below the level of 2015 for all of the preceding years. However, there is a substantial room for increasing agricultural productivity through realization of the technical efficiency in agriculture. That is, the country can produce more with efficient utilization of the available factors of production.

Absolute poverty is a major driver of food insecurity in the country. Prevalence of poverty has increased from around 34% in 2007 to 48% in 2023. The regional pattern of poverty has changed in the recent years as the proportion of households in absolute poverty is now larger in urban than rural areas. Push factors such as poverty, food insecurity, unemployment, climate change and subsistence farming have a great role in the process of urbanization. Understanding the nexus of poverty and food insecurity is essential for their eradication. Moreover, the dynamics of rural and urban food insecurity are different. Our results show that urban households are worse-off in terms of current consumption status whereas rural households are more vulnerable in the case of coping capacity. The characteristics of rural and urban food insecure households are not similar. Hence, interventions of food insecurity shall be contextualized because a simple replication of alien interventions may not efficiently address the issue.

Based on ND-GAIN Index 2021, Afghanistan is the 7th most vulnerable country to climate disruptions. It is the 12th most vulnerable and 6th least ready country to climatic shocks. Hence, the country not only needs investment and innovations to improve readiness, but also requires a great urgency for action. Climate change has a strong negative impact on food security status of households. In addition to undermining the country's capacity to produce enough food, it deteriorates livelihood and assets of rural and urban households. Thus, its adverse effect on agriculture and economy jeopardizes food security and perpetuates vicious cycles of poverty and misery.

Price stability is crucial for maintaining food security in poor countries such as Afghanistan. Volatile food prices depreciate the purchasing power of poor consumers which in turn affects their consumption patterns and energy intake. Food prices in the country initially spiked following August 2021 and it continued to decline after around mid-2022 due to, inter alia, appreciating national currency, international humanitarian relief efforts and low effective demand. As a result, food price index (food inflation) is negative since March 2023. Although food prices continue to decline in the country, the prevalence of food insecurity and undernutrition is on the rise. Hence, lower prices alone cannot guarantee improved food security status of households unless it is followed by a strong purchasing power.

Key takeaways:

- Prevalence of food insecurity and undernourishment is increasing in the recent years implying that the response is not sufficient and vulnerability of households is worsening.
- The drivers of food insecurity are diverse and context oriented. A simple replication of alien interventions may not efficiently address food insecurity.
- Population growth outstrips food production in the country, but there is a considerable room for technological change and increasing agricultural productivity.
- Afghanistan is one of the most vulnerable and least prepared countries to climate disruptions which inflict huge costs and losses every year.
- The adverse impact of climate change on agriculture jeopardizes food security and perpetuates vicious cycles of poverty and hunger.
- Although food prices follow a declining trend, food insecurity continues to increase.

The regional pattern of poverty has changed in the recent years as the proportion of households in absolute poverty is now larger in urban than rural areas.

NGO AND DONOR PERSPECTIVES

Opportunities, challenges, and international cooperation

Afghanistan stands at the forefront of the global climate crisis, facing severe impacts despite contributing minimally to worldwide emissions. As a landlocked nation with a complex topography, Afghanistan's vulnerability to climate change is particularly acute, ranking among the most affected countries globally.

Temperature rises in Afghanistan outpace global averages, causing significant shifts in seasonal patterns.

The impacts of climate change are already reshaping Afghanistan's landscape and challenging its people. Extreme weather events and natural disasters, including droughts, storms, floods, landslides, avalanches, and earthquakes, have become more frequent and severe. These events affect thousands directly and millions indirectly across the country, disrupting lives and livelihoods.

Temperature rises in Afghanistan outpace global averages, causing significant shifts in seasonal patterns. Springs and winters are arriving later, altering age-old agricultural rhythms. Precipitation patterns are changing dramatically, affecting soil moisture in the eastern regions and impacting glaciers and snow banks in the north. These changes are not merely meteorological curiosities; they have far-reaching consequences for water availability, agricultural productivity, and food security.



NGO representatives present at NAC's climate symposium.

Water scarcity and ecological stress

Water scarcity and prolonged drought conditions have become pressing concerns, leading to decreased agricultural yields and forcing many to abandon their homes in search of more viable living conditions. The country's rangelands, which cover approximately half of its territory, are under severe stress. Flash flooding events, another consequence of changing weather patterns, cause significant damage to infrastructure and devastate rural communities.

The melting of glaciers presents a double-edged sword. While it temporarily increases water flow in some areas, it also raises the risk of catastrophic glacial lake outburst floods. Moreover, in regions where groundwater has been overexploited, land subsidence is becoming an increasing concern, threatening infrastructure and agricultural lands.

