

Research Terms of Reference – Secondary Data Review

Climate Change in Afghanistan – An Overview

AFG2510

Afghanistan

September 2025

V1

REACH Informing
more effective
humanitarian action

1. Executive Summary

Country of intervention	Afghanistan					
Type of Emergency	<input checked="" type="checkbox"/>	Natural disaster	<input type="checkbox"/>	Conflict	<input checked="" type="checkbox"/>	Other: Economic, Political
Type of Crisis	<input type="checkbox"/>	Sudden onset	<input type="checkbox"/>	Slow onset	<input checked="" type="checkbox"/>	Protracted
Mandating Body/ Agency	REACH					
IMPACT Project Code	02BAS ZD4					
Overall Research Timeframe <i>(from research design to final outputs / M&E)</i>	16/04/2025 to 30/09/2025					
Research Timeframe <i>Add planned deadlines (for first cycle if more than 1)</i>	1. Start data consolidation: 16/04/2025		4. Outputs sent for validation: 18/09/2025			
	2. Preliminary source list (inc. reliability scale) sent for validation: NA		5. Outputs published: 30/09/2025			
	3. Preliminary presentation: NA		6. Final presentation: TBD			
Number of assessments	<input checked="" type="checkbox"/>	Single assessment (one cycle)				
	<input type="checkbox"/>	Multi assessment (more than one cycle)				
Humanitarian milestones <i>Specify what will the assessment inform and when e.g. The shelter cluster will use this data to draft its Revised Flash Appeal</i>	Milestone		Deadline (can be tentative)			
	<input type="checkbox"/>	Donor plan/strategy	-- / - / ----			
	<input type="checkbox"/>	Inter-cluster plan/strategy	-- / - / ----			
	<input type="checkbox"/>	Cluster plan/strategy	-- / - / ----			
	<input type="checkbox"/>	NGO platform plan/strategy	-- / - / ----			

	X	Other (Specify): REACH Climate Change Research Strategy	Summer 2025
Audience Type & Dissemination <i>Specify who will the assessment inform and how you will disseminate to inform the audience</i>	Audience type		Dissemination
	X	Strategic	X General Product Mailing (e.g. mail to NGO consortium; HCT participants; Donors)
	X	Programmatic	□ Cluster Mailing (Education, Shelter and WASH) and presentation of findings at next cluster meeting
	□	Operational	X Presentation of findings (e.g. at HCT meeting; Cluster meeting)
	□	[Other, Specify]	X Website Dissemination (Relief Web & REACH Resource Centre)
			□ [Other, Specify]
Stakeholder mapping	□	Yes	X No
General Objective	The aim is to summarise the literature on climate change across Afghanistan and its impacts on the Afghan population, in order to improve accessibility of available information, highlight the need for climate change mainstreaming in the humanitarian and basic needs responses, and inform REACH's climate change research system.		
Specific Objective(s)	<ol style="list-style-type: none"> 1. Provide an overview of the academic and humanitarian climate change literature. 2. Describe the current and projected impacts of climate change in Afghanistan. 3. Describe the impacts of climate change on the Afghan population. 4. Identify research gaps and opportunities. 		
Research Questions	<ol style="list-style-type: none"> 1. What information on climate change and its impacts is available for Afghanistan from the academic and humanitarian literature? 2. Which changes to the climate have already occurred in the previous decades, and which are expected in the coming decades? 3. What are the current and projected impacts on Afghan persons? 4. Which information gaps exist? 		
Geographic Coverage	Whole of Afghanistan		
Secondary data sources	Provided on request. Sources include open-access academic research articles and humanitarian reporting.		
	X	Situation overview #: 1	□ Report #: __ □ Profile #: __

Expected output type(s)	<input type="checkbox"/>	Presentation (Preliminary findings) #:	1	Presentation (Final) #: 1	<input type="checkbox"/>	Factsheet #: _ _
	<input type="checkbox"/>	Interactive dashboard #:_	<input type="checkbox"/>	Webmap #: _ _	<input type="checkbox"/>	Map #: _ _
Access	X	Public (available on REACH resource center and other humanitarian platforms)				
	<input type="checkbox"/>	Restricted (bilateral dissemination only upon agreed dissemination list, no publication on REACH or other platforms)				
Visibility	REACH					
	Donor: NA					
	Coordination Framework: NA					
	Partners: NA					

