

At the frontlines of the climate crisis

Scoping study for the development
of a climate resilience programme in Asia
(Afghanistan, Nepal, Bangladesh, Myanmar)

Acronyms

AA	Anticipatory Action	GDP	Gross domestic product
AAL	Average annualised losses	GEF	Global Environmental Facility
ADB	Asian Development Bank	GHG	Greenhouse gas
ADPC	Asian Disaster Preparedness Centre	GLOF	Glacial lake outburst flood
AfR	Agenda for Renewal	GRC	German Red Cross
APR	Annual probability rate	GRWG	Green response working group
ARCS	Afghanistan Red Crescent Society	HNS	Host National Society
AREU	Afghanistan Research and Evaluation Unit	ICIMOD	International Centre for Integrated Mountain Development
BCR	Benefit-cost ratio	ICRC	International Committee of the Red Cross
BDRCS	Bangladesh Red Crescent Society	IDP	Internally displaced person
CBA	Cost-benefit analysis	IFAD	International Fund for Agricultural Development
CCA	Climate change adaptation	IFRC	International Federation of Red Cross and Red Crescent Societies
CCM	Climate change mitigation	IPCC	Intergovernmental Panel on Climate Change
CDE	Centre for Development and Environment	IWRM	Integrated water resources management
CEA	Community engagement and accountability	LULUCF	Land use, land use change, forestry
CO₂	Carbon dioxide	KII	Key informant interview
CPP	Cyclone Preparedness Programme	MFA	Ministry of Foreign Affairs (Denmark)
CSA	Climate-smart agriculture	MRCS	Myanmar Red Cross Society
CTP	Cash transfer programming	MHPSS	Mental health and psychosocial support
DACAAR	Danish Committee for Aid to Afghan Refugees	MIMU	Myanmar Information Management Unit
DCA	Dan Church Aid	MoDMR	Ministry of Disaster Management and Relief (Bangladesh)
DHM	Department of Hydrology and Meteorology (Nepal)	NAP	National Adaptation Plan
DRC	Danish Red Cross	Nbs	Nature-based solutions
DRC*	Danish Refugee Council	NDC	Nationally Determined Contributions
DRM	Disaster risk management	NRCS	Nepal Red Crescent Society
DRR	Disaster risk reduction	NRM	Natural resource management
EAP	Early action protocol	NSD	National Society Development
EbA	Ecosystem-based adaptation	NTFP	Non-timber forest products
ENSO	El Niño Southern Oscillation	PAR	Pressure and release
EVCA	Enhanced vulnerability and capacity assessment	PNS	Partner National Society
EUR	Euro	PPP	Purchasing power parity
FAO	Food and Agricultural Organization	RCRC	Red Cross/Red Crescent
FGD	Focus group discussion	SRSP	Shock-responsive social protection
FLR	Forest and landscape restoration	ToR	Terms of reference
FMNR	Farmer-managed natural regeneration	UNFCCC	United Nations Framework Convention on Climate Change
FRC	Finnish Red Cross	WFP	World Food Programme
GCF	Green Climate Fund		

Contents

i	Acronyms
iii	Executive summary
1	Introduction
2	1. Objectives
2	2. Approach
5	3. Climate change and the RCRC
9	4. Regional findings
15	5. Afghanistan
21	6. Nepal
29	7. Bangladesh
39	8. Myanmar
48	9. Conclusion
51	Appendix
52	A. List of interviews
52	B. Literature

**At the frontlines of the climate crisis.
Scoping study for the development of a
climate resilience programme in Asia
(Afghanistan, Nepal, Bangladesh, Myanmar).**

Danish Red Cross, August 2023
Blegdamsvej 27
2100 Copenhagen
Denmark

Authors

Patrick Bolte, Banyaneer Consulting
Samadhi Marr, Banyaneer Consulting
Dr Su Myat Yin Chaw, Banyaneer Consulting

Acknowledgements

We would like to express our gratitude to everyone who supported this study through insights, guidance, and support.

This includes the members of the study support group — notably Fabrice Vandeputte, Sille Bern Jensen, Bjarne Andreassen, Anne Mette Meyer, Toke Jeppe Rogbo-Bengtsson, Brian Brady, Mette Norling Schmidt, and Tina Agerbak.

We furthermore thank all interview partners and participants of focus group discussions, as well as the staff in the four countries at the heart of this study.

Afghanistan: Shakar Arkab Khan, Ahmad Wali, Milan Gizdavic

Nepal: David Fogden, Tamas Marki, Rajesh Shrestha. Upstream research team: Binita Dhungel, Shubadra Devkota, Sundeep Magar, Bharat Hamal, Yama Raj Khadka, Downstream research team: Rudra Adhikari, Niru Pradhan, Mukesh Gautam, Lautan Chadhary

Bangladesh: Alfredo Melgarejo, Emmeline Untaran Managbanag, Sille Bern Jensen, Alex Ssimba, Zubair Alam, Pernille Hvitnov

Myanmar: Fabio Beltramini, Moe Thida Win, Zin Mar Win, Michelle Petersen, Sergei Boltrushevich

Executive summary

Discussing climate change typically has a future focus. Indeed, the scientific projections show that a warmer world means that regional climates will be warmer, wetter, wilder, drier in the decades to come.

But as this report highlights, the climate crisis has long begun. It is now. The four countries at the heart of this study have very different contexts. Yet, in all of them, creeping climate stresses and more frequent extreme weather events already push communities to the edge, testing and at times exceeding their coping capacities.

The imperative to act quickly and at scale is evident in all four countries. But in terms of opportunities to support climate resilience, the quartet of countries resembles two distinct pairs.

The first — Afghanistan and Myanmar — has severe operational constraints that limit programming opportunities. Here, basic options should be pursued that can be expanded and built upon when future situations allow.

The second pair — Nepal and Bangladesh — has favourable conditions that include comprehensive policy frameworks and strong networking options. Here, a mix of basic and large-scale approaches should be applied that together should aim for ambitious advances in climate resilience.

The study proposes a modular regional programming framework that has a logic of progressive growth (its five blocks build onto each other) and that should be contextualised for each country.

Commissioned by Danish Red Cross (DRC), the objective of this study was to explore how DRC can best support its Partner National Societies (PNS) in strengthening climate resilience where it is needed the most. This included two aspects — *first*, to assess climate-related needs, and *second*, to provide an outline for a new climate resilience programme that DRC seeks to implement.

Research included an extensive review of literature and policies, as well as in-country studies in Afghanistan, Nepal, Bangladesh, and Myanmar (May - June 2023).

Observed climate impact

In all four countries, patterns have been observed that are in line with the latest IPCC report. These include warmer mean climates and heat extremes as well as shifted precipitation patterns. There are prolonged periods with little or no rain, as well as more frequent extreme rainfall events. This has already increased the frequency of droughts, floods, and landslides.

Seasonal shifts in precipitation, especially reduced precipitation during agricultural growth periods, add severe stress to rain-fed agriculture that the majority of populations in the four countries rely on.

The impact of the climate crisis is already severe and has complex social effects, in particular on communities in identified 'climate hotspots'. The consequences for women are especially severe. Water scarcity is a key issue that affects livelihoods, food security, and health. Increased migration was noted in all hotspots, either as a coping strategy to compensate for reduced agricultural yields through supplementary income from temporary work, or as a permanent outmigration, which is mostly a means of last resort. Climate migration and displacement will increasingly compound other conflict-related migration drivers that are strong in Myanmar and Afghanistan.

Climate projections suggest that impacts on livelihoods will accelerate drastically. This will include the risk of widespread crop failures and the reduction or shift in arable zones. In Afghanistan and Nepal, reduced coverage of snow and ice translates to decreased inter-seasonal water flows. In coastal parts of Bangladesh and Myanmar, increased salinity levels will be the precursors of eventual submergence of coastal communities, as sea levels rise.

While the climate impact on disaster mortality is insignificant thus far (in fact, the number of people killed in disasters has fallen, thanks in part to progress in disaster risk reduction), the direct impact on lives will be strong from the 2030s onwards, primarily through the increased frequency and severity of heatwaves in urban centres (among the four countries studied, this will apply to Bangladesh and Myanmar).

Compounding risk factors

Structural vulnerability is the key compounding risk factor across all countries: communities and households with few or no buffers and limited access to services, safety nets, markets, and information have comparably less recourse to cope with and adapt to additional climatic stressors. At the same time, strong dependency on natural resources (agriculture, fishing) comes with high levels of sensitivity to these stressors.

Environmental degradation is a significant factor that compounds climate risk: in all four countries, degraded local environments led to reduced functionality of ecosystems, including their protective and regulatory services. The interplay between global (climate change) and local factors (degradation) is commonly under-appreciated, and increases the risk of maladaptation. Increasing groundwater extraction to compensate for less regular rain is a common pattern with positive short-term but disastrous long-term effects, for instance.

Policy responses

In Nepal and Bangladesh, governments have prepared comprehensive and detailed National Adaptation Plans

that are complemented by suites of technical and sectoral frameworks and plans. The implementation of these ambitious plans will require substantial external support, especially at local levels.

In **Afghanistan** and **Myanmar**, two countries that have seen takeovers of control in 2021 by entities that are not internationally recognised, policy responses of previous governments to the climate crisis have effectively remained dormant since 2021. The humanitarian crises that have ensued overshadow any efforts towards long-term adaptation and climate resilience.

Movement ambitions

The Red Cross and Red Crescent (RC/RC) Movement has expanded its programmatic focus over past decades and now treats climate resilience as one of its strategic priorities. Concrete efforts include IFRC's Global Climate Resilience Programme (that includes Nepal, Bangladesh, and Myanmar) as well as projects in all four countries led by IFRC and/or PNS. These projects vary in scale, scope, focus, and approach. **Anticipatory action (AA)** features in some of them (Nepal, Bangladesh, Myanmar), while the integration of **nature-based solutions (NbS)** is being prepared in Nepal and Bangladesh.

Danish Red Cross addresses several aspects related to climate resilience in its International Strategy 2022-25. These include health, disaster management (with a focus on AA), and inclusion/protection (focus on displacement and migration).

Regional programme outline

This study proposes that Danish Red Cross rolls out a modular regional programme over a **timeframe of ten years** (2024-2034). Its **five building blocks** ([block 1](#): foundations, [block 2](#): broad starters, [block 3](#): community resilience, [block 4](#): landscape resilience, [block 5](#): climate migration (cross-cutting)) are designed with a logic of progressive growth (rather than sectors) and that can be contextualised for each country. Comparative strengths of DRC should be treated as foundations for each of them.

Block 1 seeks to strengthen the **internal capacities** of Host National Societies and DRC country delegations required for climate resilience programming. This includes efforts to develop, strengthen, and nurture local **partnerships** and networks.

Block 2 entails the use of 'broad starters' — awareness-raising campaigns coupled with small actions that demonstrate the effects of climate change and environmental degradation, while offering easy actions that can be implemented at scale through existing entry doors (such as branches, health teams, and youth clubs).

Block 3 includes typical community-based projects. Here, the focus is on a) retrofitting current projects with the integration of aspects that foster climate resilience, as well as b) the development of new projects that are holistic in their approach.

Block 4 envisages longer-term efforts developed at landscape scale, and in strong alignment with government frameworks. These will typically cover multiple communities connected by landscapes and may include NbS. Such broad efforts will be complex in governance and implementation but are seen as more effective and sustainable in addressing root causes of climate vulnerability.

Block 5 seeks to address the negative effects of climate migration and displacement, through efforts that promote safer migration, better access to services, and more beneficial outcomes for migrants and communities. Block 5 is envisaged as a cross-cutting aspect that can be embedded into efforts under blocks 1-4.

Country contexts

In **Afghanistan**, the current context effectively rules out formal partnerships with non-Movement actors. Here, DRC should focus on internal capacity-strengthening (block 1) and the roll-out of a 'water wise' campaign that promotes the efficient and safe use of water (block 2).

In **Nepal**, the policy and partnering context offers fertile ground for ambitious climate resilience programming. This should be centred around the Karnali River Basin, an identified climate hotspot in western Nepal.

In **Bangladesh**, an equally strong enabling environment provides the foundation for ambitious programming. Both coastal Satkhira and inland Sunamganj — the two identified climate hotspots visited for this study — would represent suitable programming areas.

In **Myanmar**, opportunities are currently limited due to operational constraints. Block 1 and 2 activities should be pursued initially in current project locations in Kachin and Shan States. Further engagement should consider Bago and Ayeyarwady Regions on the basis of risk and access considerations.

Strategic adjustments

In order to maximise its effectiveness in climate resilience programming, the study suggests that Danish Red Cross should explore four areas of strategic adjustment, thereby extending or modifying its International Strategy:

- ▶ **focusing more on livelihoods** in terms of strategy and internal expertise (because to a large part, climate resilience is about resilient livelihoods);
- ▶ further **embracing partnerships** with actors that offer complementary expertise (because climate resilience requires holistic programming, and will need expertise in ecological assessments and multi-faceted solutions);
- ▶ **thinking longer-term**: addressing root causes of climate vulnerability necessitates master-planning that goes beyond the timeframe of most DRR projects; and
- ▶ **exploring new sources of funding**. There are several funding sources that DRC should utilise, in particular for Block 4 activities. However, these will require some initial investment and preparation.



Introduction

The floods came early. The waters inundated paddy fields, destroying most crops long before they were ready to harvest. And if this was not bad enough, when the regular monsoon floods came two months later, they brought the highest flood levels in at least 123 years — killing livestock and damaging homes and assets.

As we sit in the union chairman's hot office in Fatehpur in Bangladesh's north-eastern district of Sunamganj, we listen to villagers' stories from the 2022 flood season. "Many lost everything", says a farmer. "100% of the homes were flooded", adds another. "Lots of people left, now working in Dhaka or Gazipur", says a woman. How do they do? "They survive, they don't thrive", she replies.

The climate crisis already impacts cities and communities around the world. But where their additional stresses meet existing vulnerability, their impact is most severe. Dependency on natural resources is a key determinant: to office workers, severe rainfall or heatwaves may be a nuisance. To farmers, they can mean the loss of their livelihoods.

This study is a visit to the frontline of the climate crisis. We visited Afghanistan, Nepal, Bangladesh and Myanmar — four countries that are all severely affected by climate change. Furthermore, we travelled to climate hotspots like Sunamganj to better understand its impact on communities. How are people affected? How do they cope? What support do they get? And crucially: how can programming best increase climate resilience?

Through an extensive review of literature and data, as well as through interviews in Kabul, Kathmandu, Dhaka and Yangon, we furthermore gathered a picture of policies, current plans and programmes, of gaps and opportunities for the development of a regional climate resilience programme that Danish Red Cross (DRC) seeks to launch.

In essence, this study sought to answer a single question: how can DRC best support its Partner National Societies in strengthening climate resilience where it is needed the most?

The report briefly introduces the study's objectives (*chapter 1*) and approach (*chapter 2*), and offers general insights on climate resilience programming in the context of DRC strategic priorities and the Red Cross/Red Crescent (RC/RC) Movement (*chapter 3*).

Chapters 4-8 include the overarching and country-specific findings. Each country chapter starts with a country and climate profile and proceeds with a risk profile, response analysis, RC/RC positioning, and programming guidance.

The report ends with insights on implementation focus, approach, and modality of the new programme and concluding remarks (*chapter 9*).

Climate change entails a hugely complex array of physical interdependencies, causal chains, tipping points, and much more. But in essence, it is about atmospheric warming that leads to warmer local climates (leading to greater risk of heatwaves, more evaporation, and shifted 'comfort zones' of ecosystems, melting of glaciers and sea ice and thus sea-level rise).

Largely because warmer air can 'hold' more moisture (7% more for every additional degree Celsius), it comes with a redistribution of precipitation: it may not rain at all for extended periods (drought), it may rain at different times, and it may rain more heavily in what we know as extreme weather events. The greater moisture content can also make tropical storms more intense and damaging.

The data and the stories from climate hotspots illustrate these shifting patterns and their impact on communities — highlighting the role of **climate change as a risk accelerator**.

Our research furthermore illustrates that **climate change is not the whole story**. It is common to blame disasters on climate change, and indeed, great advances in attribution analysis point to its role in many events.

However, environmental degradation, pollution, and poor planning all play a role. Typically, **global factors** (climate change) and **local factors** (such as environmental degradation) converge.

Halting and reversing degradation of ecosystems can reduce net risk and render communities more resilient — especially if this is coupled with other measures to strengthen 'lines of defence', which can include crop insurance, anticipatory action, climate-smart agriculture, and much more.

As this report will show, advancing climate resilience is about holistically improving lines of defence: reducing exposure, sensitivity, and social vulnerability, while increasing preparedness as well as coping and adaptive capacities. This will require adjustments in positioning, approaches and program timeframes for DRC.

1. Objectives

The objectives of this Danish Red Cross study were two-fold. **First**, it was to assess the specific needs emerging from the climate crisis in the four targeted countries. To what extent are Afghanistan, Nepal, Bangladesh and Myanmar exposed to climate-induced hazards and stressors, what are the underlying vulnerabilities, and what are the most pressing gaps in the overall response of governments as well as humanitarian and development actors?

Based on this analysis, the **second** objective was to co-design a regional climate resilience programme, aiming to ‘minimise and address the negative impact of the climate crisis on the most vulnerable populations.’

The terms of reference (ToR) envisage two work streams for this programme:

- ▶ an **anticipatory approach**, where the impact of climate-induced disasters is reduced through well-targeted and cost-efficient anticipatory actions; and
- ▶ a **developmental approach**, where vulnerable communities are supported in adapting to a changing climate through resilience-strengthening projects.