These environmental changes are having profound impacts on Afghanistan's biodiversity and ecosystems. Species distributions are shifting, the timing of biological events is altering, and vulnerable species face an increased risk of extinction. The degradation of important ecosystems, including rangelands and forests, further compounds these challenges.

Opportunities:

- Potential for adopting clean technologies and sustainable development pathways
- Rich renewable energy resources, particularly solar and wind power
- Traditional knowledge and practices that can contribute to climate resilience
- Growing international recognition of Afghanistan's climate vulnerability and need for support
- Potential for job creation and economic diversification through green growth strategies
- Synergies between climate action and other sustainable development goals



Girls are more likely to be taken out of school during shocks.

Health implications

The health of Afghanistan's population is not immune to these changes. There has been an increase in water-borne and vector-borne diseases, as well as respiratory issues such as asthma. Heat-related illnesses are on the rise, and food insecurity is leading to increased rates of malnutrition. The mental health toll of displacement and livelihood loss adds another layer to the health challenges faced by the population.

Sectoral impacts

The cascading effects of climate change touch every sector of Afghan society. Water resources are under immense pressure, with changing precipitation patterns and glacial melt altering river flow regimes. Agriculture, a cornerstone of the Afghan economy, is struggling to adapt to shifts in growing seasons and crop suitability. Energy production is affected, with changes in hydropower potential due to altered river flows, while urban areas face increased energy demands for cooling.

Infrastructure across the country is being tested by extreme weather events, highlighting the urgent need for climate-resilient design and construction practices. The socioeconomic impacts are profound, with forced displacement leading to rural-to-urban migration, increased poverty and unemployment due to livelihood disruptions, and the potential for resource-based conflicts, especially over water.

Gender dimensions of climate change

The impacts of climate change in Afghanistan are not gender-neutral. Women and girls are disproportionately affected by the changing climate, exacerbating existing gender inequalities. In rural areas, where women play a crucial role in agriculture and water management, climate-induced changes in crop yields and water availability significantly increase their workload and economic vulnerability. The need to travel longer distances to collect water not only consumes more time but also exposes women and girls to greater security risks.

Furthermore, during climate-related disasters, women and girls face heightened vulnerabilities. They are often less likely to receive early warnings, may lack decision-making power in evacuation scenarios, and face increased risks of gender-based violence in displacement settings. Addressing these gender-specific impacts requires targeted interventions that recognize women not just as victims of climate change, but as powerful agents of adaptation and resilience in their communities.

Adaptation and mitigation needs

Addressing these multifaceted challenges requires a comprehensive approach to both adaptation and mitigation. Afghanistan needs significant support to develop and implement national and local adaptation plans, recover and restore natural ecosystems, improve water resource management, and promote climate-resilient agriculture practices. Strengthening disaster risk reduction and early warning systems, climate-proofing critical infrastructure, and enhancing health systems to address climate-related risks are also crucial steps.

Women and girls are disproportionately affected by the changing climate.

Infrastructure across the country is being tested by extreme weather events, highlighting the urgent need for climate-resilient design and construction practices



Through the production of gabons, used to protect houses, roads and agricultural land from floods, women also contribute to their own income.

On the mitigation front, efforts must focus on promoting clean and renewable energy sources, improving energy efficiency across sectors, implementing sustainable forest management and reforestation initiatives, and developing low-carbon transportation systems. These efforts not only contribute to global climate goals but also offer opportunities for sustainable development and economic diversification within Afghanistan.

Cross-cutting needs

Cross-cutting needs include enhanced climate change education and awareness, improved climate monitoring and data collection systems, capacity building for institutions and communities, and increased funding for climate-resilient development. Strengthened regional and international cooperation on climate issues is essential, recognizing that the challenges Afghanistan faces do not stop at its borders.

Challenges and opportunities

While the challenges are significant, there are also opportunities. Afghanistan has the potential to adopt clean technologies and sustainable development pathways, leveraging its rich renewable energy resources. Traditional knowledge and practices can contribute to climate resilience, offering locally appropriate solutions. Growing international recognition of Afghanistan's climate vulnerability may open doors to increased support and cooperation.

However, realizing these opportunities requires overcoming substantial hurdles. Limited financial resources and technical capacity, political instability, high dependence on climate-sensitive sectors, and difficulty accessing international climate finance mechanisms all pose significant challenges. Low levels of public awareness and the pressing need to address immediate humanitarian concerns often overshadow long-term climate strategies.