2. Rationale

2.1 Background

In 2022, Afghanistan was one of the 15 most vulnerable countries to climate change, according to the vulnerability index by the Notre Dame University. This suggests that the Afghan population is highly exposed to climate change, sensitive to these changes, has adapted poorly, and shows little readiness to invest in climate adaptation.^{1,2} However, impacts of climate change are complex due to Afghanistan's diverse geography. Particularly, altitudes range from 260m to 7,500m above sea level,³ affecting temperatures, rainfall, and other climate dimensions. Besides anticipated adverse impacts of climate change, such as increasing temperatures, greater drought frequency, and glacier retreat,^{4,5} some positive impacts are expected. These include longer growing seasons and medium-term increases in river flows due to increased meltwater.^{4,6}

While research on climate change in Afghanistan exists, much of it is within the academic literature and hence is not easily accessible to humanitarian and basic needs actors. Some efforts have been

¹ Notre Dame University. "Vulnerability Rankings | ND-GAIN Index," 2022. <https://gain-new.crc.nd.edu/ranking/vulnerability>.

² Chen, Chen, Ian Noble, Jessica Hellmann, Joyce Coffee, Martin Murillo, and Nitesh Chawla. "University of Notre Dame Global Adaptation Initiative - Country Index Technical Report." University of Notre Dame, August 2024. https://gain.nd.edu/assets/581554/nd_gain_countryindex_technicalreport_2024.pdf.

³ "Geography of Afghanistan." In *Wikipedia*, April 13, 2025. https://en.wikipedia.org/w/index.php?title=Geography_of_Afghanistan&oldid=1285423817#Mountain_systems.

⁴ Aich, Valentin, Noor Ahmad Akhundzadah, Alec Knuerr, Ahmad Jamshed Khoshbeen, Fred Hattermann, Heiko Paeth, Andrew Scanlon, and Eva Nora Paton. "Climate Change in Afghanistan Deduced from Reanalysis and Coordinated Regional Climate Downscaling Experiment (CORDEX)—South Asia Simulations." *Climate* 5, no. 2 (June 2017): 38. <https://doi.org/10.3390/cli5020038>.

⁵ Shokory, Jamal A. N., Bettina Schaeffli, and Stuart N. Lane. "Water Resources of Afghanistan and Related Hazards under Rapid Climate Warming: A Review." *Hydrological Sciences Journal*, February 17, 2023. <https://www.tandfonline.com/doi/abs/10.1080/02626667.2022.2159411>.

⁶ Bjelica, Jelena. "Shrinking, Thinning, Retreating: Afghan glaciers under threat from climate change." *Afghanistan Analysts Network - English*, January 2021. <https://www.afghanistan-analysts.org/en/reports/economy-development-environment/shrinking-thinning-retreating-afghan-glaciers-under-threat-from-climate-change/>.

undertaking by humanitarian organisations to shed light on the topic, notably ⁷. However, the majority of this reporting focuses on drought (e.g. ^{8,9,10}) and adaptation (e.g. ^{11,12,13}), rather than on the impacts of climate change specifically. This is an essential topic for the response due to its implications for disaster risk, livelihoods, food security, health and others, as well as affecting the sustainability of humanitarian programmes. The aim of this research is hence to provide a summary of existing academic and humanitarian research on climate change in Afghanistan and its impacts on the population, providing a mapping of resources.

This project links to previous research conducted by REACH on drought⁸ while leveraging existing REACH data, hence improving utilisation of previous research.

2.2 Intended impact

The intended use of this research is threefold. On a strategic level, it highlights the importance of climate mainstreaming in humanitarian and basic needs programming, given the existing and anticipated impacts of climate change on humanitarian needs. This should help to improve understanding of the current situation to inform strategic decision-making processes, including funding allocations.

Second, on a programmatic level, it should help humanitarian and basic needs actors to anticipate climate shocks in Afghanistan and hence adjust programming to ensure resilience. This should help to improve understanding of the current situation to inform ongoing or planned humanitarian interventions.

Third, for REACH, this provides a baseline analysis of the information landscape which will inform a forthcoming climate change research system.

3. Methodology

3.1 Methodology overview

⁷ ACAPS. "The Key Risks Afghans Face between 2024–2030 That Are Driven or Compounded by Climate Change," August 2024. <https://reliefweb.int/report/afghanistan/acaps-anticipatory-report-afghanistan-key-risks-afghans-face-between-2024-2030-are-driven-or-compounded-climate-change-31-july-2024>.

