Climate Change in Afghanistan: Impacts, Risks, and Responses

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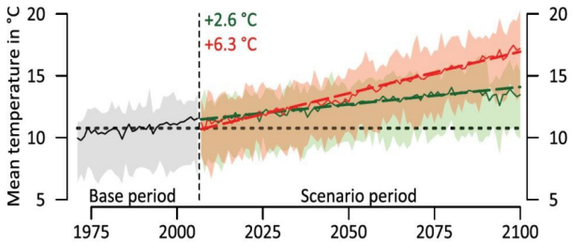
Afghanistan's Climate Profile

Afghanistan is acutely exposed to climate change due to its mountainous terrain, glacier- and snowmelt-dependent water systems, and heavy reliance on rainfed and irrigated agriculture and livestock. Rising temperatures, prolonged droughts, erratic rainfall, and recurrent floods are straining water supplies, degrading land, and threatening rural livelihoods. These climate pressures are already undermining food security, public health, and economic stability. Although government and international partners have launched adaptation initiatives, limited resources, weak infrastructure, and institutional gaps continue to constrain large-scale resilience efforts.

Climate Change Trends

Afghanistan is already experiencing profound climatic shifts. In the first half of 2025, most provinces recorded above-average temperatures and below-average precipitation relative to the monitoring baseline used by FEWS NET/USGS, intensifying stress on agriculture and water resources. These anomalies build on a long-term warming trend; Afghanistan's mean annual temperature has increased substantially since the mid-20th century.

Long-term projections suggest Kabul's average temperature could rise by approximately 2.3°C to 3.6°C by 2100, depending on emissions scenario. Warming is expected to be most pronounced in summer months, amplifying heat stress on crops, rangelands, and water supply. Precipitation is projected to become more variable, increasing the likelihood of prolonged dry spells and more intense rainfall events, thereby elevating both drought and flash-flood risks. This variability is likely to worsen both drought and flood risks across different regions.



Projected Temperature Change, 1975–2100 (Afghanistan Analysts Network)

Glacier retreat and snowpack decline are among the most visible signs of climate change. Afghanistan lost an estimated 14% of its glacier area between 1990 and 2015, reducing natural water storage and increasing seasonal flow volatility. Projections indicate substantially greater glacier loss by the end of the century, threatening long-term summer water availability as meltwater contributions decline. In the northeastern Hindu Kush-Himalaya ranges, glacier melt contributes significantly to summer streamflow, but this contribution will diminish as glacier mass continues to shrink. These changes threaten river flow patterns, long term water availability, irrigation, and hydro systems that depend on stable seasonal flows.

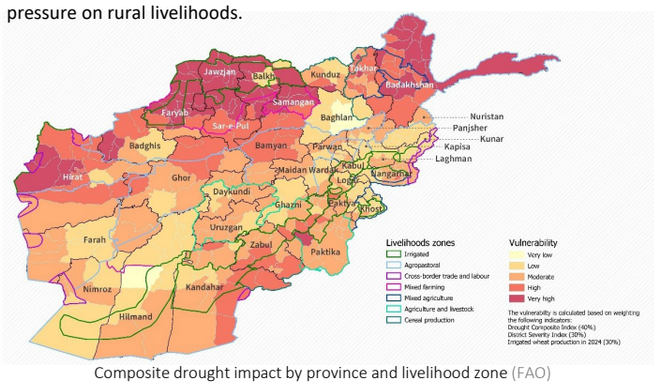
Hydrological regimes are shifting, with both low-flow drought conditions and high-flow flood events becoming more frequent in major river basins. This volatility complicates reservoir management and long-term water planning. Future scenarios suggest greater variability in daily flows, making water allocation for agriculture, drinking supply, and energy production increasingly challenging.

Impacts and Risks

Afghanistan faces increasing climate-related hazards, including rising temperatures, recurrent droughts, seasonal floods, and landslides. These factors are affecting key sectors such as agriculture, water resources, infrastructure, and ecosystems. Regional variations mean that impacts are experienced differently across provinces, highlighting the need for tailored approaches to preparedness and resilience planning.

1. Agriculture and Livelihood Impacts

Agriculture, a cornerstone of Afghanistan's economy and livelihoods, is increasingly vulnerable to climate change. Wheat yields are projected to decline by 2.60%, 3.60%, and 5.45% during the future period (2025–2100) as maximum temperatures increase, under different greenhouse gas scenarios. Additionally, droughts and heat stress have led to crop failures, soil degradation, and reduced irrigation efficiency. In arid provinces, desertification is reducing arable land and grazing areas, placing additional pressure on rural livelihoods.



Composite drought impact by province and livelihood zone (FAO)

2. Water Resources and Health

Groundwater resources are also under pressure from over-extraction and declining recharge rates, particularly around urban centers. Floods frequently contaminate drinking water supplies, increasing the risk of waterborne illnesses. Rising temperatures further exacerbate water quality issues, creating seasonal challenges for both rural and urban communities.