To this end, the study team was expected to deliver the following elements:

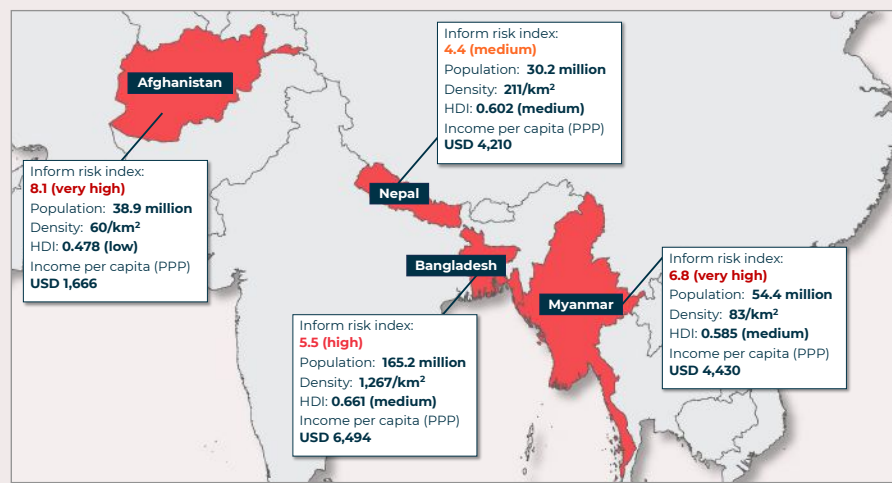
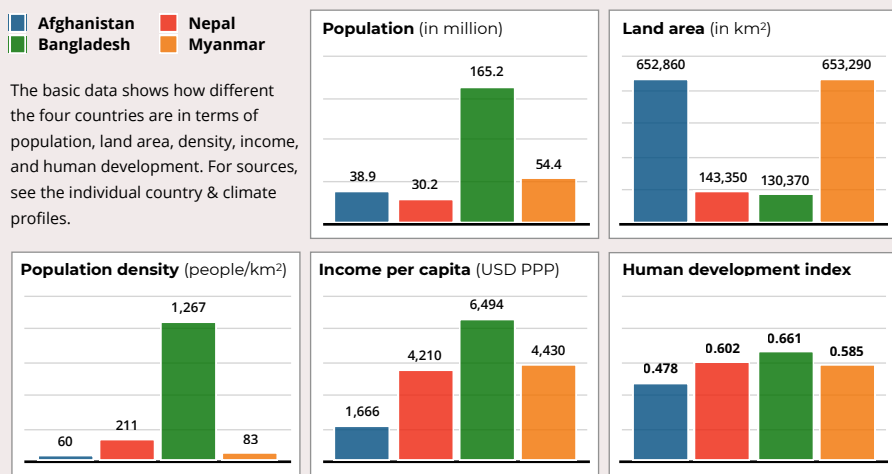
- ▶ **to analyse** how climate-induced disasters impact the most vulnerable communities in the four targeted countries;
- ▶ **to assess** the gaps between the needs and the current responses (of development actors and partner national societies) related to preparing for, coping with, and adapting to changing weather and climate patterns and risks;
- ▶ **to define** the specific role of the Danish Red Cross based on its added value;
- ▶ **to identify** potential partners;
- ▶ **to propose** an outline of the regional programme; and
- ▶ **to present** the study results.

Danish Red Cross supported the study team through regular updates and calls with the DRC Eurasia unit, technical advisors, and members of the four country delegations.

Initial results were presented in early June at the regional meeting of Danish Red Cross in Bangkok; feedback from this meeting were incorporated into this report.

1. This final version greatly benefited from the review of the initial draft version and was completed in August 2023.

Figure 1 | Comparing the four countries: basic data



2. Approach

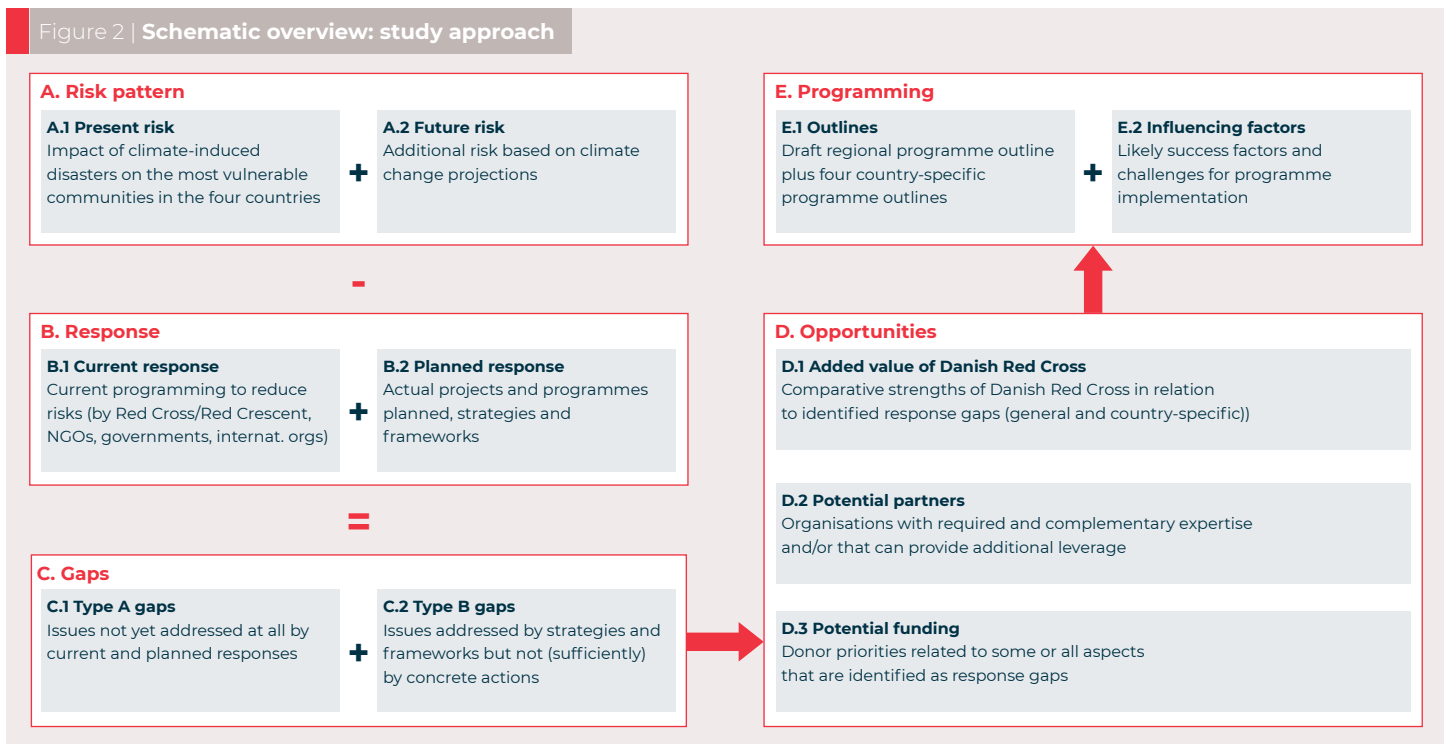
The study was carried out in three phases — the **preparation phase** (April 11th - 30th, 2023), the **research phase** (May 1st - 28th), and the **synthesis phase** (May 29th - June 16th).¹ It included an extensive literature review and in-country studies in Afghanistan (*Patrick Bolte*), Nepal (*Samadhi Marr*), Bangladesh (*Patrick Bolte*), and Myanmar (*Su Myat Yin Chaw*).

The **preparation phase** had the three objectives: the review and initial synopsis of secondary information, the preparation of country visits, and the identification of climate hotspots in each country.

The **literature review** included the latest round of IPCC reports, regional studies, key policies and plans (such as National Adaptation Plans (NAP)), strategies, scientific and grey literature. All reviewed documents are listed in *appendix B*.

The review of these documents enabled a policy analysis for each country as well as the compilation of sub-national risk data.

Figure 2 | Schematic overview: study approach



Risk and climate outlook data at the subnational level (e.g. Inform Index for Bangladesh and Myanmar) furthermore helped *identify climate hotspots*.

- ▶ For **Bangladesh**, the districts of Satkhira in the south-west and Sunamganj in the north-east were identified on the basis of Inform Index ratings (see chapter 7) and confirmed following discussions with the country delegation.
- ▶ For **Nepal**, the Karnali river basin (KRB) was identified on the basis of the NAP and other documents. In discussion with the country delegation, upstream and downstream communities were selected.
- ▶ For **Myanmar**, the initial risk analysis pointed to Shan, Kachin, Rakhine, and Kayin States. However, the prevailing restrictions prevented visiting any of these areas. Eventually, Mandalay and Bago Regions were selected following discussions with the country delegation and Myanmar Red Cross Society (MRCS).
- ▶ For **Afghanistan**, there are numerous climate hotspots, especially in the arid south-west. However, the security context did not enable any travel outside the capital Kabul.

In addition, the initial literature review informed the development of a broad study design (see figure 2 above). For each of the four countries, we aimed to identify current

and future risk (item A), to analyse the current and planned response (item B), response gaps (item C), opportunities (item D), and to provide guidance on programming (item E) in terms of outlines and influencing factors.

The overarching research design was explorative in nature: insights gained at each step of the process shaped further research. This meant that for instance, participants during focus group discussions (FGD) would help to shape discussions: if the discussion showed that a particular aspect was important, this would be explored in greater detail (instead of following to a rigid frame of enquiry). This approach enabled a detailed (although inevitably simplified) creation of problem trees for Nepal and Bangladesh hotspots (see pages 25, 36, and 37).

The overarching enquiry at communities was aligned with the eleven dimensions of resilience² — thereby aiming to ensure that the impact of climate change was assessed in a holistic manner. This also helped to identify priorities for adaptive action and programming more broadly.

In addition to FGDs, research tools included transect walks and semi-structured key informant interviews (KII) at national and local levels. The full list of interviews can be seen in *appendix A*.

To prepare the in-country research, the study team discussed with DRC country delegations

2. Resilience is the “ability [...] to anticipate, reduce the impact of, cope with, and recover from the effects of shocks and stresses without compromising [...] long-term prospects.” (IFRC 2021:8).

Resilience can be seen from functional and outcome perspectives. The *outcome perspective* of resilience aims for a quick re-bounce in the wake of a stressor. The overall downturn of a highly resilient community is short and shallow, compared to a deep and prolonged downturn of a less resilient community.

The *functional perspective* meanwhile looks at the characteristics a community needs to have to be resilient. IFRC has defined a set of eleven resilience dimensions that include 1. risk management, 2. health, 3. water, 4. shelter, 5. food & nutrition security, 6. economic opportunities, 7. infrastructure and services, 8. natural resource management, 9. social cohesion, 10. inclusion, and 11. connectedness.

In some communities, FGDs were started with a game that illustrates the linkage between functional and outcome perspectives. Participants stood in a circle and held up eleven elastic ropes that were linked to the ‘community’ at the centre (symbolised by a rubber ring). A weight (‘the hazard’) was then dropped onto the community. If the ropes are tight, the community quickly bounces back to its original state (it takes longer to do so if the ropes are not tight). The game illustrates that to have a high level of resilience, we need to ‘tighten the ropes’.

the suitability of climate hotspots, lists of potential key informants, schedules and travel arrangements. We thank the DRC team for the excellent facilitation of this process.

Research in Afghanistan

Current IFRC security regulations did not allow for any field visits outside the capital — thus, no climate hotspots were visited here.

Nevertheless, over the course of one week, it was possible to conduct interviews with Afghanistan Red Crescent Society (ARCS), RC/RC Movement partners (IFRC, Danish RC, Norwegian RC, Qatar RC, Turkish RC), with the Ministry of Public Health and the National Environmental Protection Agency (NEPA), as well as with UNICEF and the Aga Khan Foundation.

Research in Nepal

In Nepal, research featured a field trip to the Karnali River Basin, which included six community visits close to the Karnali river (three located upstream in the hills and three others in the lowland Terai) as well as interviews with the Nepal Red Cross Society (NRCS) Karnali province office, various district chapters, and other district-level stakeholders (other local government representatives, DMH, INGOs, CSOs and journalists).

At the national level, interviews were conducted with NRCS, RC/RC Movement partners (IFRC, Danish RC, American RC, British RC), government agencies (Department of Environment and Forestry) and potential partners (WWF, ICIMOD, and Dan Church Aid).

Research in Bangladesh

In Bangladesh, two very different climate hotspots were visited: in coastal Satkhira district in the country's south-west, this included the island community of Gabura as well as interviews with representatives of Shyamnagar upazilla, the Bangladesh Red Crescent Society (BDRCS) district branch, and of Utturan, a local NGO. In Sumanganj district in the country's north-east, the community of Fatehpur was visited. Interviews included representatives of the district department of disaster management, of Bishwamvarpur upazilla, the BDRCS district branch as well as of Utturan and CARE.

At the national level, interviews were conducted with BDRCS, RC/RC Movement partners (IFRC, ICRC, Danish RC, American RC, British RC, German RC, Swedish RC and Swiss RC).

Research in Myanmar

In Myanmar, interviews were conducted with Myanmar Red Cross Society (MRCS), RC/RC Movement partners (Danish RC, German RC, Norwegian RC, and Finnish RC). In terms of climate hotspots, the combination of risk data, climate projections, and considerations of access led to the exploration of five areas (Ayeyarwady, Yangon, and Bago Regions as well as Kachin and Shan States).

In further discussion with MRCS and DRC, it was eventually decided to visit Mandalay and Bago Regions. The Bago visit had to be cancelled due to ongoing delays that would have extended the timeline of this study.

Synthesis

The substantial differences between the four countries, especially in terms of their operating contexts, posed a challenge to develop a singular regional programme that would be relevant and appropriate for all contexts. Therefore, a modular system was designed that is aligned with key RC/RC frameworks but is able to account for the four different country settings.

Feedback from a regional DRC meeting in Bangkok on this model was incorporated in the regional and country outlines, which are illustrated in chapters 4-8.



Bangladesh: Villagers from Gabura in Satkhira district play the resilience game ahead of a focus group discussion. Photo: BDRCS

3. Climate change and the RC/RC Movement

Disasters are not natural. They are almost always the result of decisions made long before the event, and often not by those affected. How much we invest in preparedness, in redundancies, in early warning, in nature-based pathways or not: somebody will get the bill at some point. The saying that ‘earthquakes don’t kill — buildings do’ can be applied in some form to most other hazards.

Before moving to regional findings and the four country assessments, let us reconsider theoretical underpinnings of DRR (part 3.1), reflect on the role of climate change (3.2), environmental degradation (3.3), and the changing role of the Red Cross/Red Crescent Movement (3.4). The chapter ends with a proposed model (‘lines of defence’) to scan for opportunities of practical action (3.5).

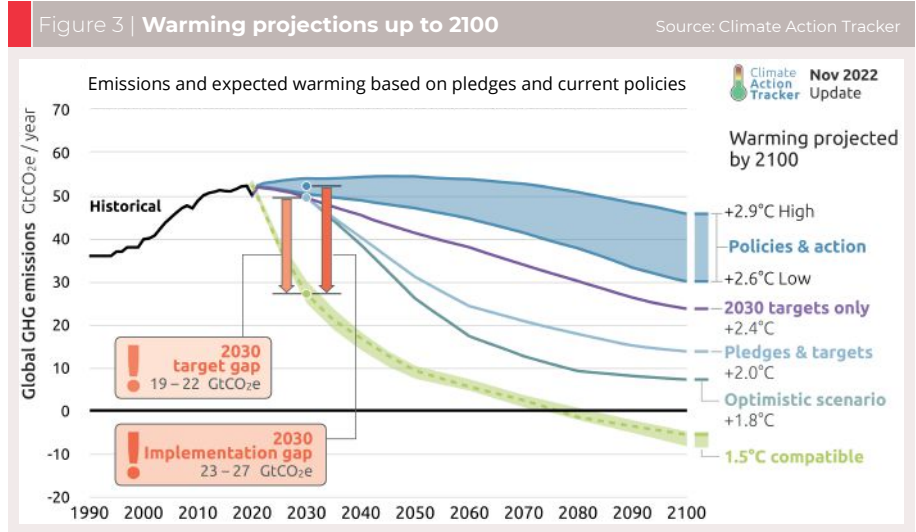
3.1 DRR theory

Disasters occur when hazards meet vulnerability. The ‘pressure-and-release’ (PAR) model describes a progression of vulnerability that starts with root causes and progresses to dynamic pressures and, finally, to unsafe conditions.³ When a hazard hits, the pressure is released. To reduce disaster risk, we need to prevent the build-up of pressure.

Reducing disaster risk is thus essentially about reducing vulnerability in its broadest sense (we cannot do much about the hazards themselves). The PAR model has served as the conceptual underpinning of DRR frameworks and approaches — from the 2015 Sendai Framework for Disaster Risk Reduction (SFDRR) to practical tools such as the Enhanced Vulnerability and Capacity Analysis (EVCA).⁴

The focus on **resilience** that has emerged as a key conceptual and programmatic strain over the past two decades has not moved away from the PAR foundation but made the necessity of holistic risk reduction more elaborate (IFRC 2014).

A more recent term, **systemic risk governance**, was called for in the Global Assessment Report 2022 (UNDRR 2022). Rather than treating disaster risk as a sectoral aspect, this calls for consistent mainstreaming of risk considerations into all spheres of governance, including spatial planning, finance, regional development, and others.



3.2 Climate change

In the decade 2011-2020, the global surface temperature has increased by 1.1°C above 1850-1900 levels (IPCC 2023:4). Limiting global warming to 1.5°C by the year 2100, as the world’s governments aimed for in the 2015 Paris Agreement, appears increasingly difficult to achieve, despite some progress in pledges and policies over recent years. Fig. 3 above illustrates the current outlook on the basis of mitigation targets from pledges and policies.

While every effort must be made to further reduce greenhouse gas (GHG) emissions (and to do so more quickly), countries must also adapt more urgently and broadly to a significantly warmer and wilder world that we are beginning to witness (see figure 4 on climate impacts already observed globally).

Adaptation to climate change inevitably involves uncertainty (adapting to what scenario?). The IPCC cautions that “adaptation options that are feasible and effective today will become constrained and less effective with increasing global warming. With increasing global warming, losses and damages will increase and additional human and natural systems will reach adaptation limits” (IPCC 2023:19).

Warning of the risk of **maladaptation**, the IPCC continues that “the feasibility and effectiveness of options increase with integrated, multi-sectoral solutions that differentiate responses based on climate risk, cut across systems, and address social inequities” (ibid).

The considerations from the discussion of DRR (systemic risk governance, resilience) and climate change adaptation thus all point towards broad and holistic approaches that



3. See Wisner, B. et al. (2004): *At risk. Natural hazards, people’s vulnerability, and disasters*. 2nd ed., Routledge.

4. The SFDRR’s four priorities for action (1. understanding disaster risk, 2. strengthening disaster risk governance, 3. investing in disaster risk reduction for resilience, and 4. enhancing disaster preparedness for effective response) together aim to systematically reduce ‘pressure’. See UNDRR 2015.

would be needed to sustainably strengthen climate resilience. Indeed, in a 2019 report, the International Federation of Red Cross and Red Crescent Societies (IFRC) points out that failing to address the climate crisis may almost double the number of people requiring humanitarian assistance (from 108 million people in 2018 to 200 million in 2050), and calls for long-term reduction in vulnerability and exposure as being the top priority (IFRC 2019:4).

3.3 Environmental degradation

There is more to the story of climate risk. Other environmental crises — ecosystem degradation, biodiversity loss, and pollution — compound climate change. Together, these are seen as planetary crises that threaten human existence.

Nature provides and protects: we commonly take many ecosystem services for granted (just think of the air you breathe in while reading this sentence). Where ecosystems are degraded, their ability to provide their services is compromised. Some of this degradation occurs as a result of climate change. Much however is the result of unsustainable practices of natural resources management (NRM).

From a risk perspective, there is an interplay between the status of ecosystems and climate change (see figure 5). For instance, let us think of a watershed. Climate change may mean more extreme rainfall on the watershed.⁵

If upstream areas feature intact forests and healthy soils, they act like a sponge that absorbs much of the water and helps groundwater infiltration. Where forests and soils are denuded or degraded, they amplify the risk of mudflows, flash floods, and — due to the missing sponge — water scarcity.⁶

From a programme perspective, this gives us greater leverage: while at community-level, nothing can be done to mitigate climate change, we can protect, sustainably manage,

or restore ecosystems — thereby reducing risk and gaining other benefits for climate resilience (such as livelihood and health benefits).