⁸ REACH Afghanistan. "Afghanistan: Comparative Drought Analysis," September 2024. <https://reliefweb.int/report/afghanistan/afghanistan-comparative-drought-analysis-september-2024>.

⁹ Clark, Kate. "Global Warming and Afghanistan: Drought, hunger and thirst expected to worsen." Afghanistan Analysts Network - English, November 6, 2021. <https://www.afghanistan-analysts.org/en/reports/economy-development-environment/global-warming-and-afghanistan-drought-hunger-and-thirst-expected-to-worsen/>.

¹⁰ ACAPS. "Afghanistan: Understanding Drought," July 4, 2024. <https://reliefweb.int/report/afghanistan/acaps-thematic-report-afghanistan-understanding-drought-4-july-2024>.

¹¹ Bjelica, Jelena. "The Climate Change Crisis in Afghanistan: The catastrophe worsens - what hope for action?" Afghanistan Analysts Network - English, June 6, 2022. <https://www.afghanistan-analysts.org/en/reports/economy-development-environment/the-climate-change-crisis-in-afghanistan-the-catastrophe-worsens-what-hope-for-action/>.

¹² REHA Organisation, and Samuel Hall. "Harnessing Hope: Community Perceptions & Climate Adaptation in Afghanistan - Lessons Learned and the Way Forward," August 2024. <https://reliefweb.int/report/afghanistan/harnessing-hope-community-perceptions-climate-adaptation-afghanistan-lessons-learned-and-way-forward>.

¹³ International Rescue Committee. "Blending Tradition and Modernity for Disaster Risk Reduction at the Epicenter of Crisis: The Case of Afghanistan and Somalia," November 2024. <https://reliefweb.int/report/afghanistan/blending-tradition-and-modernity-disaster-risk-reduction-epicenter-crisis-case-afghanistan-and-somalia-enardarips>.

This is a non-systematic scoping literature review. Open-access academic peer-reviewed literature and grey literature in the form of working papers and preprints are identified through targeted Google Scholar searches. Additional UN documents and humanitarian reporting is identified through ReliefWeb. Research is synthesised according to pre-determined topics of interest. During this process, research gaps in the realm of climate data and information on the humanitarian and basic needs impacts of climate change in Afghanistan are identified. These gaps are discussed further in the Situation Overview.

3.2 Population of interest

The entire population residing within Afghanistan is of interest to this research.

3.3 Secondary data review

The output will focus on synthesising studies and reports on recent and projected climate change manifestations and impacts on population of Afghanistan. The emphasis will be on academic journal articles as the complex nature of climate change means that climate analysis and projections require extensive technical expertise. Academic journal articles are primarily identified through Google Scholar using search terms such "climate change Afghanistan" but also searches for specific dimensions of climate change as relate to drought, flooding, glaciers, river flow, and such. Note that REACH relies primarily on open access sources, and so the synthesis will necessarily exclude key articles. Complementing academic literature, the research will include grey literature, specifically UN documents, humanitarian reports, working papers, and academic preprints. These contribute dimensions such as population perceptions of climate change¹² and consider the contemporary realities of climate research and action in Afghanistan,¹¹ which is unlikely to be represented in academic literature. Other than relevance to the research questions, no inclusion criteria (considering for instance the methodology or quality of the research) are imposed.

This scoping literature review is loosely structured according to some key themes of climate change, which were identified over the course of the literature review:

- Meteorology (RQ2):
 - Temperature
 - Precipitation
- Hydrology (RQ2):
 - Glaciers and snowpack
 - River flow
 - Groundwater
- Extreme Events (RQ2):
 - Drought
 - Floods
 - Heatwaves
 - Other extreme events
- Human impacts (RQ3):
 - Water access
 - Food security
 - Health
 - Agriculture

- Livestock
- Displacement
- Conflict
- Hydropower
- Community perspectives (RQ3):
 - Perceptions
 - Coping strategies and assistance
 - Community priorities
 - Vulnerable groups

RQ4 is discussed in the conclusions.

Where possible, at least five sources that speak to each sub-dimension are identified. Results from these sources will be synthesised by sub-dimension. This is done in a non-systematic way, focusing on themes for which there is agreement across multiple sources, as well as highlighting where contradictions or research gaps exist. These gaps will be further discussed throughout the situation overview.