Way forward

The path forward for Afghanistan in addressing climate change is complex but crucial. It requires a delicate balance between meeting immediate needs and investing in long-term resilience. By prioritizing climate action and sustainable development, Afghanistan can not only reduce its vulnerability to climate impacts but also create opportunities for green growth and improved livelihoods for its people.

The global nature of the climate crisis demands collective action. International support and cooperation will be crucial in helping Afghanistan navigate the challenges ahead. As the country works to build its resilience and contribute to global climate goals, it offers a powerful reminder of the urgency of climate action and the interconnectedness of our shared environment.

Afghanistan needs significant support to develop and implement national and local adaptation plans, recover and restore natural ecosystems, improve water resource management, and promote climate-resilient agriculture practices.

Recommendations:

- Prioritize the integration of climate change considerations into all aspects of national and local development planning.
- Strengthen institutional capacity for climate change governance, including improved coordination among government agencies and stakeholders.
- Enhance climate change education and awareness programs, targeting all segments of society, with a particular focus on youth and women.
- Develop and implement a comprehensive national climate change adaptation plan, with specific strategies for key vulnerable sectors.
- Invest in climate-resilient infrastructure and promote climate-smart urban development to address rapid urbanization challenges.
- Scale up sustainable water management practices, including improved irrigation efficiency and watershed management.
- Promote climate-smart agriculture and support farmers in adopting resilient farming practices and crop diversification.
- Accelerate the transition to clean energy sources and improve energy efficiency across all sectors.
- Strengthen early warning systems and disaster preparedness measures to reduce the impacts of climate-related disasters.
- Enhance regional cooperation on transboundary water management and other shared climate challenges.
- Mobilize increased climate finance from both domestic and international sources, including exploring innovative financing mechanisms.
- Foster partnerships between government, civil society, private sector, and international organizations to leverage diverse expertise and resources for climate action.
- Invest in research and development of locally appropriate climate solutions and technologies.
- Strengthen the collection, analysis, and dissemination of climate data to support evidence-based decision-making.
- Ensure the meaningful participation of women, youth, and marginalized communities in climate change planning and implementation processes.

GOVERNMENT PERSPECTIVES

Afghanistan's Approach to Climate Change: Challenges and Strategies

Afghanistan faces significant challenges from climate change, with government ministries and organizations working to address these issues through various strategies and initiatives. Despite limited resources, the country is striving to implement adaptive measures and raise awareness about environmental protection.

The following are summaries of presentations from key ministries along with specific recommendations:

Ministry of Borders and Tribal Affairs

The ministry focuses on community engagement through jirga and support for nomadic people who are particularly vulnerable to climate change. They emphasize the importance of check dams for water management and economic growth in border areas. The ministry offers its platform of regular community meetings to raise awareness about climate change.

Recommendations:

- Utilize jirgas and community meetings to disseminate climate change information
- Implement check dam projects in border areas for water management and economic development
- Develop targeted support programs for nomadic communities to enhance climate resilience

Ministry of Energy and Water:

The ministry maintains 172 hydrometeorological stations and 30 snow survey stations across Afghanistan. They provide daily flood forecasting and classify regions based on flood risk. The ministry emphasizes the importance of combining ground data with satellite imagery for more accurate climate analysis.



Recommendations:

- Install new climate monitoring stations to enhance data collection
- Provide support to retain expert staff through improved salaries and capacity building
- Prioritize implementation of climate adaptation projects
- Encourage researchers to use both ground data and satellite imagery in climate studies

Ministry of State:

The ministry highlights that poor and vulnerable communities are most affected by climate change, despite Afghanistan's minimal contribution to greenhouse gas emissions. They emphasize the correlation between climate change and natural disasters, noting the inadequacy of current infrastructure to manage these impacts.

Recommendations:

- Raise public awareness about natural disasters and climate change
- Establish early warning systems for natural disasters
- Develop infrastructure for better water resource management
- Conduct comprehensive risk assessments and hazard mapping

Technical and Vocational Education and Training Authority (TVET):

TVET provides education in 11 sectors and 74 professions related to environmental protection, technical knowledge, and resource management. They emphasize the importance of proper water management and the need for more research on Afghanistan's natural resources and disaster management.

Buy-in from Afghan institutions are crucial in the development and implementation of national action plans.

The Ministry of Energy and Water emphasizes the importance of combining ground data with satellite imagery for more accurate climate analysis.



Check dams prevent floods and store water for irrigation.