Nature-based solutions (NbS)⁷ have grown popular over the past decade not just because of this triple set of benefits (protective, economic, and environmental) but also because they are often more cost-effective than ‘grey’ alternatives to risk mitigation.⁸

3.4 The Movement moves

While the RC/RC Movement has its roots firmly in the humanitarian sphere (with disaster response and recovery being major components), over the past three decades it has expanded its focus to cover a larger share of the humanitarian-development nexus.

This came first in the shape of community-based activities (such as CBDRR and CBHFA) and in the recognition that some development aspects were needed to enhance humanitarian response (organisational development, now called National Society Development or NSD, and preparedness for effective response are examples of this trend). From the 2010s onwards, the focus expanded towards more comprehensive programming, highlighting the importance of **community resilience** (see, for instance, IFRC 2014).

Even what is arguably one of the Movement’s core businesses — disaster response — progressively gained developmental aspects: systems for early warning and early action were combined with advances in extreme weather forecasting, enabling the development of **anticipatory action** (AA).

This approach entails early action protocols and has pre-established triggers and systems for action *before* an area is hit by a crisis or disaster.⁹

The current frameworks maintain this portfolio but expand it explicitly to addressing the climate and environmental crises. The **IFRC Strategy 2030** recognises the climate and environmental crisis as the first of five global challenges (while the other four deal with some of its consequences, such as evolving disasters and migration).

The **IFRC Plan and Budget 2021-25** addresses these five challenges as strategic priorities, and has set clear targets (including the goal to better protect 250 million people from heatwaves, or the aim that 100 National Societies will apply nature-based solutions).

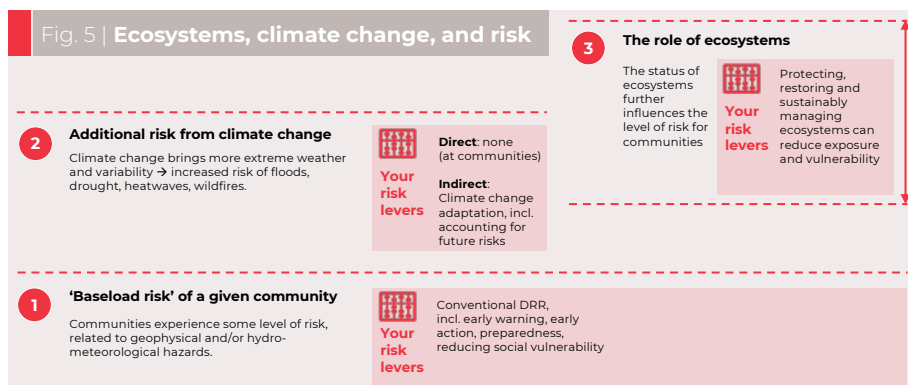
5. A watershed (also known as drainage basin) is a geographical area where all flowing surface water converges to a single point, such as a river mouth. A watershed is separated from adjacent watersheds by a perimeter, called the drainage divide, made up of a succession of ridges and hills.

6. For further examples of the protective effect of ecosystems, see [IFRC 2022: 7-12](#).

7. Nature-based solutions are “actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits (IUCN 2016:xii).

8. Grey risk mitigation measures refer to engineered defences, such as flood canals, seawalls, or levees.

9. AA works as financing, with the amount, source and disbursement being pre-arranged to allow the actions to be implemented immediately once the triggers are met and before hazard impacts unfold.



In 2020, ICRC and IFRC drew up **Movement ambitions to address the climate crisis**; one year later, they initiated a global framework called the **Climate and Environment Charter**. As of June 2023, more than 360 organisations (including DRC, BDRCS, NRCS, and MRCS) signed the charter, committing themselves to accelerated environmental action and to the formulation of concrete targets.

The IFRC's **Global Climate Resilience Programme**, initiated in 2022, is the most detailed framework to date, which seeks to drastically 'strengthen the enabling environment for scaling up climate-smart DRR and adaptation'. Its outline (see figure 6) features four enablers (A-D) as well as four pillars (1-4):

- ▶ **1. Scale up climate-smart DRR, early action and preparedness:** this will include the integration of long-term climate risks, anticipatory action, nature-based solutions, and the alignment with shock-responsive social protection systems.
- ▶ **2. Reduce health impacts of climate change:** under this pillar, climate change impacts on health and health systems (i.e., from heatwaves and the changed or expanded of water- and vector-borne diseases) are to be addressed, with National Societies contributing to climate-smart health systems.
- ▶ **3. Address climate displacement:** the ambition under this pillar is to better understand and predict climate-induced displacement, and to ensure that displacement is safer and more dignified.
- ▶ **4. Enable climate-resilient livelihoods and ecosystem services:** this pillar includes livelihood diversification and reduction of sensitivity — e.g., through the promotion of climate-smart agriculture. Ensuring food and water security is a key part of this pillar.

The **four enablers** go beyond regular NSD in that they seek to develop or strengthen **specific internal capacities** that can be seen as a precursor to strengthening climate resilience. Staff and volunteers must have a good understanding of the climate and environmental crises, of key policies and plans, of entry doors, tools and approaches. The programme's **four pillars** meanwhile represent a restructuring of the five strategic priorities in the IFRC Strategy 2030 into sectors — namely, of DRR (pillar 1), health (pillar 2), migration (pillar 3) and livelihoods (pillar 4).¹⁰

The Global Climate Resilience Programme (GCRP) targets 100 National Societies in low-

and middle-income countries. In Asia, it targets 19 Societies, including those of Nepal, Bangladesh, and Myanmar. The GCRP features a set of indicators related to Strategy 2030 Strategic Priorities 1.1 and 1.2, as well as a set of specific GCRP indicators and targets. The initiative aims to mobilise CHF 1 billion up until 2027, facilitated through the **Global Resilience Platform**.

In summary, the RC/RC Movement has expanded its scope over time, and ambitions to address the climate and environmental crisis are now an integral aspect. While some progress has been achieved already — for instance, through several projects supported by USAID and the International Climate Initiative (IKI)¹¹, and several global partnerships (notably with WWF) — the key challenge is to translate the ambition to broader action.

The portfolio and priorities of **DRC** have evolved in the context of the broader RC/RC Movement. Its current **International Strategy 2022-2025** (DRC 2022) aims for three key 'breakthroughs' related to health, disasters, as well as inclusion and protection.¹²

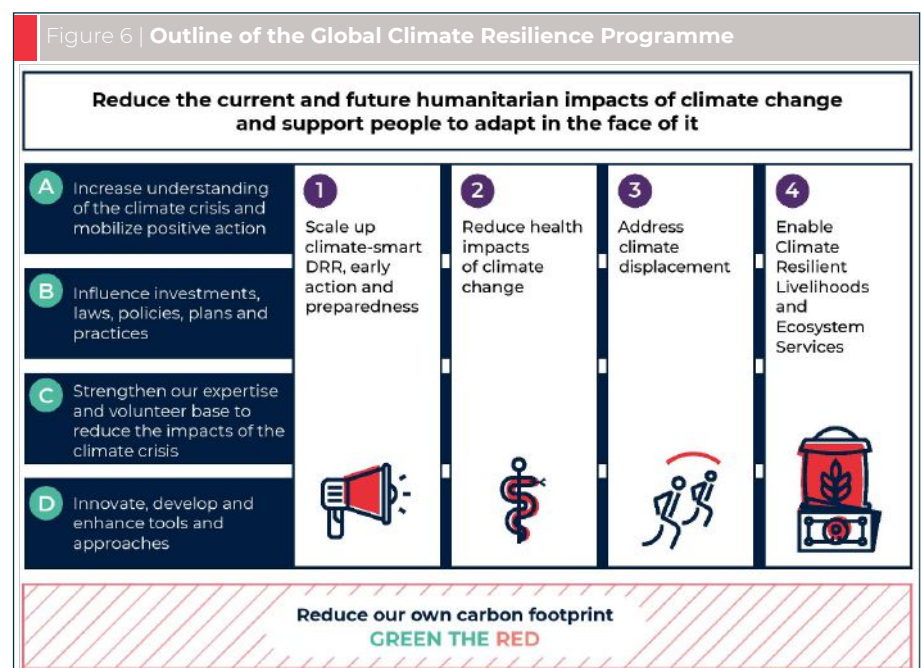
All three breakthroughs relate to aspects on which climate change has an impact, and the DRC Strategy notes that climate change "causes rapid changes in land use and agricultural practice and that it is a driver of conflict, displacement, and new disease patterns." (ibid: 4). The four aspects in which DRC seeks to lead action (mental health, health services, anticipatory action, and migration/displacement) are indeed closely linked to climate change.

¹⁰ The Strategy 2030's priority 5 (values, power, and inclusion) is treated as a cross-cutting issue in the Global Climate Resilience Programme.

¹¹ The [International Climate Initiative](#) is led by the German Department for Economics and Climate Change and has funded more than 800 projects across 150 countries, including the IFRC-led '[Resilient Islands](#)' project in the Caribbean.

¹² The Strategy's three 'breakthroughs' are as follows: [Healthy lives](#): People live healthy lives and access quality essential health services; [Disasters damage fewer lives](#): People anticipate, cope with, and recover from crises; and [Included and safe people](#): People are included and live safe, dignified, and active lives.

Figure 6 | Outline of the Global Climate Resilience Programme



13. The lines of defence model was developed by Banyaneer in 2022; an earlier version was published in [TNC \(2021\)](#).

Numerous **funding opportunities** exist for climate resilience, both through programmes of ‘traditional’ bi- and multilateral donors as well as through specific climate funding.

The latter include:

- ▶ The [Green Climate Fund \(GCF\)](#) adaptation result area on ecosystems and ecosystem-based adaptation;
- ▶ The International Climate Initiative’s [adaptation priority on ecosystem-based adaptation](#);
- ▶ The Global Environment Facility (GEF) [Climate Funds for adaptation](#); and
- ▶ The [EU GCCA+ funds for priority actions](#) that strengthen the resilience and adaptive capacity of human and natural systems to climate-related natural hazards.

3.5 Lines of defence

This chapter started with the conceptual foundation of DRR, summarised climate change impact and introduced the interplay with other environmental crises, and sketched out the progressive shift of the RC/RC Movement towards community and climate resilience.

As part of the Movement, Danish Red Cross signed the climate charter, is preparing its own climate policy, and aims to invest in climate resilience through initiatives such as the Regional Climate Resilience Programme for which this study has been prepared.

Before turning to the regional findings and a proposed model for the programme in the next chapter, let us explore a new analytical lens that may be particularly well-g geared to the requirements of climate resilience.

After all, we have learned that ‘integrated, multi-sectoral and differentiated’ responses (IPCC 2023:19) stand the best chance of being feasible and effective for the long term, while reducing the risk of maladaptation.

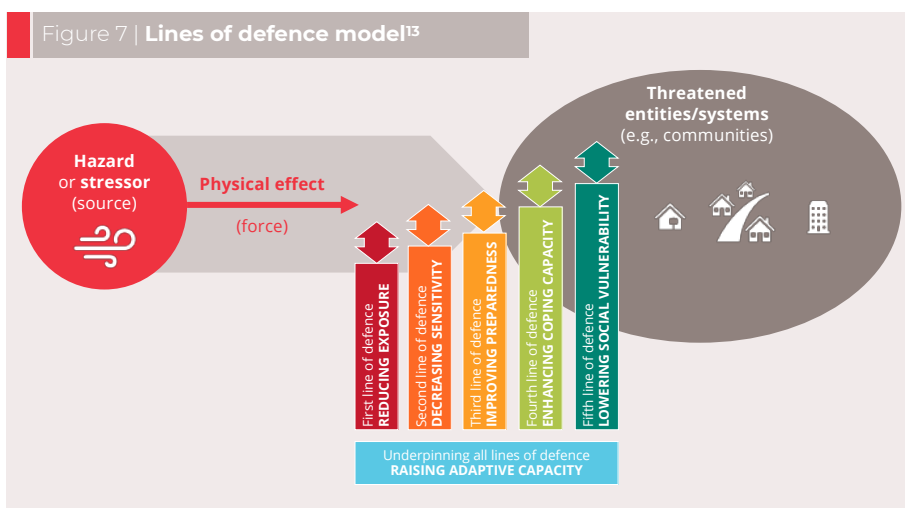
The **lines of defence** model¹³ (see fig. 7) classifies groups of actions that can be taken to reduce the impact of hazards and stressors on communities. It disaggregates vulnerability in the general sense used in the PAR model into practical lines of defence.

We propose that climate resilience programming should seek to strengthen multiple (and ideally: all) lines of defence in order to minimise climate change impact. The model can also be used to review the effectiveness of current DRR programmes.

Improving **preparedness** has arguably been the cornerstone of RC/RC programming, but in the context of climate change, simply having more and better-equipped response systems may no longer be enough.

Climate resilience must also reduce **exposure** (e.g., restoring the functionality of ecosystem services), reduce **sensitivity** (e.g., through more climate-resilient crop types and cropping patterns), enhance **coping capacity** (e.g., through weather index-based agricultural insurance and anticipatory action), ensure that nobody is left behind by lowering **social vulnerability** and ensuring cohesion and inclusion, and ensure that communities have resources and processes in place to retain and improve their **adaptive capacity**.

Figure 7 | Lines of defence model¹³



Strategic components	Defining the components	Logic for best-case scenario
First line of defence REDUCING EXPOSURE	Between hazard source and object: ▶ Increase the distance ▶ Create barriers in order to reduce the direct effect of the hazard on the object.	The hazard does not reach/affect the threatened entities at all.
Second line of defence DECREASING SENSITIVITY	Rendering hazard objects (buildings, infrastructure, systems, business, livelihoods, households) more robust so that they can better withstand direct physical effects of hazards and stressors.	The hazard reaches the threatened entity but does not generate any economic damages/losses or physical harm.
Third line of defence IMPROVING PREPAREDNESS	Resources and procedures that help further reduce direct hazard impact. This includes early warning & early action as well as response capacity.	The threatened entity takes all possible action to keep economic damages/ losses and physical harm at a minimum.
Fourth line of defence ENHANCING COPING CAPACITY	Strengthening mechanisms to deal with residual risk – primarily risk transfer and creation of buffers, redundant systems/ mechanisms.	The threatened (and affected) entity has all possible measures in place to recover quickly and to keep indirect losses at a minimum.
Fifth line of defence LOWERING SOCIAL VULNERABILITY	Strengthening mechanisms that reduce poverty and that ensure social inclusion of all.	Nobody gets left behind or is forced to live in precarious conditions.
Strengthening all defence lines RAISING ADAPTIVE CAPACITY	Raising the capacity to anticipate and proactively adapt to changing circumstances and risk patterns. Includes access to information, reflective processes, resources.	The threatened entity continuously reviews and strengthens its five lines of defence to keep future economic damages/losses and physical harm at a minimum.

4. Regional findings and programming

Afghanistan. Nepal. Bangladesh. Myanmar. All four countries are in Asia, and Danish Red Cross is present in each of them. But beyond that, what do they have in common?

It is easy to spot the differences: think of culture, geography, population, hazard profile, conflict history, governance, of socio-economic and development conditions. While all four countries are part of the same continent, this 'region' must not be misconstrued as a somewhat homogenous country cluster.

Even within the countries, after all, huge discrepancies and differences exist under the veil of macro-level socio-economic data.

Without a deep sense of a 'region', the task of conceiving a regional programme may be daunting. The solution we propose is a flexible framework with five building blocks and underpinning principles. Each country programme should fit in this framework but must accommodate the different needs, opportunities, and challenges unique to each country (guidance on in-country programming is provided in chapters 5-8).

Leading up to the programme outline (part 4.3), let us first review our cross-country findings (4.1) and propose some general guidance on climate resilience programming (4.2)

4.1 Regional findings

Despite the differences between the four countries, we identified eight cross-country observations relevant to climate resilience.

1. Impact of climate change has been observed in all four countries. In many cases, this impact is so severe that the coping capacities of communities are exceeded.

To varying degrees, all twelve climate change impacts on human systems highlighted in the latest IPCC report (see the summary in *fig. 4*)¹⁴ have been observed by this study in the four countries. In visited 'climate hotspot' communities, the impact patterns are complex and varied but commonly exceed coping capacities, leading to net negative trends in socio-economic conditions. Climate-induced migration (especially in its permanent form) was often reported as a 'means of last resort' and

suggests local means of coping have been exhausted (especially in Bangladesh).

2. Water scarcity is a key issue in all four countries and hampers health and livelihoods in particular.

Among the multiple impacts observed, water scarcity is the most common and one of the most consequential issues. Several factors contribute to this scarcity, including shifts in seasonal or reduced precipitation¹⁵, increased evapotranspiration, poor soil health, deforestation, excessive groundwater extraction, and other unsustainable NRM practices.¹⁶

Numerous negative effects of water scarcity were observed on livelihoods, health, and overall conditions (see country chapters). These had a particularly negative impact on women, increasing their burden of work (e.g., carrying water over longer distances).

3. Climate projections indicate further serious adverse effects on all countries, even under the most optimistic scenario.

The Global to Regional Atlas, an annex to the Sixth IPCC Working Group II report ([IPCC 2022](#)) illustrates climate projections under different scenarios, as well as their impact on natural and human systems. These indicate that **average precipitation** will increase marginally in all four countries, but that it will shift in terms of extremes and seasonality.

Warmer climates will also increase evapotranspiration. The projected impact on crop yields in Asia is negative for wheat, maize, and soybean, and mixed for rice. Afghanistan will see amongst the world's highest stresses for wheat production (*ibid*: page 2830); of the four countries, it sees the highest overall risk to rain-fed agriculture (*ibid*:2836).

¹⁴ These include impacts on water availability, agriculture, livestock and fisheries, health (diseases, malnutrition, mental health), displacement, flooding, and damages to infrastructures and economies.

¹⁵ In **Afghanistan**, three consecutive years of La Niña, which has a local impact of below-average rain/snowfall and warmer conditions, has contributed to severe water scarcity, as the country experiences a socio-economic drought. See [UN OCHA 2022](#) for details.

¹⁶ In Satkhira district of **Bangladesh**, these included the pollution of groundwater aquifers from aqua-farming, which increased salinity to dangerous levels.



Nepal: Villagers from Sunar Khola in Kalikot district discuss the impact of climate change on their community. Photo: NRCS

All four countries will see increased human productivity losses due to heat (ibid:2842) and temperature-related mortality rates (ibid: 2843). Glacial melting and reduced snowfields will have substantially detrimental long-term consequences on Afghanistan and Nepal, while sea-level rise will render many coastal areas of Bangladesh and Myanmar unproductive (due to high salinity) and eventually uninhabitable.¹⁷ Climate-induced migration is already a major issue that will grow dramatically in scale by mid-century.¹⁸

4. The ultimate effects of climate change on communities is dependent on a complex interplay with other root causes such as structural vulnerability and environmental degradation.

For climate hotspots in Nepal and Bangladesh, we prepared problem trees on the basis of inputs from community members on observed changes. These illustrate a complex interplay between climate change, environmental degradation, and other factors.¹⁹

There is a ‘positive in the negative’, as local factors such as unsustainable NRM can be addressed directly (there is direct leverage over local risk factors, *compare figure 5*).²⁰ Climate resilience programming should seek to eliminate or reduce local risk factors while helping to adapt to those directly induced by climate change.