3.4 Limitations

- The literature review primarily includes open-access sources and so may miss key research on climate change in Afghanistan.
- Due to 40 years of war, ground-level data from Afghanistan is scarce, and many gaps exist. This has impacted the quality of all research on Afghanistan.
- No systematic methodology was employed for this literature review, due to which biases may have been introduced and key research may have been omitted.

4. Key ethical considerations and related risks

The proposed research design meets / does not meet the following criteria:

<i>The proposed research design...</i>	<i>Yes/ No</i>	<i>Details if no (including mitigation)</i>
... Has been coordinated with relevant stakeholders to avoid unnecessary duplication of data collection efforts?	Yes	No data is collected
... Does not expose researchers and / or data subjects to any risks as a direct result of this research and analysis exercise?	Yes	
... Does not involve analysing information on specific topics which may be stressful and/ or re-traumatising for researchers and/or data subjects?	Yes	
... Follows IMPACT SOPs for management of personally identifiable information ?	Yes	No PII included in the research

5. Roles and responsibilities

Task Description	Responsible	Accountable	Consulted	Informed
Research design	Assessment Specialist (AS)	Deputy Country Representative (DCR)	IMPACT HQ	
Data processing and analysis	AS	DCR	IMPACT HQ	
Output production	AS	DCR	IMPACT HQ	
Dissemination	AS, DCR	DCR		
Monitoring & Evaluation	Project Development Assistant	DCR		
Lessons learned	AS, DCR	DCR		

Responsible: the person(s) who executes the task

Accountable: the person who validates the completion of the task and is accountable of the final output or milestone

Consulted: the person(s) who must be consulted when the task is implemented

Informed: the person(s) who need to be informed when the task is completed

6. Data Analysis Plan

Available on request.

7. Data Management Plan

Data protection risk assessment			
Have you completed the Indicators Risk Assessment table below?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/> No, no information that potentially allows identification of individuals is to be collected.
[Please complete the first 4 columns in the Indicators Risk Assessment table below]			

8. Monitoring & Evaluation Plan

IMPACT Objective	External M&E Indicator	Internal M&E Indicator	Focal point	Tool	Will indicator be tracked?
Humanitarian stakeholders are accessing IMPACT products	Number of humanitarian organisations accessing IMPACT services/products	# of downloads of x product from Resource Center	Country request to HQ	User_log	X Yes
		# of downloads of x product from Relief Web	Country request to HQ		X Yes
		# of downloads of x product from Country level platforms	Country team		<input type="checkbox"/> Yes
	Number of individuals accessing IMPACT services/products	# of page clicks on x product from REACH global newsletter	Country request to HQ		<input type="checkbox"/> Yes
		# of page clicks on x product from country newsletter, Friendly, bit.ly	Country team		X Yes
		# of visits to x webmap/x dashboard	Country request to HQ		<input type="checkbox"/> Yes
IMPACT activities contribute to better program implementation and coordination of the humanitarian response	Number of humanitarian organisations utilizing IMPACT services/products	# references in HPC documents (HNO, SRP, Flash appeals, Cluster/sector strategies)	Country team	Reference_log	
		# references in single agency documents			
Humanitarian stakeholders are	Humanitarian actors use IMPACT	Perceived relevance of IMPACT country-programs	Country team	Usage_Fee dback and	

using IMPACT products	evidence/products as a basis for decision making, aid planning and delivery	Perceived usefulness and influence of IMPACT outputs		Usage_Survey template	
		Recommendations to strengthen IMPACT programs			
		Perceived capacity of IMPACT staff			
	Perceived quality of outputs/programs				
	Number of humanitarian documents (HNO, HRP, cluster/agency strategic plans, etc.) directly informed by IMPACT products	Recommendations to strengthen IMPACT programs			
Humanitarian stakeholders are engaged in IMPACT programs throughout the research cycle	Number and/or percentage of humanitarian organizations directly contributing to IMPACT programs <i>(providing resources, participating to presentations, etc.)</i>	# of organisations providing resources (i.e.staff, vehicles, meeting space, budget, etc.) for activity implementation	Country team	Engagement_log	<input type="checkbox"/> Yes
		# of organisations/clusters inputting in research design and joint analysis			<input type="checkbox"/> Yes
		# of organisations/clusters attending briefings on findings;			<input type="checkbox"/> Yes