Recommendations:

- Increase funding for research on natural disaster management and resource conservation
- Improve water management practices and provide technical support to the government
- Enhance predictability of rainfall and snowfall patterns
- Develop strategies for equitable water resource management with neighboring countries

Ministry of Education, Technology and Professional Development

This ministry is committed to providing education in various sectors including agriculture, engineering, and environmental studies. They stress the importance of climate-smart agriculture practices and the need for comprehensive environmental regulations.

Recommendations:

- Develop and implement comprehensive environmental laws and regulations
- Establish a centralized meteorological center for improved climate data access
- Promote climate-smart agriculture practices through training and workshops
- Strengthen collaboration between different ministries on climate change activities
- Encourage international support for climate change mitigation and adaptation projects

CONCLUSION

Main findings and recommendations

The Afghan government, through NEPA and other key ministries, has pledged support for organizations working on climate resilience, while national NGOs like REHA and EPTDO have undertaken comprehensive awareness-raising efforts. A Climate Change Symposium, jointly hosted by NEPA and NAC in April, garnered significant media attention and was followed by technical meetings and World Environment Day events in May, demonstrating ongoing commitment to the issue.

While some environmental protection policies are already in place and others are being developed, there is a growing grassroots understanding among community members of all ages and genders about how climate change impacts their daily lives and livelihoods.

Impacts on the local community

Afghanistan is experiencing a paradoxical climate crisis, with severe droughts occurring alongside destructive floods and flashfloods, while weather patterns shift dramatically across different regions of the country. The agricultural sector has been hit hard, with 89% of farmers reporting vulnerability to natural disasters, leading to significant income losses, displacement, and migration, as evidenced by NAC's 2023 Baseline Survey which revealed an average 31% deficit in household budgets. These climate-induced changes are also introducing new health challenges for both human and animal populations, including the emergence of diseases like dengue fever in rural and urban areas, as well as new afflictions affecting poultry and livestock.

Systemic challenges

Despite the pressing need for climate action, Afghanistan faces significant policy gaps in natural resource management and climate change adaptation and mitigation, compounded by a lack of awareness of existing regulations and ineffective implementation in the field. The responsible regulatory bodies struggle to enforce policies and regulations effectively, hindering progress in addressing climate-related challenges. Furthermore, the education system lacks comprehensive curricula, syllabi, and textbooks that adequately address climate change issues, particularly those contextualized to the diverse climatic and topographic zones of the country, leaving the younger generation ill-equipped to tackle future environmental challenges.

Challenges in implementation

International sanctions have severely hampered coordination between Afghan government agencies and development partners, leading to significant funding shortages and a lack of long-term programs crucial for addressing climate change impacts.

Afghanistan is experiencing a paradoxical climate crisis, with severe droughts occurring alongside destructive floods and flashfloods, while weather patterns shift dramatically across different regions of the country.

The current focus on shorter-term humanitarian programs is insufficient to tackle the complex, long-lasting effects of climate change, highlighting the need for sustained, comprehensive interventions. This situation is further exacerbated by a scarcity of knowledge-based actions, underscoring the urgent need for evidence-driven strategies to effectively combat the multifaceted challenges posed by climate change in Afghanistan.

Recommendations

1. Explore funding options through educational institution, NGOs, international bodies, or private organizations to conduct scientific research to understand the problems and propose practical, affordable, and sustainable solutions
2. Increase investments in long-term solutions and comprehensive development efforts, including reforestation to protect slopes, conserve soil, protect riverbanks to reduce erosion and loss of arable land – Complex problems require systematic, comprehensive, knowledge-based, and sustainable interventions
3. Increase cooperation between academia, governance structures, and farmers to promote practical and applicable knowledge-based solutions, including action research and other participatory research approaches and development of school curricula on climate change to inform, mobilize, and empower children and youth
4. Develop comprehensive policies on NRM, environmental protection, and effective systems for climate change adaptation and mitigation
5. Increase invest in protective and productive infrastructure, including comprehensive water-shed management systems – Ensure sustainability through establishment and support for grassroots NRM and DRR committees
6. Invest in post-harvest infrastructure to increase income for farmers, reduce food insecurity levels, and reduce food waste
7. Train farmers in climate smart agriculture, including drip-irrigation and other water saving technologies – Ensure that new and innovative approaches are anchored in Universities and Agriculture TVET Schools = Institutionalize innovation
8. Introduce drought resistant crops to increase yields while reducing water consumption and work towards changing food habits (e.g., increase pulse, soy, and other plant-based protein sources) and reduce the reliance on wheat

Afghanistankomiteen
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