5. There is serious risk of maladaptation, and several cases of maladaptation have been observed.

In all visited communities, people have heard about climate change and were able to explain some of its manifestations. At the same time, the understanding of the physics, its interplay with other factors, and of some ways to adapt is limited.

The common combination of observed impact and incomplete knowledge of causes is a breeding ground for maladaptation and sub-optimal adaptation outcomes.

In Sunamganj, one farmer recommended that the best way to reduce riverbank erosion was to increase the level of dredging. In Satkhira, the move to aqua-farming was initially proposed as an adaptation measure.

And in all four countries, a common ‘solution’ to address water scarcity is to drill deeper wells (rather than making water use more efficient), with severe consequences for humans and for nature.

Climate resilience programming must strengthen the community understanding of observed changes, combine local knowledge and traditional practices with science, and be based on holistic approaches to prevent maladaptation.

6. The governments’ policy response is very strong in Nepal and Bangladesh, and very limited in Afghanistan and Myanmar.

In terms of the quality and scope of policy responses, there is a neat dichotomy between the four countries.

In **Nepal** and **Bangladesh**, the governments have prepared excellent National Adaptation Plans (NAP) and a rich set of underpinning policies and compounding frameworks. Although there are considerable implementation gaps (ambitious plans must be funded and implemented), these serve as strong entry points when devising country-level climate resilience programmes. DRC country teams are encouraged to read and use them when meeting key government agencies.

In **Afghanistan** and **Myanmar**, the effective policy response is limited, and the two new authorities face countless challenges that supersede climate change on the list of priorities.

Previous governments had done much groundwork, and many experts remain in lower levels of bureaucracies. However, in terms of public entry doors, the scope is much more limited and likely to be restricted to informal processes.²¹

7. All Host National Societies already work to strengthen climate resilience. While scope and depth varies greatly, stronger foundations are required.

ARCS, NRCS, BDRCS and MRCS have all done some work related to climate change. This includes a climate resilience project in **Afghanistan’s** Herat and Samangan provinces (supported by IFRC and funded by Japanese RC), an urban heatwave early action project in **Myanmar’s** Yangon Region (supported by German RC), and a climate resilience project in Mandalay Region (supported by IFRC and Finnish RC), as well as a long list of projects in **Nepal**²² and **Bangladesh**.

The level of climate expertise varies between National Societies and is topped by NRCS and BDRCS, who are both in the process of developing their climate change strategies.

17. In coastal areas of **Myanmar** and **Bangladesh**, sea-level rise will contribute to more flood risk from cyclone-induced storm surges, affecting areas several kilometres inland.

18. Coastal areas of **Bangladesh** have seen net out-migration for more than a decade; by 2050, the country expects up to 19.9 million internal climate migrants (*Rigaud et al. 2018:148*).

19. Secondary information suggests similar patterns in other countries. In **Afghanistan’s** arid Kandahar province, for instance, farmers invested in solar and diesel pumps at huge scales, contributing to groundwater depletion.

20. Communities can directly protect and influence their natural resources like forests and water resources, and at scale, this can improve protection from hazards and limit further risks.

21. In **Afghanistan**, visits to the Ministry of Public Health and the National Environmental Protection Agency (NEPA) were insightful: in both agencies, the respective leaders were open and keen to discuss climate change and possible opportunities. NEPA officials had very detailed knowledge and were eager to share their pre-2021 work products.

22. In **Nepal**, DRC has supported NRCS for many years in implementing DRR projects. These included components on climate change adaptation and, more recently, anticipatory action.

Nevertheless, all National Societies — including Danish RC — have requested and would benefit from capacity strengthening in terms of knowledge, networking and approaches to better address the climate and environmental crises.

A more solid foundation in this regard is seen as a crucial precursor to climate resilience programming.

8. The current country portfolios of Danish Red Cross offer a good range of entry points for strengthening work on climate resilience.

In all four countries, Danish Red Cross is a respected RC/RC Movement partner and Partner National Society. It is acknowledged for its expertise in MHPSS and health, anticipatory action (Nepal), in community-based DRR and its approaches fostering social inclusion and links to local governments.

All country profiles offer entry points for climate resilience programming. In Bangladesh and Nepal, there is particular scope for ambitious and long-term action.

4.2 Programming guidance

Where do these findings lead us? We propose six critical points that should be considered when developing the new regional programme.

A. One size does not fit all:

The imperative for locally-led solutions

The ‘regional-ness’ of the new programme should not be over-emphasised: while all actions should contribute to the overarching goal of greater climate resilience, the regional frame should be treated as a catalogue from which to choose some key items, and then to customise these items as needed. It should share basic principles but retain flexibility for local innovation.

This study should be seen as a scoping study, rather than a needs assessment. The actual time we were able to spend in ‘hotspot’ communities was enough to get a good idea of patterns and trends. However, it does not replace a robust assessment of needs, challenges and possible responses. Every community is different, and every community must be enabled to co-design solutions in partnership with DRC and relevant experts.

B. No quick solutions:

Master-plan for the long haul.

Looking at climate projections on the one hand and at the interplay with environmental degradation and vulnerability on the other, and considering the imperative of holistic approaches (lines of defence, multiple sectors and hazards), there is enormous need and potential for programming to make a tangible difference to ‘climate hotspot’ communities.

Where feasible (currently in Nepal and Bangladesh), DRC should be ambitious in moving towards holistic and landscape-based approaches that are best suited to tackle some of the root causes, and to adapt to others.²³

Yet, this will take time, funding, and commitment to systematic partnering and internal capacity development. While there is clear potential in Nepal and Bangladesh, neither NRCS nor BDRCS has experience in landscape-based approaches, and networking with environmental actors is in its infancy.

Our proposed outline assumes a timeframe of ten years and envisages progressive growth, developing internal capacities and networks first, and gaining further climate resilience experience at the community level first.

It is suggested that DRC considers master-planning, rolling out climate resilience programming step by step.

C. Start here:

utilise existing entry points

In all four countries, there are suitable entry points to get started. These include the units involved in current projects, such as youth clubs, medical teams, branches, the *maras-*

²³ Landscape-based approaches seek to reduce risk at a broader level and typically target multiple communities that are connected by a shared landscape and ecosystems. Compared to projects that target individual communities, landscape-based approaches can also address risk factors that are beyond the control of individual communities. They account for the interdependencies between areas linked by a common landscape.

For instance, reducing forest degradation or replenishing groundwater aquifers for flood and drought mitigation requires efforts that are pursued across multiple communities in a landscape.



Bangladesh: Villagers from Fatehpur in Sunamganj district play the resilience game ahead of a focus group discussion. Photo: P. Bolte

toons (social entities in Afghanistan), heat-wave volunteers (in Myanmar), and the structures in place in the context of AA/DRR projects (in Nepal).

Here, internal capacity strengthening and awareness campaigns on climate-related issues (such as on the efficient use of water or on heatwaves) can be coupled with small actions that demonstrate or help reinforce these practices (e.g., kitchen gardens with drip irrigation and rainwater harvesting). DRC's community-based projects can form similar entry points — if additional funding can be secured, these could be modified to introduce aspects like climate-smart agriculture or soil conservation. Consider using the lines of defence model to scan for gaps (which lines are not yet addressed?).

D. Align where you can: harness enabling environments

In **Nepal** and **Bangladesh**, the strong enabling environments for climate resilience pose a perfect opportunity for ambitious actions. This includes not just the National Adaptation Plans and policies, but also a broad set of committed actors from government departments, research institutions, NGOs, CSOs and international organisations.

DRC delegations in these countries should explore the plans and align programming with these frameworks, investigating how the

auxiliary role of Host National Societies could be enacted (see chapters 6 and 7 for summaries). In **Afghanistan** and **Myanmar**, the conditions should be monitored closely to harness opportunities as they arise.

E. Partner, network, grow: Nurture networks to address root causes at scale

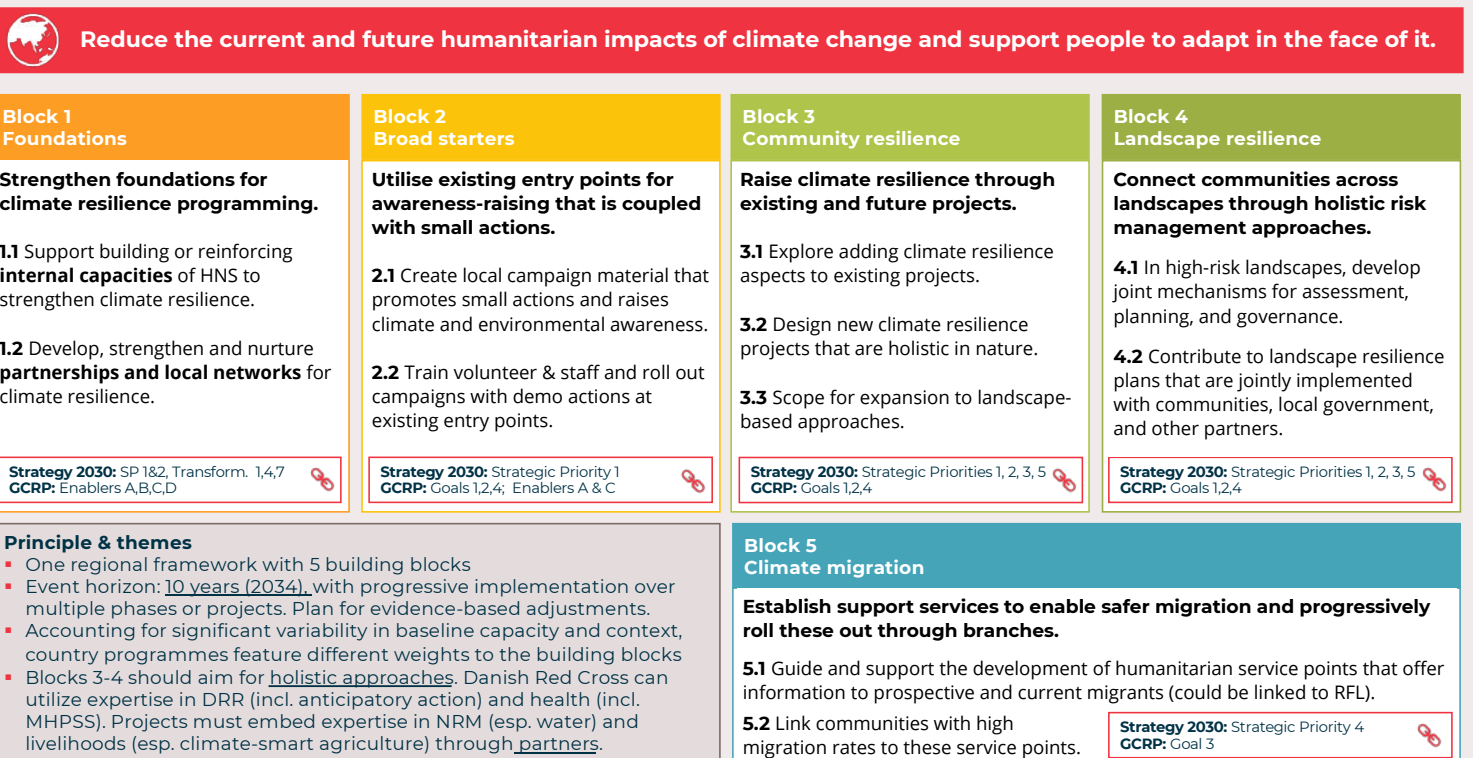
Addressing the main issues and root causes of vulnerability requires holistic approaches, and reduces the risk of maladaptation. But neither DRC nor Host National Societies have, or need to have, the full set of technical expertise on issues like crop insurance, ecosystem assessments, reforestation, or the design of recharge ponds. What they need to have is the willingness to explore new partnerships with actors that have this expertise.

ICIMOD, WWF, Care, Oxfam, BRAC, ICCCAD and Uttaran are examples of possible partners, and some advances to partnerships have been made.²⁴ Some of the Danish NGOs, such as Danish Refugee Council and Dan Church Aid, would also make suitable partners. Host National Societies and DRC bring a lot to the table that others don't have — notably, a large volunteer base and strong experience in DRR.

Reaching out and developing new partnerships and exchanges with actors outside the RC/RC Movement is seen as critical for activities under Block 3 and 4 of climate resilience programming.

24. These include the **global** partnership between IFRC and WWF, collaboration with ICIMOD in **Nepal**, and in **Bangladesh**, the development of the BDRCS climate change strategy with the support of ICCCAD.

Figure 8 | Proposed outline of the Regional Climate Resilience Programme



F. Get funded: Widen the donor base

Money talks, and funding is essential to put words and ambitions into action. While DRC receives core funding from the Danish Ministry for Foreign Affairs (MFA), climate resilience programming offers the opportunity to widen the donor base to include some of the funds specifically geared to strengthen climate resilience (see part 3.4). Undoubtedly, this will necessitate some groundwork, as these sources come with their specific eligibility and accreditation requirements. DRC should work with Movement partners in Nepal and Bangladesh to explore these funding opportunities. IFRC can assist in this context, both through its Asia Pacific regional office and the Global Climate Resilience Platform.

For Myanmar and especially for Afghanistan, funding opportunities are likely to be limited for the foreseeable future; here, a case may need to be made to the Danish MFA for increased funding.

4.3 Programming outline

Taking into account the regional findings and considerations listed above, a regional programme is proposed that features:

- ▶ a tentative **timeframe** around 10 years (up until 2034 from the point of inception),
- ▶ **flexibility** to account for significant variability in baseline capacity and context; and
- ▶ a **modular system** with five thematic blocks, allowing country delegations to shape it according to respective contexts.

The programme (see figure 8) is inherently ambitious in that it aims to address some of the root causes at a broader scale than what is typical in most RC/RC programming (where this is possible). The experiences of DRC can be integrated in all five blocks. For instance, **anticipatory action** and **MHPSS** can feature as part of Block 3 and 4 portfolios, as a means to raise coping capacity (fourth line of defence).

The proposed outline is also aligned with IFRC's Global Climate Resilience Programme (GCRP). Block 1 is in line with the GCRP enablers A-D. Blocks 2-5 are also aligned with GCRP goals 1-4 but **eliminate the sectoral structure** of the GCRP. Rather, the blocks feature a progressive logic that builds from block 2 to blocks 3 and 4 where possible.

A community resilience project (block 3) could and should simultaneously work towards improvements in DRR, health, livelihoods,

inclusion, as well as water and sanitation, while also embedding services that can enable safer migration.

Climate migration was identified as a key issue in this study, and should be addressed as a cross-cutting theme (Block 5). Migration is a coping strategy when other lines of defence have proven ineffective. While migration is common in all countries as part of broader development and urbanisation ('pull' factor of cities), we noted that much of the movement is driven by 'push factors' of insufficient livelihoods. Climate migrants tend to move under precarious conditions, and there are major needs to support safer migration and better migration outcomes.

Support services could provide information on issues such as safe travel and settlement practices, remittances, work safety standards, insurance, emergency numbers and eligibility to social safety benefits. For instance, many permanent migrants may not know how to access social safety nets at their destination.

Like all blocks, block 5 will need to be contextualised to local needs of temporary and permanent migrants. This could include decision-making support and vocational training to enable non-precarious livelihoods at destinations. Climate migration is one form of adaptation, but the likely scale is under-appreciated in most policy responses: even one of the most far-reaching documents, Bangladesh's Delta Plan 2100, offers little in terms of a policy response.

The proposed outline of the DRC climate resilience programme is ambitious — does it exceed the capabilities of Danish Red Cross and Host National Societies? Would a smaller programme be more suitable? These may be valid concerns.

However, the gravity of the climate crisis requires us to be bold. While programming opportunities in Afghanistan and Myanmar are inevitably limited by prevailing conditions, in Nepal and Bangladesh there is both the opportunity as well as the humanitarian imperative to strengthen climate resilience with scope and scale.

As the quote from Nepal on the right as well as the country-specific findings in the next chapters highlight, the climate crisis is now.

The worst is yet to come. We need to expand our ambitions and grow our capacities to address it, raising climate resilience as much as we can.

"There is a scarcity of water. This is our biggest problem. There is no drinking water. We have to fetch water from a nearby school that is a 20 minute walk away but there is always a queue, and we have to wait for hours.

25 years ago, there was a water source nearby, but it has now dried up. We have requested help from the government, but they haven't listened.

We don't collect rainwater as we don't have the tanks needed. We last saw rain in October and November, and still there is no rain (in late May). We want to be able to protect the water sources.

When we had more water, we could produce more crops. But the lack of water now affects every dimension of life. Having no water is like a pain in the foot. One injury there, and you can't function for the rest of your life."

Lamchudi community, Dailekh district, Karnali province, Nepal

Afghanistan

Basic data: Afghanistan

Population	38.93 million (2023 estimate)
Land area	652,860 km ²
Population density	60/km ²
Per capita income	1,666 (USD PPP, World Bank 2021)
Human development (HDI)	0.478 (low)
Per capita CO ₂ emissions	0.28 tonnes

Risk

Inform index score 2023	8.1 (very high)
Inform country profile	See here
Hazard & exposure	8.9 (very high)
Vulnerability	8.5 (very high)
Lack of coping capacity	7.1 (high)

5. Afghanistan

Our journey to the frontlines of the climate crisis starts in Afghanistan. Of the four countries covered in this study, it is the one with the greatest gap between risks and responses.

On the one hand, the country is exposed to risk from drought, floods, earthquakes and other other hazards. Decades of war have left large shares of the population vulnerable, and Afghanistan has the lowest per capita GDP of the four countries in this study. Infrastructure and services are severely limited.

Projections indicate a huge impact of climate change; in the IPCC's [Global to Regional Atlas](#), Afghanistan is shown as a global hotspot for future droughts and decreased yields.

On the other hand, the change of government in August 2021 led to an exodus of most international agencies and NGOs, leaving mainly humanitarian and few development efforts in place.

The huge response gap represents an imperative for urgent and sustained engagement in the country.

While opportunities are limited due to funding and operational constraints, Danish Red Cross should utilise and build on the entry doors it has with Afghanistan Red Crescent Society (ARCS). Its efforts should weave together humanitarian components with aspects that help to strengthen climate resilience.

5.1 Risk profile

Home to 39 million people, Afghanistan is a landlocked country that shares borders with Pakistan, Iran, Turkmenistan, Uzbekistan, Tajikistan, and China. Afghanistan's rugged mountain landscape and generally arid climate make it prone to several natural hazards.

The Hindu Kush mountains²⁵ divide the country into the central highlands that are part of the Himalayas, the southwestern plateau, and the country's fertile northern plains — and have shaped the country in many ways, including climatic zones, risk patterns, hydrology, cultures and languages.²⁶

Afghanistan is administered through 34 provinces and 391 districts. The new government, headed by its supreme leader, is not

internationally recognised. Strict sanctions have been applied, most embassies are closed, and many international actors have left.