3. Infrastructure and Displacement

Climate-induced disasters continue to damage infrastructure and displace populations. Floods and climate-related landslides frequently destroy housing, roads, irrigation canals, and energy facilities, disrupting connectivity and local economies. Seasonal floods in eastern and northeastern provinces often trigger flash floods and landslides, damaging homes and agricultural land.

Droughts also drive population movements as households seek alternative livelihoods.

In 2024, nearly 988,000 people experienced temporary displacement (lasting less than one month) due to climate- and disaster-related events. In the first quarter of 2025, close to five million people–about 10% of the population–were affected by environmental hazards. Nearly 396,000 people were forced to leave their homes, and approximately 79% of internal displacements were linked to climate-related events.

4. Ecosystems and Biodiversity

Climate change is contributing to land degradation, desertification, and forest loss in several regions. Reduced vegetation cover increases erosion and decreases the land's natural ability to absorb rainfall, thereby intensifying flood risks. Glacier retreat in the Hindu Kush-Himalaya range is particularly concerning, as it directly affects river systems, groundwater recharge, and agricultural water availability.

5. Compound and Future Risks

Multiple hazards often occur together, amplifying their impacts. For instance, drought can weaken soil and vegetation cover, making floods and landslides more destructive when heavy rainfall occurs. Looking ahead, average temperatures in Afghanistan are projected to rise by 1.5–2°C by 2050, with more frequent droughts and intense rainfall events. These shifts are expected to increase stress on agriculture, water systems, and infrastructure if adaptive measures are not strengthened.

Programs and Initiatives

Afghanistan lacks direct climate programming at scale, with climate finance, access, and implementation constraints limiting resilience efforts. The country faces growing environmental challenges, including extreme weather events, water scarcity, land degradation, and the impacts of climate change on agriculture and livelihoods. Despite these pressing issues, there are very few programs or interventions designed to address climate resilience, adaptation, or mitigation in the region. Programs listed are illustrative examples selected based on public documentation, relevance to climate resilience, and national or multi-province reach.

1. **Community Resilience and Livelihoods Project (CRLP)** is funded by the *World Bank* with financing from the Afghanistan Reconstruction Trust Fund (ARTF) and implementation partners including UNOPS and Afghan NGOs and community institutions. The project's objective is to provide short-term livelihood opportunities, rehabilitate community infrastructure, and expand climate-sensitive natural resource management to build resilience in rural and urban communities. Initially approved in 2022, it received Additional Financing in 2024 and continues active implementation through December 2025.
2. **Afghanistan Rural Energy Market Transformation Initiative (FP129)** is funded by the *Green Climate Fund (GCF)* and implemented by *UNDP* in cooperation with Afghan government counterparts. Its objective is to transform Afghanistan's rural energy market by developing commercially viable renewable energy mini-grids, expanding access to sustainable electricity, and strengthening livelihoods through clean energy. The project was approved by the GCF Board in 2020 and was active until August 2021, when implementation was suspended due to political changes in the country.
3. **Afghanistan Climate Vulnerability Assessment (ACVA) / IOM DTM Climate Data Updates** are produced by the *International Organization for Migration (IOM)* through its Displacement Tracking Matrix (DTM) program. The objective is to generate nationwide, community-level climate vulnerability data to inform humanitarian and resilience programming, helping agencies target assistance to areas most at risk. The first assessment was published in late 2024, with updates ongoing in 2025 to guide climate and displacement response.

Rising temperatures
almost all provinces above average; Kabul projected +2.3–3.6°C by 2100.

Droughts in Northeast, East, Southeast
hit hardest, affecting water and crops.

Central Highlands
Urban flooding; East & northeast flash floods and landslides

Near to five million people affected
In the first quarter of 2025

Resources and references

1. Afghanistan Analysts Network (2023).
2. Adapt Afghanistan (2023).
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5. Assessing the impact of climate change on agricultural production in central Afghanistan.
6. Afghanistan: Alarming Effects of Climate Change.
7. Afghanistan: Climate Risk and Resilience Assessment.
8. Climate Change and Water: Afghanistan.
9. Climate Crisis Drives Displacement and Worsens Afghanistan's Humanitarian Needs.
10. Disease and Malnutrition Stalk Water-Scarce Afghanistan.
11. Afghanistan's Environmental Landscapes 2020–2024
12. The Role of Glacier Retreat in Water Availability in the Hindu Kush–Himalaya.
13. Assessing the Impact of Climate Change on Agricultural Production in Central Afghanistan.
14. Afghanistan Community Resilience and Livelihoods Project (CRLP).
15. Afghanistan Rural Energy Market Transformation Initiative – Strengthening Resilience of Livelihoods Through Sustainable Energy Access.
16. Afghanistan Climate Vulnerability Assessment (ACVA)
17. Climate events affect 5m Afghans in first quarter of 2025
18. Negative Impacts of Climate Change: Drought, Water Shortages, and Internal Displacement
19. Climate Crisis Drives Displacement, Worsens Afghanistan's Humanitarian Needs: IOM Report
20. Afghanistan: Worsening drought - Urgent call for assistance