5.1.1 Present risk

On the 2023 Inform Index, Afghanistan has a score of 8.1 (very high risk) and ranks as the world's fourth-highest country in terms of overall risk.²⁷ The risk profile is regionally diverse in terms of hazards but features extreme levels of vulnerability throughout the country.

Between 1980 and 2017, disasters caused by natural hazards have affected 9 million people and caused over 20,000 fatalities ([World Bank 2017:5](#)).

Earthquakes affect mainly the north-eastern part of the country. In June 2022, more than 1,100 people were killed by a 6.0 magnitude earthquake in Khost province; the earthquake triggered several landslides and caused severe damage.

Over the past 30 years, more than 11,000 people have been killed by earth-quakes, making them the leading cause for disaster mortality (ibid.).

Floods are the most frequent natural hazard and have caused average annual damages of USD 54 million. Steep slopes and denudation in upper watersheds render the communities along rivers prone to floods, which occur as a result of heavy rainfall and rapid snowmelt. The Hairatan and Helmand watersheds in the country's north and west, respectively, are the most prone to flooding.

With 85% of the population relying on agriculture and the country generally being arid, **droughts** are a major hazard across the country. The risk is greatest in the country's south-western areas around the Helmand basin. Afghanistan is already experiencing increased occurrence of agricultural drought and water scarcity.

Following three years of La Niña — which mean below-average rainfall for Afghanistan — the reality appears ahead of the reduced spring precipitation that the climate projections anticipate.²⁸

Other hazards include avalanches, mudflows, and landslides.

²⁵ The Hindu Kush forms the boundary between the Indus watershed in South Asia and the Amu Darya watershed in Central Asia.

²⁶ Pashtun are the largest ethnolinguistic group (around 50% of the population), other groups include Tajik (25%), Hazara (10%) and Uzbek (10%) mainly in the in the north, as well as numerous minorities.

²⁷ Only Somalia (8.7), the Central African Republic (8.5) and South Sudan (8.5) surpass Afghanistan.

²⁸ See [UN OCHA 2022: Afghanistan La Niña Outlook 2022/23](#).

Fig. 9 | Physiographic map of Afghanistan



5.1.2 Future risk

The climate crisis already affects Afghanistan, and its impact will further propel risk to extreme levels over coming decades.

Mean annual **temperatures** have already increased by 1.8°C; the warming has been strongest in the country's south, with an increase as high as 2.4°C (NEPA 2017).

Looking into the future, warming of up to 3°C is projected by 2050. Warming in higher altitudes will overtake trends in lowlands (IFRC 2021a:7). Warming will reduce the share of precipitation that falls as snow and reduce the natural water storage that high-altitude snow fields provide, thereby increasing the risk and severity of inter-seasonal water shortages and droughts.

In the hotter climates of southern Afghanistan, **heatwaves** will be more frequent, and greater water loss from evapotranspiration will severely hamper agricultural yields, especially for wheat, rice, and corn (NEPA 2016:8).

Prolonged multi-year **droughts** have already occurred in 15-year cycles on average and have been strongly linked to La Niña. On average, these affected almost 10 million people (Aliyar et al. 2022). Future events may further induce high levels of climate migration, as the capacity to adapt is exceeded.

In terms of **precipitation**, patterns have changed already (although total annual rainfall has not). **Spring rainfall** (March-May) has decreased (in particular in the central highlands) while **winter rainfall** (November - January) has slightly increased (NEPA and UNEP 2016).

By 2050, **spring rainfall** is projected to decrease significantly by 5-10%, which will be most pronounced in the north, the central highlands, and the eastern part of the southern regions (known as the 'food bowl', *ibid.*).

Winter precipitation, which largely falls as snow, is expected to decrease in most parts of Afghanistan except for the north-western Hindu Kush, where precipitation will increase by 10%.

For the arid south, winters are expected to be significantly drier (*ibid.*).

What do the climate projections mean for communities across Afghanistan? With 85% of the population relying on agriculture, Afghanistan is hugely sensitive to climatic variations.

Both more heat and changed precipitation — especially the decrease of spring rainfall that is crucial for plant growth in agricultural production of the southern 'food bowl' — will have severe consequences for **livelihoods** and **food security**. Here, the combined effects of more evapotranspiration, less rainfall, and reduced water storage in snowfields upstream will reduce yields and increase the risk of large-scale crop failures during droughts.

With its conflict-ridden past, Afghanistan has invested little in water management infrastructure — while the country receives much more precipitation than neighbouring Iran and Pakistan, around two-thirds flow to neighbouring countries.²⁹

The water crisis that affected the entire country during our Kabul visit in May 2023 may be seen as a La Niña-fuelled sneak preview of the things to come. Depleted groundwater levels spurred the authorities into action, as it has passed a law seeking to tax and limit groundwater extraction.

Across mountainous areas, meanwhile, faster snowmelt and more extreme precipitation events will exacerbate the risk of flash floods and precipitation-induced mass wasting events (landslides, mudflows, and avalanches). The country's very limited coverage of early warning systems (EWS) compounds the risk of flood-related damages and losses.³⁰

5.1.3 Risk hotspots and risk drivers

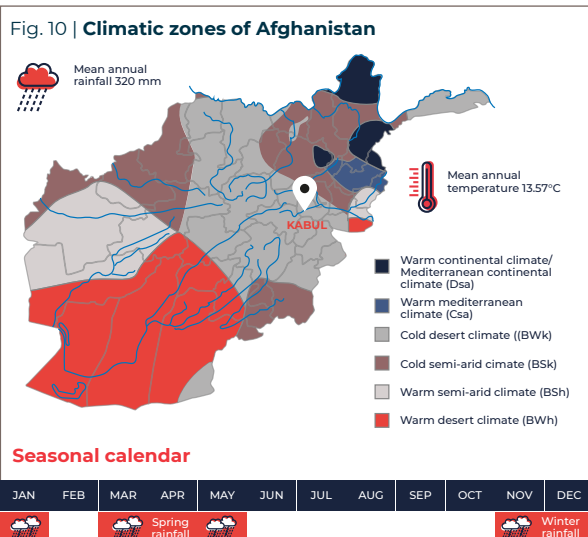
With high levels of vulnerability across the country, of hazard exposure, limited coping capacity, and dire climate projections, **all of Afghanistan should be seen as a hotspot of climate risk**. The overall impact in terms of livelihoods, food security, and health, may be greatest in Afghanistan **southern provinces**.

Women are now excluded from public roles, many economic opportunities as well as secondary and tertiary education, and are seen as highly vulnerable as a result.

Farmers are generally vulnerable due to their sensitivity to climatic variations. **Pastoralists**, including the nomadic Kuchis, will be increasingly affected; 53.7% already live in poverty according to one study (NEPA 2017).

29. Afghanistan water availability is estimated to be 47-55 billion m³ per year, a 75% decrease compared to the 1960s (NEPA and UNEP, 2020:18). This translates to water availability per capita of 1,600 m³ of precipitation, compared to 700 m³ in Iran and 900 m³ in Pakistan. Most water flows out to Turkmenistan, Iran, and Pakistan (Interview IFRC). Conflict over water resources is a very real threat, as was shown late May 2023 in a **firefight** between Iran and Afghanistan over the construction of dams in Helmand province.

30. A 2020 study by UNEP and NEPA highlighted the poor state of EWS in the country, and called for a National Strategy to widen EWS coverage. There are several community-based EWS in some watershed. In Herat province, Aga Khan Foundation (ADF) has made EWS part of a broader approach across selected watersheds (Interview AKF).



Following Afghanistan's long conflict and in response to disasters and loss of livelihoods, the country already has a huge population of **internally displaced persons** (IDP), who are a highly vulnerable group. Their numbers are expected to rise dramatically, with many of them being climate migrants.³¹

In terms of **risk drivers**, there are several factors that compound the physical manifestations of the climate crisis.

These include unsustainable natural resource management and **environmental degradation**, as well as the underpinning level of vulnerability as shown in *figure 5* on page 7.

By far the biggest issue in this arid country concerns unsustainable levels of **groundwater extraction**. Digging deeper wells may be seen as adaptation in the face of more erratic rainfall. Yet, if done at scale and without other measures towards more efficient water usage, it can be seen as maladaptation with disastrous ecological and social consequences.

In the southern provinces of Helmand, Nimroz, and Farah, for instance, some 500,000 new settlers have converted desert areas to agricultural fields since around 2005. With cheaply available solar pumps, the desert has been turned to green fields. At the same time, groundwaters now fall three meters per year ([Mansfield 2020](#))³² and threaten fragile ecosystems in the endorheic Sistan basin.³³

Countrywide, there are consistent reports that groundwater levels are falling, while means to more efficient water use (such as drip irrigation) are all but common. Groundwater depletion threatens ecosystems and makes it difficult to access water for those who cannot afford digging ever-deeper wells.

Another issue concerns **deforestation**. As of 2015, only 2.1% of Afghanistan's land area were forested (13,500 km², roughly the size of Montenegro). These are mainly east and south-east of Kabul (with most forest cover in Nuristan and Kunar provinces). Between 2000 and 2015, around 5,500 km² of forests were lost. Wood is sourced as fuel or exported to Pakistan, despite logging being illegal. One interview partner from Khost also reported that many communities in the province systematically assign forest parcels to families for logging.

The loss of forest cover may not seem as much as a share of Afghanistan's land area. But the fact that the forest is lost along the steep and rugged terrain of the central highlands means



that this deforestation greatly increases risk of floods and landslides, as its role for water infiltration and storage and slope stabilisation is diminished.

Structural vulnerability compounds other risk factors across the country: with low incomes, few buffers, high sensitivity, and little recourse to safety nets and services, it does not take a lot to throw families into crisis.

5.2 Response analysis

In terms of a response to climate-accelerated risk, August 2021 marks a watershed moment: we need to distinguish between the policies and plans under the previous government and the time since the change of power. In the pre-2021 period, several forward-looking policies and plans were drawn up. This has been replaced by a crisis mode with neither little political room for long-term strategies, nor the international support that would be required.

Players and policies

Our visit to the National Environmental Protection Agency (NEPA) is emblematic of the wider situation. As we walk through empty corridors of its large building, signs at doors and posters on walls show the range of past activities. NEPA's partner UNEP has left, and international funding has dried up.

Staff explain that NEPA has implemented 31 projects funded by the Global Environmental Facility (GEF). Seventeen were completed, the others abandoned. Nine further projects had been 'in the pipeline.' The project portfolio included conservation efforts, rural energy efficiency, and a large NbS project in the country's eastern forest complex.

Herat, Afghanistan. In March 2019, heavy rains and snowfall across 16 provinces caused flash floods that affected 250,000 people. Photo: ARCS

³¹ See [Vigil et al. \(2022\)](#) for a background on migration and the nexus with environment and conflict. As of December 2022, Afghanistan had 6.6 million IDPs, according to the [Internal Displacement Monitoring Centre](#).

³² The study of the settlers in southern provinces highlights the ecological damage and concludes that future groundwater depletion will induce a severe economic crisis and high levels of migration.

³³ An endorheic basin is a watershed that has no outflows to oceans or rivers. The Sistan basin covers large parts of southwestern Afghanistan (and minor parts of Iran). It is one of the world's driest regions.

Post-2021, all GEF, GCF, UNDP and UNEP projects were terminated, explains the NEPA director. “No support seems viable.” Expressing his frustration, he adds: “I understand that there are differences. But protecting the environment should be seen as apolitical.”

Pre-2021, Afghanistan had seen several advances in terms of policies and frameworks that addressed some aspects of the climate crisis (see fig. 11).

The NAP listed investments in agriculture and food security, water resource management, disaster risk reduction, infrastructure, health and gender as priority areas for adaptation. It does not feature targets or detailed institutional arrangements that feature in the NAPs of Nepal and Bangladesh — however, much associated ground work was in the process (NEPA 2015).

While progress towards action on the climate crisis is up in the air, our visits to NEPA as well as the Ministry of Public Health (MPH) illustrated that while leadership has been replaced, much technical expertise remains with mid-ranking officers in the agencies.³⁴ Climate change is recognised as a key challenge, and staff is keen to relaunch adaptive action if partnerships and funding are available.

External support

Little development and adaptation programming remains, and the little international support that remains is largely of humanitarian nature. In addition to the RC/RC Movement, several UN agencies (such as UNICEF and WFP) and some NGOs remain in the country (mostly with humanitarian profiles).

34. Requests for an interview with Afghanistan’s disaster management agency ANDMA were not returned.

35. The AKF programme focuses on Badakshan, Samangan, Kunduz, Takhar, and Baghlan.

36. Being one of the few remaining development NGOs in the country, many donors have approached AKF. But as the programme coordinator explains: ‘somebody can offer me 40 kg of mangoes, but I can only eat so much.’

37. DACCAAR, the Danish Committee for Aid to Afghan Refugees, has a strong focus on community-based development and works on WASH, natural resource management, and small-sale enterprise development. It also supports groundwater monitoring in a partnership with Unicef.



Fig. 11 | Afghanistan’s policy context

Climate change

- ▶ National Adaptation Plan (2016)
- ▶ Afghanistan’s Climate Change Strategy and Action Plan (not finalised)
- ▶ National Adaptation Plan of Action (2009)

Disaster management

- ▶ Strategic National Action Plan for DRR (2011)
- ▶ Law on Disaster Response, Management, and Preparedness (2012)

Environment

- ▶ National Environmental Action Plan (NEAP)
- ▶ National Water and Natural Resource Management Priority Programme
- ▶ Law on Regulating Forest Affairs (2011)

Other key policies

- ▶ National Agriculture Development Framework
- ▶ National Comprehensive Agriculture Production and Market Development Programme

One of the few organisations that retain a development programme is the Aga Khan Foundation (AKF), which has a large climate resilience programme in 120 communities across north-western provinces.³⁵ The programme features livelihood, DRR, and NRM components, and aims to incorporate NbS and community-based early warning systems.³⁶

Another organisation with development focus is DACCAAR, which focuses on WASH and is a key partner of Unicef.³⁷

5.2.3 Needs and opportunities

In terms of needs related to the climate crisis, the list is endless, and few are addressed with the urgency and scale that would be required.

In the interviews conducted as part of this study, **water** emerged as a central theme. NEPA staff highlighted water scarcity as key stressor for farmers, noting that water was essential for agriculture and that groundwater extraction was increasingly common — leading to falling groundwater levels and threatening ecosystems. NEPA, the Ministry of Agriculture and FAO have promoted more efficient use of water. However, techniques like drip irrigation) are the exception rather than the rule.

Promotion of more efficient water use could be coupled with awareness-raising on water safety: MPH staff pointed out that knowledge was very limited in this regard, causing high levels of water-borne diseases (especially after floods).

Interviewed members of ARCS also saw water scarcity as a key issue — both for household consumption and agriculture.

There of course many other needs, covering multiple sectors and themes.³⁸ However, considering the operational constraints as well as the strengths of ARCS, a volunteer-based rollout of a ‘water wise’ campaign appears to be the most promising opportunity for the time being.

5.3 Positioning

Danish Red Cross is a well-respected partner to ARCS and the wider Movement and currently engages in health (mobile health teams), MHPSS, livelihood, volunteer management, and broader National Society development (NSD). It has a strong and knowledgeable team that enjoys the trust of ARCS and partners. How can DRC best position itself in the context of climate resilience programming?

Afghanistan Red Crescent Society (ARCS) has 25,000 volunteers across 34 branches and is engaged in disaster management, health, and social services. Its five *marastoons* (social welfare centres) and 28 youth clubs for vulnerable families and children.

ARCS does not have a specific portfolio on climate resilience, although several activities supported by IFRC and PNS cover selected aspects of resilience. Notably, this includes a 5-year project (2021-2025) in Herat and Samangan provinces. All interview partners from ARCS recognised the climate crisis as a major issue and had several ideas for action.³⁹

ARCS is supported by partners of the **RC/RC Movement** — IFRC and ICRC, as well as Danish Red Cross, Norwegian Red Cross, Turkish Red Crescent, and Qatar Red Crescent have teams in the country. However, there is very limited support with regard to climate resilience thus far.

Programming guidance

Afghanistan is a climate hotspot — and the future outlook calls urgent action to help communities adapt to it. ARCS enjoys great credibility and access across the country, and thus has strong potential to fulfil a role facilitating adaptation.

Thus far, however, its foundation for climate resilience programming is limited. Therefore,

specific capacity strengthening for climate resilience programming should be a cornerstone of DRC efforts. The study recommends that Danish Red Cross should initially focus efforts on blocks 1 and 2.

Specifically, this should entail:

- ▶ **Block 1:** strengthen the ARCS capacity to deliver climate resilience programming - both at headquarters and branches.

This should be aligned or integrated DRC’s efforts in NSD. In terms of networking, opportunities are limited but informal exchange (e.g., with NEPA, Dacaa, and AKF) is possible.

Concrete capacity-strengthening components may include short training series on climate change for headquarters and branch staff (physics, projections, interplay with other factors, adaptation options), regular exchange with climate-relevant actors, and a facilitated workshop to explore opportunities to climate-smarten current projects and tools used in the country.

- ▶ **Block 2:** develop a ‘water wise’ campaign that raises awareness on the interaction between climate change and degradation, and that demonstrates small actions at existing entry points (*marastoons*, health teams, youth clubs, and branches).

The [Climate Training Kit](#) has some resources to get started. This campaign could be rolled out countrywide and should include water safety messaging.

In addition, DRC should monitor for additional opportunities, especially with regard to **blocks 3 and 5**.

Building onto the existing climate resilience programme supported by IFRC and Japanese Red Cross may be the most promising option for Block 3 - either by adding scope or scale.

As for Block 5, migration is a key issue in the country. Unfortunately, it was not possible to explore the potential in the context of this study.

The needs in Afghanistan are immense, and the climate crisis will progressively bring more hardship to a vulnerable population.

The imperative for adaptation and resilience programming is strong, and the question how to support long-term development remains.

³⁸ These range from several aspects in DRR, such as the limited coverage of DRR, to health issues (e.g., respiratory diseases from pollution in urban areas), to a plethora of livelihood issues, for instance.

³⁹ For example, the ARCS President outlined four options: 1. vocational training and livelihood diversification, 2. actions to improve water storage and collection, 3. provision of drought-resilient seeds, and 4. cash distribution to widows and other vulnerable groups. Other ideas proposed by ARCS staff include WASH, small business support (e.g. poultry farming), and tree planting to reduce mudflow risk.

Nepal

Basic data: Nepal

Population	30.1 million (2023)
Land area	147,200 km²
Population density	211/km²
Per capita income	4,210 (USD PPP, World Bank 2021)
Human development (HDI)	0.602 (medium)
Per capita CO ₂ emissions	0.29 tonnes

Risk

Inform index score 2023	4.4 (medium risk)
Inform country profile	See here
Hazard & exposure	3.6 (medium)
Vulnerability	4.4 (high)
Lack of coping capacity	5.5 (medium)

6.1.2 Future risk

Looking ahead, the climate crisis will bring dramatic further changes, and with it, heightened levels of risk.

Temperature: Nepal's climate will grow warmer: compared to 1981-2010, the mean change of temperature is expected to be +0.9/+1.1°C by 2045 and +1.3/+1.9°C by 2065. The highest rates of warming are expected in the mountains, and rates will be higher in western Nepal than in its east.

Precipitation: While overall precipitation is expected to see a slight increase, the seasonal distribution will change dramatically, as the projections for 2045 under optimistic (RCP 4.5) and pessimistic (RCP 8.5) in *fig.13* show.

The reduction in rainfall during winter and pre-monsoon seasons will increasingly hamper agricultural production and see more water scarcity. Meanwhile, the additional rainfall during the monsoon season (which accounts for 80% of annual rainfall) will increase the risk of floods and landslides during this time.

In mountains, more precipitation will come as rain, rather than snow — the 'natural water storage' of snow fields will therefore shrink.

The combined effects will lead to additional risk in several ways.

Drought risk will be increased by a) less rain during agricultural growth periods, b) greater evapotranspiration, and c) reduced water storage in snow fields.

Flood risk will be exacerbated by a) extreme precipitation events, b) snow-to-rainfall conversion in high-altitude precipitation, and c) accelerated melting of glaciers, which can lead to glacial lake outburst floods (GLOF).⁴⁴

The progressive retreat of glaciers will have the most serious long-term consequences for the country, as the key water buffer and climate regulator recedes.

These changes will have increasingly severe **impacts on ecosystems** and materialise in reduced biodiversity as well as an increase of pests, insect infestations, and vector-borne diseases. In addition, the risk of forest fires will increase further for most of the country.⁴⁵

The climate projections imply severe additional **stressors** to lives (water and sanitation as well as health) and livelihoods (agricultural production) over the decades to come.

Direct threats to life also include increased frequency of **fast-onset** hazards, such as flash floods, landslides, and thunderstorms.

6.1.3 Risk hotspots and risk drivers

The western part of Nepal will generally see greater climate change impact in terms warming and changed precipitation patterns. The two westernmost provinces of Sudurpashchim and Karnali also have higher levels of vulnerability, as many socio-economic indicators illustrate (MoFE 2021:5).

The more populous and flood-prone areas of the south-western *Terai*, as well as other centres further north in the *Pahad*, are therefore considered **climate risk hotspots**.

Risk is driven by a combination of structural vulnerability (e.g., limited access to markets, services, information), some environmental degradation,⁴⁶ and the climatic factors mentioned above. The interplay between these factors is complex and has long impact chains, as our problem trees in part 6.3 show.

6.2 Response analysis

The Government of Nepal has developed a strong set of policies and plans for climate change mitigation and adaptation, and numerous policies relevant to reduce long-term risk (*see fig. 14*). The ambitions are supported by several donors, international agencies, and NGOs — yet, many gaps exist, especially at the local level.

Fig. 14 | Nepal's policy context

Climate change

- ▶ [National Adaptation Plan 2021-2050](#) ⁽²⁰²¹⁾
- ▶ [Second Nationally Determined Contributions \(NDC\)](#) ⁽²⁰²⁰⁾
- ▶ [National Climate Change Policy](#) ⁽²⁰¹⁹⁾
- ▶ [Framework on Local Adaptation Plans of Action](#) ⁽²⁰¹⁹⁾

Disaster management

- ▶ [Disaster Risk Reduction and Management Act 2074](#) ⁽²⁰¹⁷⁾
- ▶ [Disaster Risk Reduction National Strategic Plan of Action 2018-2030](#) ⁽²⁰¹⁷⁾

Environment

- ▶ [Environment Protection Act](#) ⁽²⁰¹⁹⁾
- ▶ [Environment Protection Regulation](#) ⁽²⁰²⁰⁾
- ▶ [Forests Act](#) ⁽²⁰¹⁹⁾

Other key policies

- ▶ [Agriculture Development Strategy 2015-2035](#) ⁽²⁰¹⁵⁾

Fig. 13 | 2045 precipitation

Seasons	RCP 4.5	RCP 8.5
Winter	-5.8%	+7.2%
Pre-monsoon	-5.0%	-4.0%
Monsoon	+2.7%	+7.8%
Post-monsoon	+18.6%	+6.0%
Annual	+2.1%	+6.4%

Projected range of mean change in precipitation (%) for different seasons, compared to the reference period 1981-2010. **Source:** MoFE 2019, as listed in NAP (7).

44. These floods occur when water dammed by a glacier or moraine is suddenly released as the 'glacier dam' disintegrates. Large amounts of water are quickly released can have disastrous impact on communities downstream. For more information on GLOF risk in Nepal, see [ICIMOD 2011](#).

45. The risk of forest fires is greatest in populous areas of the Terai, especially in Sudurpashchim and Karnali. Most fires are started by human activity, while some are caused by lightning strikes. See [Government of Nepal 2021:9](#).

46. Environmental degradation in Nepal most severe in areas of high population density. Issues include overgrazing and indiscriminate use of pesticides, soil degradation, water pollution, and unsustainable levels of groundwater extraction. The country has also seen some deforestation and forest degradation, although the absolute and proportional loss of forests is less than in other countries included in this study. Between 2001 and 2021, Nepal lost 513 km² of forest cover (see [Global Forest Watch](#)). The [PEDRR Opportunity Mapping Tool](#) notes wide opportunities for protection of forests, and the NAP envisages community-based forest management to this end.

Policies

The National Adaptation Plan (NAP) is built on detailed analysis and features a comprehensive set of priority actions that address all eleven dimensions of resilience.⁴⁷ **Principles** include inclusiveness, ecosystem integrity, and systemic mainstreaming of adaptation into planning at all levels. Planned **measures** include community forestry, climate-smart agriculture, soil conservation, and water infrastructure.⁴⁸

A framework for local adaptation plans of action (LAPA) had been devised already in 2011, but with most local administrations still undergoing re-structuring, planning and implementation varies considerably.⁴⁹ The LAPA mechanism is a useful tool for bottom-up planning that can be linked to NAP priorities and as well as provincial plans ([GoN 2011](#)).

NAP implementation is coordinated chiefly through the Climate Change Management Division (CCMD) at the Ministry of Forests and Environment (MoFE).⁵⁰ The CCMD coordinates both horizontally with line departments as well as vertically with the seven provincial governments.⁵¹

The Ministry of Finance is the designated focal point for the Green Climate Fund (GCF) and the Global Environmental Facility (GEF). The NAP comes with a price tag of USD 47.4 billion up to 2050; by 2030, the government hopes to receive USD 20.5 billion through external support.⁵²

External support

Nepal has a wide range of programmes supporting aspects of climate resilience, and that support the policies outlined above.

The Global Environmental Facility (GEF) currently supports 23 projects with a total volume of USD 302 million, in addition to its small grant scheme.

The Global Climate Fund supports three projects with a volume of USD 87.8 million.

Both the World Bank (through the GFDRR) and the Asian Development Bank have provided funding/loans for investments in climate resilience.

The International Climate Initiative currently funds 27 projects at all levels - ranging from support to forest user groups to making local institutions ready for climate finance.

6.3 Local insights

Based on secondary data analysis, the Karnali River Basin (KRB) was identified as a climate hotspot and visited as part of this study.

The Karnali flows from Mt Kailash (China/Tibet) to the Ganges (India). Almost 1,100 km long, around 270 km of the river pass through Nepal. Over this distance, it falls 7,500m in elevation. The KRB stretches across 14 districts in Sudurpashim, Karnali, and Lumbini provinces (*see map below*).

Six communities were visited for this study — three upstream in Kalikot and Dailekh districts, and three downstream in Kailali and Bardiya districts. The findings from these visits are presented below and grouped by resilience dimension.

Many of the observations are linked to each other - the problem tree in *figure 15* overleaf illustrates these linkages.

Disaster risk management

Communities reported a variety of preparedness and coping mechanisms. One village in Kailali that DRC supported through a previous project stood out with its high level of preparedness: the community is well organised, maintains an early warning system (EWS) for river floods, has 'go bags' prepared and evacuation locations identified. This community also appears more inclusive and has people with disabilities on committees who speak up at meetings.

Other communities struggle with preparing for and responding to disasters, and all mentioned that vulnerable members, the elderly, or

⁴⁷ The eleven dimensions of resilience include risk management, health, water, shelter, food & nutrition security, economic opportunities, infrastructure & services, natural resource management, social cohesion, inclusion, and connectedness. See the IFRC Road Map to Community Resilience for details ([IFRC 2021](#)).

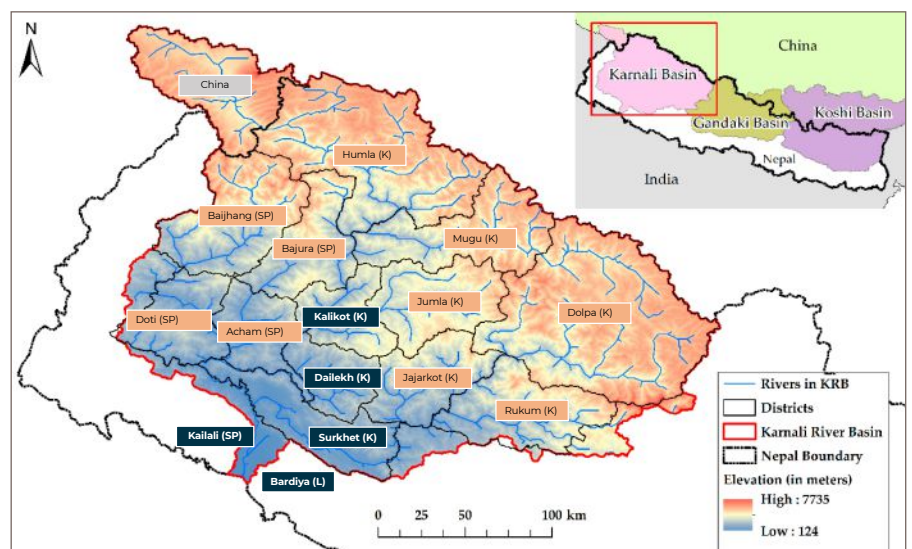
⁴⁸ See chapter 6 of the National Adaptation Plan. [Government of Nepal 2021:17-37](#).

⁴⁹ Following the administrative reform that came with the new Constitution, the capacity of local governments at the 7 provinces and 753 districts varies greatly. Strengthening government capacity with regard to climate resilience should thus be part of local adaptation efforts.

⁵⁰ For the institutional arrangements under the NAP, see part 8.1 of the NAP (pp. 40-42). Overall implementation is under the auspices of an inter-ministerial council called the EPCCMNC that is chaired by the Prime Minister.

⁵¹ All seven provinces have established Provincial Climate Change Coordination Committees (PCCCC).

⁵² For details on the budget, see part 8.2 of the NAP (p. 42). More than 95% of the funding is expected to be provided through external support.



female-headed households faced severe challenges at times of crisis or evacuation, as youth and men are often working in India or have migrated to other countries.

Communities said that rising temperatures are of concern. The Department of Hydrology and Meteorology (DHM) in Nepalgunj reported that in the *Terai*, temperatures had not exceeded 39 °C in the past. Now, they often reached 40-41° C. Heatwaves had not existed five years ago but now affect the *Terai*.⁵³

Upstream The three sampled upstream communities face floods, landslides, earthquakes, lightning strikes, forest and household fires. People felt landslides were extremely unpredictable and do not know which parts of the community were safe. Upstream communities listed disaster risk management as the second or third priority out of the eleven resilience dimensions.

Downstream All three visited communities listed disaster risk management as their primary concern. This relates to flooding, landslides, riverbank erosion, forest and household fires, storms and animal attacks. Villages reported increased incidence and intensity of all hazards.

Water & sanitation

All communities reported erratic rainfall patterns that affect water availability for agriculture and household use.

Upstream In all three upstream communities, water scarcity and quality was listed as the

priority issue out of the eleven dimensions. Community members reported that water springs and sources had dried up in recent years. Two communities reported severe water shortages and ‘disturbed’ rainfall patterns.

In Sunar Khola (Kalikot), this erratic rainfall allowed for just two months of food production a year. Women have to walk long distances and wait in line to collect water. Communities want to collect rainwater but lack the knowledge and resources to build tanks.

While a community based along the Karnali river corridor (Lalighat, Kalikot) has an abundance of water at their doorsteps, it cannot access the water easily, as there are no piping systems.

Downstream While some communities had more access to household water with hand pumps, a reoccurring issue was water contamination due to flooding. Erratic rainfall also affects agricultural production.

Livelihoods

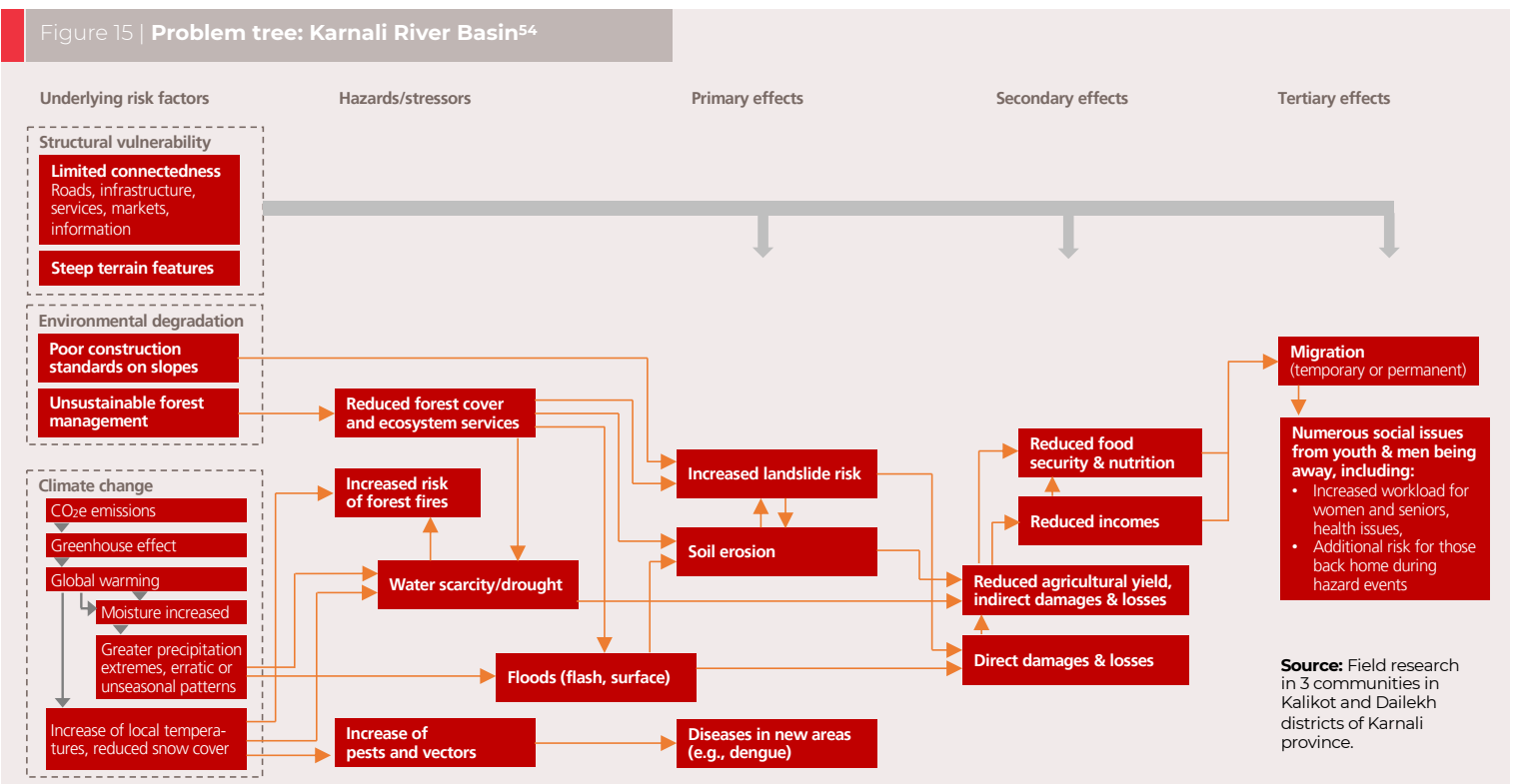
All community research around climate change impact in Nepal has led to the understanding that livelihoods have been greatly compromised through agricultural losses. Communities reported they could only produce for a period of two months, and up to six months for subsistence-level agriculture.

For the remaining part of the year, many households need to seek alternative livelihoods, mostly via *seasonal migration to India* for domestic or manual labour.

53. Interview with [redacted] with Ram Bikesh Ray, Office Chief, DHM Nepalgunj.

54. The problem tree summarises the observations and illustrates the linkages. It was prepared on the basis of discussions with the three upstream communities in Kalikot and Dailekh districts.

Figure 15 | Problem tree: Karnali River Basin⁵⁴



Upstream Many issues affect livelihoods, including new pest infestations and increased frequency of hailstorms that destroy crops. The main issue hampering agricultural yields is water scarcity.

Downstream The communities face similar issues as those upstream but have the added complication of wild animals like monkeys, elephants, and wild boars destroying and eating crops. Another concern is that livestock is killed by tigers and leopards.

Health

Precarious terrain and remoteness makes accessing health services difficult for upstream communities. Downstream communities are also often cut off from medical services during the monsoon season.

Seeking any type of medical assistance often requires long walks; if patients are in a serious condition, they have to be carried on stretchers. High cost of treatments was reported as a barrier for seeking health services.

Communities reported that many women had less health knowledge and would face challenges without support from their husbands, many of whom are for work in India. Traditional home births are common, and high rates of maternal deaths are of concern. Health issues include uterine prolapse, typhoid, dengue hemorrhagic fever, diarrhoea, and skin diseases.

Natural resource management

Forest degradation was widely reported in communities, with most remembering dense forests 20 years ago. Some communities are able to make a living from harvesting non-timber forest products, such as mushrooms and berries (NTFP).

Only one community knew about **forest user groups** (present in its neighbouring village), while others did not have any systems of protection or sustainable management. Communities reported that the collection of firewood and dry leaves was unregulated, and that many forest fires were started by careless people in the forest.

Natural water sources are degraded, with many having dried up or destroyed by landslides and flooding. Poor road construction standards and unplanned development was listed by villagers, NGOs, NRCS chapters and government departments as key factors behind deforestation and environmental degradation. Communities were vocal about the need for better protection of forests, water sources, air and wildlife.



Migration

Seasonal migration affects almost every family in the sampled rural communities. Villagers reported that up to 85% of men would travel to India for work for at least six months per year, while some would travel to the Middle East for up to five years. Women also seek work options abroad.

A myriad of consequences were reported that affect many parts of life. With so many community members absent, vulnerable groups face additional challenges in times of crisis or disasters. Women absorb a larger burden of heavy and demanding work, which exacerbates some health issues like uterine prolapse. Family breakdowns and multiple marriages were also reported as negative consequences.

While working in India, social protections are lost, and many workers reported having been cheated, exploited, and subjected to gender-based violence. Some migrants fall into debt while trying to secure work in the Middle East, and families are left to repay increasing debts.

Protection, gender & inclusion

Who are the most vulnerable in western Nepal when it comes to climate change? NRCS chapters, NGOs and government agencies reported that **women** and the **elderly** were disproportionately affected by climate change.

Reduced agricultural yields mean that male family members often migrate for work, leaving women with the burden of work to run farms, households and collect scarce water and grasses for livestock. They are also responsible for kitchen gardens, which often fail due to water shortages. Where forests are degraded and water sources depleted, women need to walk greater distances to collect

Kalikot district spans well into the mountains, with much of the district at temperate or sub-alpine levels of 2,000 - 4,000 metres. The population is sparsely interspersed among the mountain ranges and valleys.

Not far from the district capital Manma is the **community of Sunar Khola**. The 45 households are precariously perched on a steep and rocky mountain range. Their caste is Dalit, and they are all related through family ties. Of all issues the community is facing, water is the most pressing concern, as community members explain. It has not rained, the jungle has receded, and 'the whole mountain has cracked'. People here have heard the term climate change but explain they don't talk about it, they live it.

The village used to be surrounded by jungle, but now it is gone. What used to be big trees are now only small shrubs. Twenty years ago, villagers could enjoy wild fruits in the forest; now, these no longer exist.

Villagers point to the new road construction and say that since it was built, all the runoff water washes into their homes when it rains, and the land has slipped. The road construction has scared off wild animals; while deers and tigers were common, these animals have not been seen since the road construction.

The dry season is too long, which makes farming unmanageable. And when it does rain, it comes down in a deluge, and the community has to deal with landslides and flooding.

One woman takes us to see her stone home that was destroyed by landslides seven months ago. Her family of six now live in temporary accommodation with a tin roof held on by stones. It is just 16 m² in size and less than 1.2 metres high. It is impossibly suffocating for just one person, let alone six.



The community members also notice that there are more insects than before, and they now have mosquitos which they have never had. There are new **pests and insects** invading their crops which they don't know how to manage.

Another issue that they worry about is the increasing number of **forest fires** and their livestock get killed in these fires. With no fire brigade in the district, or any equipment, they try to manage the fire themselves by throwing sand and dirt.

However, their first priority is clearly **water**. Their only source is a 7km walk away and they must wait for all the other communities to take the water first, they are Dalit, and must wait until last. They barely have enough drinking water for each family member. With such a lack of water, one woman explains she can't even dream of bathing or washing

their clothes. They want to collect rainwater, but don't have any resources or knowledge how to make the storage tanks. They have asked their local government for help with no response.

Lack of water also affects their food production. The government supplied them with seeds, but they laughed and asked how they are supposed to plant seeds when they don't have enough water to drink themselves, let alone to give to plants.

With such harsh climate conditions, their own food production lasts for about two months of the year and the rest of the time they must seek labouring and daily work.

If it is available locally, they can work in Nepal, but most travel to India for work. This **seasonal migration** has its benefits and risks. They don't disclose their caste status as they would face discrimination in India as well.

"Since we are not registered in India, we have no security or rights; everything depends on the mood of the contractor."

Sometimes we work for one month and then the contractor runs away, and we don't get paid. Only a few Nepalis are doing well.

We have to travel far and there is no guarantee of a job, no fixed income and we are far from family. Women go for cleaning work and men for manual labour."

They requested more support and education opportunities for their children with disabilities. They said there were no educational opportunities for them here.

firewood and water. Women's reproductive health has also been impacted by this increased work burden.

Some **ethnic groups** are also seen as very vulnerable. These include the **Raute**, a nomadic group that hunts and gathers in the rural areas of western Nepal — moving from the wooded *terai* plains in winter to the jungles of the *pahad* in summer.

They are present in Karnali province, and government bodies and NRCS chapters all reported these groups as particularly vulnerable due to their dependency on forests.

Other ethnic groups such as **Badi**⁵⁵ and **Dalit** were reported as vulnerable as well as all those living along the Karnali river corridors.

6.4 Positioning

Danish Red Dross has much to offer for the envisaged climate resilience programme in Nepal. DRC has a long history of working with NRCS in DRR, and is technically skilled in early action and anticipatory action (AA), flood early warning systems, and in coordinating with local governments on these systems.

DRC is the Movement's technical lead for AA in the country. It is acknowledged for social inclusion and harnessing national social security functions into flood assistance. DRC has also supported community development and livelihood actions in earlier projects. DRC has a well-balanced team with many technical skills. It has existing and productive

⁵⁵ The Badi are the lowest ranking "untouchable" caste in western Nepal. The rules of orthodox Hinduism dictate that members of the higher castes (Braham, Chetri or Thakuri) cannot allow the Badi into their houses, accept water or food from them, use the same village pump, or even touch them. Women are often seen as sex workers.

partnerships with ICIMOD and Mercy Corps, and good relations with Dan Church Aid.

In summary, Danish Red Cross is in a strong position to pursue climate resilience programming in the country. Let us reflect on NRCS and Movement partners as well as gaps and opportunities before turning to programming guidance.

6.4.1 The Host National Society

Established in 1963, Nepal Red Cross Society (NRCS) has more than 100,000 volunteers across 77 chapters. Students and youth volunteers feature strongly in NRCS and form Nepal Junior and Youth Red Cross Circles that are active in schools, campuses and communities throughout the country.

NRCS has prepared a national programme related to IFRC's Global Climate Resilience Programme and, at the time of this study, was drafting a climate policy.

Due to a long-standing governance crisis at the national level, most NRCS programming runs through district chapters with the support of technical departments at the headquarters.

6.4.2 The RC/RC Movement

Red Cross/Red Crescent Movement partners in Nepal include IFRC, ICRC and seven PNS. There is an active unified planning process in Nepal and considerable coordination between partners. The following summarises actions by Movement partners related to climate resilience.

American Red Cross (ARC) supports NRCS in community-based disaster risk reduction in the Sudurpashchim province and is about to start a new USAID climate resilience programme in the same province. ARC seeks to adopt a watershed approach in the Karnali River Basin, focussing on the western side of the Karnali river in Achham and Bajura districts. It also supports heatwave action plans with **Finnish Red Cross** in Nepalgunj. ARC is the technical lead in Nepal for ecological assessments.

British Red Cross (BRC) cooperates with **Swiss Red Cross (SRC)** on integrated programming in Lumbini and Karnali provinces.

It has commissioned an ecosystem assessment of Dhangadi district in Sudurpashchim province (due in December 2023) and seeks to support NbS in this area. BRC supports the youth programme developed by the Climate Centre (**Y-Adapt**) in Nepal.⁵⁶

Finnish Red Cross has experience in climate-smart WASH projects, including in the use of recharge ponds, organic fertilisers and pest management. FRC has also worked in Karnali province (Salyan and Dolpa districts). FRC plans to focus on anticipatory action in future.

Canadian Red Cross supports NRCS in pre-hospital care and community-based health activities. **Japanese Red Cross** supports community-based disaster risk reduction and youth action for WASH.

6.4.3 Gaps and opportunities

As the study has shown, there are several thematic gaps and opportunities, which include **migration**,⁵⁷ **nature-based solutions**,⁵⁸ work to reduce the risk of **forest fires**⁵⁹, and **Y-Adapt** as a channel to engage youth at broad scale.⁶⁰

In terms of **partnership opportunities**, the strong interest and action among RC/RC Movement partners in terms of climate resilience is noted. Coordination is critical, and it is time to 'join the dots'. The study also found numerous opportunities to partner with external organisations. Three are highlighted here.

ICIMOD, the International Centre for Integrated Mountain Development, is an intergovernmental knowledge and learning centre working for people of the Hindu Kush Himalaya (HKH) based in Kathmandu.⁶¹ ICIMOD specialises on low-cost and evidence-based solutions. Its 'Living Mountain Lab' outside of Kathmandu is used to demonstrate technologies and farming practices. This resource is extremely advantageous for DRC climate resilience programming.⁶²

Dan Church Aid (DCA) pursues climate resilience programming under its agri-ecology approach.⁶³ Projects typically support communities over 4-5 years. With its strong livelihood expertise, an interest in exploring funding models for climate resilience, a presence in Nepal, Bangladesh and Myanmar, and a new project in western Nepal, DCA would make a suitable partner for DRC.⁶⁴

WWF already has a global partnership with IFRC and currently are in the process of negotiating a partnership agreement between NRCS, WWF and IFRC. Its strong expertise in ecosystem-based approaches makes WWF a strong complementary partner.⁶⁵

6.4.4 Programming guidance

Five aspects make Nepal a fertile ground for broad and ambitious climate resilience efforts under DRC's envisaged regional programme.

⁵⁶ The In addition, BRC supports climate-smart water, sanitation and hygiene (WASH) activities with FRC and IFRC, as well as livelihoods, cash and voucher assistance preparedness, migration, community engagement and accountability, and branch development.

⁵⁷ The high levels of migration in Nepal and the prospect of greatly accelerated climate migration are a key issue that has not been addressed. Addressing this gap is an opportunity in line with DRC and IFRC strategic priorities.

⁵⁸ The [Nature Navigator handbook](#) (IFRC 2022) provides guidance and solution factsheets on utilising NbS.

⁵⁹ This study found little evidence of any actions to reduce the risk of forest fires and their impact. This is seen as a gap; actions could include community education, link with forest user groups, and strategic fire management. See solution C.4 on integrated fire management in the Nature Navigator (IFRC 2022).

⁶⁰ See the [Y-Adapt page](#) with the programme outline. It has been successfully utilised in Nepal.

⁶¹ ICIMOD has eight regional member countries: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. Currently, ICIMOD is not able spend funds in Afghanistan or Myanmar, but are very active in Nepal and Bangladesh.

⁶² Danish Red Cross already collaborates with ICIMOD for flood triggers. ICIMOD is an exceptional resource for climate, livelihoods and resilience related issues, and a more formal partnership is recommended.

⁶³ DCA's agri-ecology approach includes bio-waste solutions, fuel efficient stoves, recharge ponds, solar irrigation systems/solar bore systems, rainwater collection, and landslide protection through bio-engineering.

⁶⁴ The new DCA project focuses on areas in the Karnali River Basin, including the districts of Dailekh, Surkhet, Achham, and Bardiya. It is aligned with the government's '2000 Climate Smart Villages' initiative and will include drought-tolerant crops and community seed banks.

⁶⁵ WWF's expertise would be useful for ecosystem assessments and the set-up of governance mechanisms at watershed scale, as well as for innovations addressing human-wildlife conflict and the prevention of forest fires. The organisation has partnered with the RC/RC Movement in several countries and is interested in extending partnership arrangements.

Bardiya district lies in the *Terai* plains that consist of agricultural lands and protected forests. The world-renowned Bardiya National Park covers 968 km² and takes up the northern half of the district. It is the largest wilderness area in Nepal's *Terai*, home of the Royal Bengal Tiger, rhinoceros, leopards, the Asian Elephant and over 250 species of birds.

Goberela village is surrounded by Bardiya National Park on three sides. The village is at the confluence of several tributaries to the Karnali river.

While many tourists come from afar to visit the National Park, the residents of Goberela face several challenges. Home to 80 households from a mix of ethnicities and castes like Dalit, Choudhary, Brahmin and Shreti, the community is united — but humans and wildlife collide as they try to share their home environments.

The community explains that animal attacks are increasing; people especially worry about tigers, elephants, leopards and wild boar. The women explain that to protect themselves, they move in groups of at least three people.

"We are scared to move at night or even to go to the toilet. We make loud noises when walking to prevent animal attacks. We are surrounded by the conservation area of the forest. Just a few days ago, a tiger attacked a goat that was being herded right in front of us. We want an electric fence or wall."

The community explains that this is not their only risk. Over the years, the river and streams have changed — now they face annual floods. With little skills on how to get prepared, they struggle during flood periods.

"When it floods, our toilets get submerged and our water contaminated. Sometimes we use a cheap water filter from the market, but we don't know how effective they really are."



"We can't use our hand pumps or our latrines, so we are forced to go to the forest to the toilet – which is dangerous due to the wild animals. Those without proper housing really struggle. Flooding is a big challenge for us, and we don't know how to protect ourselves."

Even though the community is surrounded by forest, it does not have a proper system to oversee and use the nearby jungle sustainably.

"We go to the forest for food items and firewood. Most people depend on the forest for firewood, mushroom collection, forest vegetables and grass collection. There is no system to manage these products or firewood"

Chandra Kola BK is an extraordinary woman who survived a tiger attack and shares her story.

"On that day, we were in a group, I was not alone, and my three sons were with me. It was mostly women walking with me. All of a sudden, the tiger was on me. At that time many people cried out."

"Immediately, I began to struggle with the tiger. My biggest worry was that the tiger might attack my sons. The village quickly notified the police and nearby soldiers who service the National Park. At that point, I became unconscious. I was told that the villagers, police and soldiers cut down a nearby tree to startle the tiger."

"The noise of that falling tree scared the tiger, and he ran off. I was bleeding from many parts of my body. Luckily there was one youth in the village who knew First Aid and he bandaged me, and I was taken to hospital."

I stayed there for 17 days and the treatment cost NRP 200,000 (USD 1,500). This event was so terrible that even after all these years, I always remember it. I still don't feel well."

The conflict between humans and protected wildlife is an issue in parts of Nepal. WWF Nepal* explains that this human and wildlife conflict has three compounding factors related to climate change.

First, disasters such as floods and landslides mean that people move into forest areas for shelter, encroaching on animal habitats. They sometimes resettle there, and it is hard to move them back.

Second, rising temperatures mean that mammals such as tigers are moving upwards or coming more often to waterways for cooling. Urbanisation and new road constructions can cut off wildlife corridors.

Third, forest fires, which are increasing in western Nepal, degrade the forest and animal habitat and promote the wildlife to move into or close to human settlements for shelter.

The solution is to protect and conserve the natural environment, preserve wildlife corridors, and create good animal warning systems for the human settlements nearby.

Although communities request fences, WWF says that this has not been a successful measure and instead recommends sound and light deterrents for wild animals.

In the eye of the tiger: Chandra Kola BK survived a tiger attack outside her village of Goberela. Photo: Samadhi Marr

* Interview with Rajendra Suwal – WWF Nepal.

First, the country already experiences considerable climate change impact that exacerbates pre-existing risk, as our findings from the Karnali River Basin have shown.

Second, Nepal's government is committed to advancing climate resilience and has formulated an ambitious suite of policies and plans for adaptation. The NAP is comprehensive and aligns with all eleven resilience dimensions; its eight priority actions outline concrete measures but will need to be operationalised at local levels.

Third, the LAPA process is suitable to translate NAP actions to locally contextualised programmes. DRC should strive to embed local efforts in district LAPAs and align these with provincial adaptation plans.

Fourth, a watershed approach as envisaged under **block 4** of the regional programme (see p.13) appears both feasible and desirable in the Karnali River Basin (KRB) — especially as BRC and ARC have current and planned projects in other parts of the KRB. Working in this area offers the opportunity to combine puzzle pieces of a) NAP guidance, b) new district-level LAPAs and provincial adaptation plans, and c) the NRCS efforts supported by ARC, BRC and DRC and bring them 'under one roof'.

Fifth, Nepal features a rich set of potential partners with solid technical expertise that includes environmental aspects. These would be required for a holistic approach centred around nature-based solutions (NbS). NRCS has shown strong interest in these broader approaches and has begun to partner with some environmental actors.

Considering this strong enabling environment, the study recommends that Danish Red Cross should outline a masterplan with a ten-year timeframe, and pursue efforts related to all five blocks through consecutive projects.

Specifically, this should entail:

- ▶ **Block 1:** strengthen the NRCS capacity to deliver climate resilience programming - in particular at the district and province levels. This should include strong networking with local governments and environmental actors, and be aligned with DRC's efforts in NSD.
- ▶ **Block 2:** enable district chapters to roll out campaigns that combine environmental awareness with small-scale action. These efforts can build on existing resources (such as Y-Adapt) and be rolled out broadly across schools and communities.

- ▶ **Block 3:** the ongoing community-based projects supported by DRC should be the initial launchpad for climate resilience programming at the community level. The lines of defence model can be used to scope for prevailing gaps. Actions may include mitigation measures (exposure), investments in climate-smart agriculture and soil conservation (sensitivity), improved EWS and response team capacity (preparedness), anticipatory action and awareness of safety nets (coping capacity), as well as other compounding measures.⁶⁶ At the same time, efforts should be pursued to explore alignment with possible broader frames as proposed under block 4.

- ▶ **Block 4:** the watershed-based approach takes community-based projects to a new level in that it connects communities in the same watershed ('upstream and downstream') and aligns with plans at district, province, and watershed levels. Such programming is more complex and will require substantial investments in networking and governance.

These preparations could begin together with Block 3 activities through a 'Block 4 preparation phase', then upscaled to concrete actions in a broad range of communities. Block 4 activities are expected to be more effective (due to the scale and range of actions) and more sustainable (due to the inherent alignment with government plans).

- ▶ **Block 5:** considering the strong migration patterns (some of which is climate-induced) and the enormous social impact, DRC should support NRCS chapters in providing services on safer migration.

The suggested outline is ambitious in scale and scope and will require substantial funding. Danish Red Cross should therefore investigate the pooling of multiple funding sources.

These may include direct funding (Danish MFA, EU) as well as indirect climate funding through local governments and NRCS chapters (e.g. through the GEF small climate grants).

Notably, a well-prepared Block 4 scheme would be eligible for several funds designed for nature-based solutions ([IFRC 2021: 41](#)).

The needs are there, the opportunities are clear. DRC has much to offer and huge potential in designing a broad climate resilience programme for Nepal. Exploring new sources of funding is the key aspect needed to make it happen.

⁶⁶ Additional measures may include, for instance:

- ▶ Recharge ponds to boost depleted water sources
- ▶ Rainwater harvesting
- ▶ Bio-engineering options for slope stabilisation,
- ▶ Forest fire prevention campaigns and forest user groups (envisaged in NAP)
- ▶ Specific actions to reduce the risk of wildlife/human conflict.

The Nature Navigator handbook (IFRC 2021) provides detailed guidance and a wide range of solutions that may be applied in Nepal and elsewhere.

Bangladesh

Basic data: Bangladesh

Population	165.16 million (2022 census)
Land area	130,370 km²
Population density	1,267/km²
Per capita income	6,494 (USD PPP, World Bank 2021)
Human development (HDI)	0.661 (medium)
Per capita CO ₂ emissions	0.47 tonnes

Risk

Inform index score 2023	5.5 (high)
Inform country profile	See here
Hazard & exposure	6.3 (very high)
Vulnerability	5.5 (high)
Lack of coping capacity	4.9 (medium)

7. Bangladesh

Bangladesh has come a long way. In its early years, it was one of the poorest places on Earth, struggling to recover from the catastrophic impact of the 1971 independence war as well as a massive cyclone that had hit the area a year prior.⁶⁷

Today, it is booming: with its GDP having grown by an average of 6.9% per year over the past decade — outperforming other lower middle income countries and the rest of South Asia — it has realistic prospects (and the ambition) of reaching upper middle-income status by 2030 (World Bank). The country made remarkable progress towards reducing poverty, improving education and health access, in upgrading infrastructure, and in disaster risk reduction.

Despite this progress, the country faces enormous challenges. Located in coastal low-elevation zone on the one hand, and lying at the confluence of major rivers fed by the Himalayas on the other, the country already faces impact from floods and cyclones. Long-term, it will see some of most severe impacts of the climate crisis, stemming from sea-level rise to its south and melting Himalayan glaciers to its north.

Over the course of the 21st century, Bangladesh will see an enormous transformation, and with many far-reaching frameworks, the government seeks to steer this change — greater climate resilience and prosperity is a core part of this ambition.⁶⁸

7.1 Risk profile

Bangladesh is the world's eighth-most populous country and one of the most densely populated. Located at the lower basin of major rivers fed by the Himalayas (notably the Ganges and Brahmaputra) and north of the Bay of Bengal, it is extremely prone to floods and cyclones (among other hazards). On the 2023 Inform Index, Bangladesh scores 5.5 (high risk), although there are strong regional variations, as the sub-national ratings on the map to the right illustrate.

7.1.1 Present risk

In terms of the country's disaster record over the past 30 years, **floods** have been by far the most frequent and damaging natural hazard. Four distinct types affect the country: river floods, flash floods, urban flooding, and storm

surges. **River floods** are induced by the combination of Himalayan snow melt and monsoon precipitation. Major floods in 1987, 1988, 1998, 2004, 2007, and 2017 caused total economic damages and losses of USD 12.5 billion and inundated between 39% and 69% of the country (GoB 2022:21). **Flash floods** occur as a result of heavy rainfall in watersheds with steep gradients. They are most common in the country's north-eastern wetlands⁶⁹ and the Eastern hills region. **Urban floods** have become more common, mainly as a result of urbanisation with underdeveloped drainage infrastructure. In 2004, urban floods in Dhaka affected 80% of the city, following record-high daily rainfall (ibid: 25). **Storm surges** refer to the coastal inundation that come with cyclones. The storm surge induced by Cyclone Amphan in 2020 inundated 1,490 km² of land - more than twice the land area of Singapore.

Cyclones have been the most lethal climatic hazard, especially due to storms in 1970 and 1991 that killed at least 300,000 and 150,000 people respectively. The human toll has been greatly reduced over past decades, thanks to massive investments in cyclone preparedness and early warning.⁷⁰ Despite this tremendous progress, cyclones are associated with very high economic losses and damages.

Droughts affect mainly the country's western areas and have occurred every 2.5 years on average in the country's history.

Secondary effects from floods and extreme precipitation include **riverbank erosion** and **landslides**. The country already experiences **heatwaves**, especially in urban centres. Other hazards include **earthquakes** as well as **industrial accidents and fires**.

Bangladesh is already affected by the climate crisis: mean **temperatures** have significantly increased, while **rainfall patterns** have changed. This includes temporal as well as local variations. Winters have become drier and monsoons wetter, and slightly less rain was observed in the north-west, and more in the north-east of the country (ibid:18).

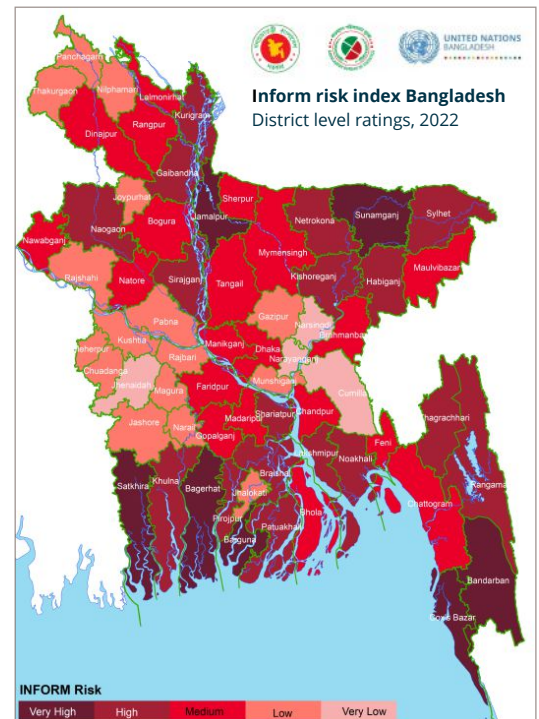
Bangladesh has already seen some sea-level rise, most recently of around 3.2 mm per year. This has led to increased salinity along coastal lands.

67. In November 1970, Cyclone Bhola made landfall in India and East Pakistan (present-day Bangladesh) and killed at least 300,000 people. The response by the Pakistan government was criticised as being slow and insufficient, and was one of several factors that fuelled the independence movement.

68. 'Vulnerability to resilience to prosperity' is a leading motto of the government's [Mujib Climate Prosperity Plan 2030](#).

69. These wetlands in Sylhet division are one of the country's key 'rice bowls'. The area comprises several small watersheds originating in the Indian state of Meghalaya, which has one of the world's highest annual rainfall. Sunamganj district (see part 6.3) is part of this area.

70. These comprise the construction of cyclone shelters along the coastline as well as the Cyclone Preparedness Programme (CPP) that Bangladesh Red Crescent Society (BDRCS) supports with 90,000 volunteers.



71. There are high levels of uncertainty over the long-term rise of sea levels, and some global models estimate an increase of up to 1.75m (ibid: 21).

72. On average, current losses to riverbank erosion are 30km² and displace 25,000 people per year.

73. The multi-hazard risk map divides Bangladesh into 11 climate stress areas. The table to the right summarises respective impacts as medium (orange) or high (red). See GoB 2021: 31-35 for details. The red frames highlight the two areas visited for this study: SWM includes Satkhira and HFF Sunamganj.

7.1.2 Future risk

Looking into the future, the climate crisis will bring drastic further changes and propel risk. Let us first look at the physical changes and then at their effects.

Temperature: Bangladesh's climate will grow warmer: optimistic and pessimistic scenarios project an increase of mean annual temperature by +0.44/+0.69°C by 2030 and by +1.30/+2.0°C by 2050. The highest rates of warming are expected in the country's north.

Precipitation: Overall precipitation in Bangladesh will remain roughly unchanged by the 2030s and increase by 2.4 - 3.5% in the 2050s, with increases expected to be most pronounced in coastal areas and Chattogram Hill Tracts. Rainfall will decrease in winter for most of the country and increase during monsoon and post-monsoon seasons. The frequency of heavy rainfalls will rise while that of light rainfalls will fall.

Sea-level rise: In addition to the already observed rise in sea levels, projections estimate a further rise of 11-12 cm by 2030, 23-27 cm by 2050, and 54-86 cm by 2100.⁷¹ Under the pessimistic scenario, up to 18% of the coastal belt may be inundated by 2050.

Accelerated water discharge: The three main watersheds that feed into Bangladesh (the

Ganges, Brahmaputra and Meghna basins) will all see increased mean annual flows.

This is most pronounced for the Ganges basin, which will see increased discharge of 17-28% by 2050, primarily during the pre-monsoon season.

In several ways, these physical changes will lead to additional risk.

The combined effects of a) more extreme precipitation events, b) higher river discharge, and c) sea-level rise will greatly increase **flood risk**. Riverbank **erosion** will worsen as flow dynamics and sedimentation patterns change.⁷² Unseasonal extreme rainfall events in the pre-monsoon season are likely to induce substantial crop losses (as was the case in April 2022, when early flash floods destroyed crops long before they were to be harvested).

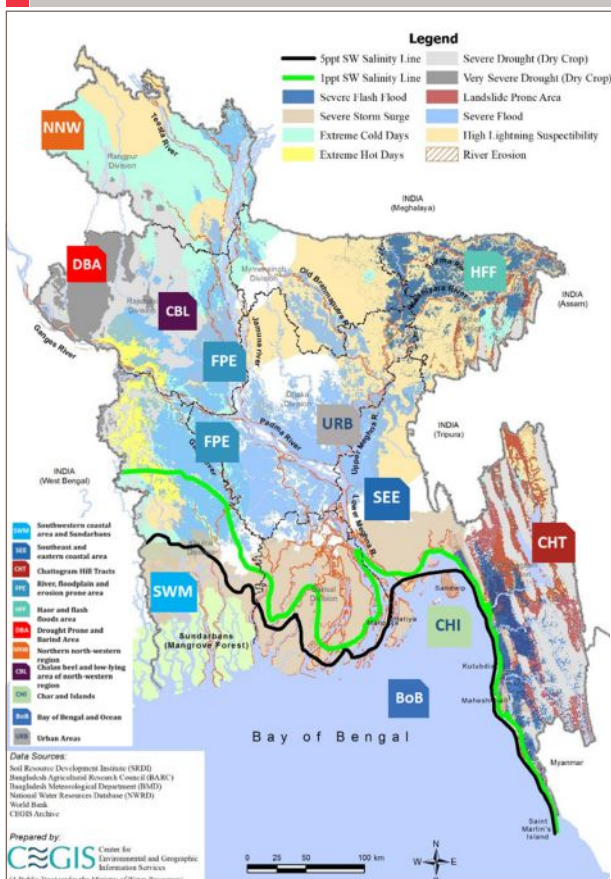
Drought risk will be exacerbated by greater evapotranspiration (due to warmer climates) and fewer rainy days in the pre-monsoon season. Moisture stress is expected to induce **reduced agricultural yields** by up to 27% for Aus paddy, 61% for wheat, and 62% for Boro rice.

In terms of **cyclones**, the greater physical force (due to higher moisture) is a threat to coastal communities, both through increased velocity and force of air flows and storm surge.

Lightning strikes will become more frequent and deadly as a result of climate change and tree cover loss. Over the past three decades, fatalities have already increased from 114 to 368 per year.

Heatwaves are expected to be increasingly frequent and severe, and will affect urban heat islands in Dhaka and western cities like Rajshahi the most. While the parameters of heatwaves are always locally defined, the extreme heat stress that these cities will encounter will lead to substantial productivity losses, health impacts, and deaths. Climate projections suggest that heatwaves are set to reverse the trend in reduction of disaster mortality as soon as the 2030s.

Fig. 16 | Climate stresses in Bangladesh⁷³



Climate Stress Areas	Climate Stresses													
	Rainfall Variability	River Flood	Flash Flood	Urban Flood	Sea Level Rise	Salinity	Cyclonic Storm Surge	Drought	Erosion	Lightning	Extreme Heat	Extreme Cold	Landslide	SST & Ocean Acidification
SWM	High	High	High	High	High	High	High	High	High	High	High	High	High	High
SEE	High	High	High	High	High	High	High	High	High	High	High	High	High	High
CHT	High	High	High	High	High	High	High	High	High	High	High	High	High	High
FPE	High	High	High	High	High	High	High	High	High	High	High	High	High	High
HFF	High	High	High	High	High	High	High	High	High	High	High	High	High	High
DBA	High	High	High	High	High	High	High	High	High	High	High	High	High	High
CBL	High	High	High	High	High	High	High	High	High	High	High	High	High	High
NNW	High	High	High	High	High	High	High	High	High	High	High	High	High	High
CHI	High	High	High	High	High	High	High	High	High	High	High	High	High	High
BoB	High	High	High	High	High	High	High	High	High	High	High	High	High	High
URB	High	High	High	High	High	High	High	High	High	High	High	High	High	High

Data Sources: Soil Resource Development Institute (SRDI), Bangladesh Agricultural Research Council (BARC), Bangladesh Meteorological Department (BMD), National Water Resources Database (NWRD), World Bank, CBDR Archive. Prepared by: CGIS, Center for Environmental and Geographic Information Services. © Public Trust under the Ministry of Water Resources.

7.1.3 Risk hotspots and risk drivers

With its high population density, hazard profile, high levels of environmental degradation, and variable levels of coping capacity, Bangladesh has arguably one of the most complex patterns of climate impact. With its population of 165.9 million exceeding those of Afghanistan, Nepal and Myanmar combined, the impact is also biggest in absolute terms.

In terms of **risk drivers**, underpinning **vulnerabilities** intersect with climate factors and **environmental degradation**, as will be illustrated in *part 7.3*. As a country that is booming economically while being bombarded by floods, storms, droughts, and numerous stressors, Bangladesh is dynamic as it experiences a period of rapid change. The share of people living in cities, for instance, is expected to increase from 38.2% today (66.7 million people) to almost 60% (112.4 million) in 2050 (World Bank). The number of **climate migrants** could reach 19.9 million people by 2050, outpacing people migrating for other reasons (Rigaud et al. 2018:148).

The identification of **risk hotspots** across Bangladesh depends on the method and time scale applied. For this study, we selected **Satkhira** and **Sunamganj** districts as climate hotspots and study areas, using the sub-national Inform Index data from 2022 as a basis.⁷⁴

7.2 Response analysis

With the huge advances in disaster risk reduction that Bangladesh has achieved over past decades, the country features a strong foundation to address the enormous challenges posed by the climate crisis. The government has laid out its priorities and strategies in an advanced and elaborate policy landscape related to climate change and disaster risk management (see *figure 17*).

Fig. 17 | Bangladesh's policy context

Climate change

- ▶ National Adaptation Plan 2023-2050 (2022)
- ▶ Nationally Determined Contributions (NDCs) 2021 - updated (2021)
- ▶ Bangladesh Delta Plan 2100 (2018)
- ▶ Mujib Climate Prosperity Plan (2019)

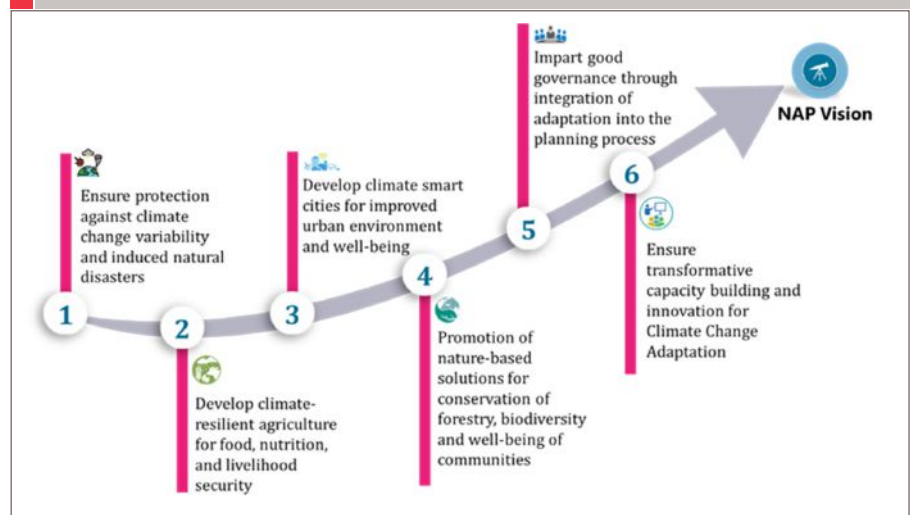
Disaster management

- ▶ Disaster Management Act (2012)
- ▶ Standing Order on Disasters (2019)
- ▶ National Plan for Disaster Management 2021-2025 (2020)

Environment

- ▶ National Environmental Policy (2018)
- ▶ National Action Plan for Clean Cooking (2019)

Fig. 18 | The six goals of Bangladesh's National Adaptation Plan



The National Adaptation Plan 2023 - 2050 (NAP) is the government's leading document to address the climate crisis. It features six goals (see *figure 18*) and a detailed list of priority actions that in sum address all resilience dimensions in urban and rural settings.

Its eight principles are in line with systemic risk governance, and there is a clear implementation strategy as well as alignment with other major plans, such as the Mujib Climate Prosperity Plan and the Bangladesh Delta Plan 2100.

The implementation of the NAP is overseen by the Inter-ministerial Steering Committee on Climate Change (ISCCC), which is led by the Ministry for the Environment, Forests, and Climate Change (MoEFCC).⁷⁵

While the policy suite related to the climate crisis is rather comprehensive, a notable omission concerns the lack of a strategy on climate-induced **migration**. Although the risk of losing land to the sea is acknowledged, the main stance is to limit or prevent internal migration.⁷⁶

7.3 Local insights

Having reviewed the climate risk patterns and summarised the policy response, let us turn to some local insights from our visits to two climate hotspots. On the basis of present risk patterns, climate projections, and operational considerations, the coastal district of **Satkhira** in the country's south-west, and the district of **Sunamganj** in the north-east were selected. In both areas, a strong impact of climate change was observed, as well as an interplay with environmental degradation and structural vulnerability. With their very different settings, two unique impact chains were identified.

⁷⁴ Satkhira and Sunamganj are two of the four districts with 'very high' risk ratings (the other two being Bagerhat and Jamalpur). Other data, such as those in the Bangladesh Climate and Disaster Risk Atlas (ADB 2021) highlight the country's northern districts along the Brahmaputra as risk hotspots.

⁷⁵ For details regarding institutional arrangements, including horizontal and vertical links, see pp. 105-108 of the NAP.

⁷⁶ The Mujib Plan, for instance, aims for 'zero climate-induced migration by 2030'.

Satkhira

The visit to Satkhira district returned surprising findings (*see case study 3 opposite*). This area is part of the SWM climate stress zone identified in the NAP (*compare fig.16*), whose impact profile lists rainfall variability, sea-level rise, salinity, cyclonic storm surge, erosion, and extreme heat as **high impacts** and floods, drought, lightning, and extreme cold as **medium impacts**.

As the map in *fig. 16* also shows, Satkhira lies inside the severe storm surge area and in a zone expecting high levels of salinity (5 ppt salinity line).

All of these impacts were noted in the community of Gabura. However, the patterns of root causes and causal chains were more complex than an exclusive focus on climate factors would suggest. The large-scale conversion of paddy fields to shrimp farms and associated pumping of salty seawater drastically increased saltwater intrusion and, according to a local NGO, accounts for 90% of the overall effect. This has accelerated environmental degradation as well as the depletion and contamination of groundwater, contributing to water scarcity and several other effects.

Aquafarming had been promoted by the government both as an adaptation measure and to harness economic growth opportunities — however, few farmers had the funds to invest in the technology to keep pH and oxygen levels within the narrow comfort zones of their crustacean produce. Many aqua farms failed — “if you want to meet failed shrimp farmers, you will now meet them in the slums of Satkhira town”, advised an officer of local NGO Utturan. As levels of suitable groundwater fell, many dug deeper wells. By the time of our visit in the pre-monsoon season, most wells were dry - with villagers having to buy drinking water.

Many other aspects compound to high levels of risk: cyclones are projected to increase in severity, and when Cyclone Amphan made landfall in Satkhira in 2020, it caused damages to homes (partly by falling trees), fields, aquafarms, and coastlines (including coastal defences). The Sundarban mangroves greatly reduced the storm surge, but the cyclone nevertheless caused damage. Villagers also reported that with poor conditions at the cyclone shelter, many had opted to evacuate to them last minute, putting their lives at risk.

In terms of livelihoods, people in Gabura also explained that environmental regulation had affected them: strict fishing regulations and

access restrictions to the Sundarban forest had reduced their overall incomes. Overall, Gabura faces a severe crisis that includes impacts on health, mental health, social aspects, and migration.

What could be done to address this crisis? The villagers themselves asked for holistic development solutions and ways to address environmental degradation — “not just cash after disasters.” Several points should be considered by Danish Red Cross, should it decide to include Satkhira in its climate resilience programme.

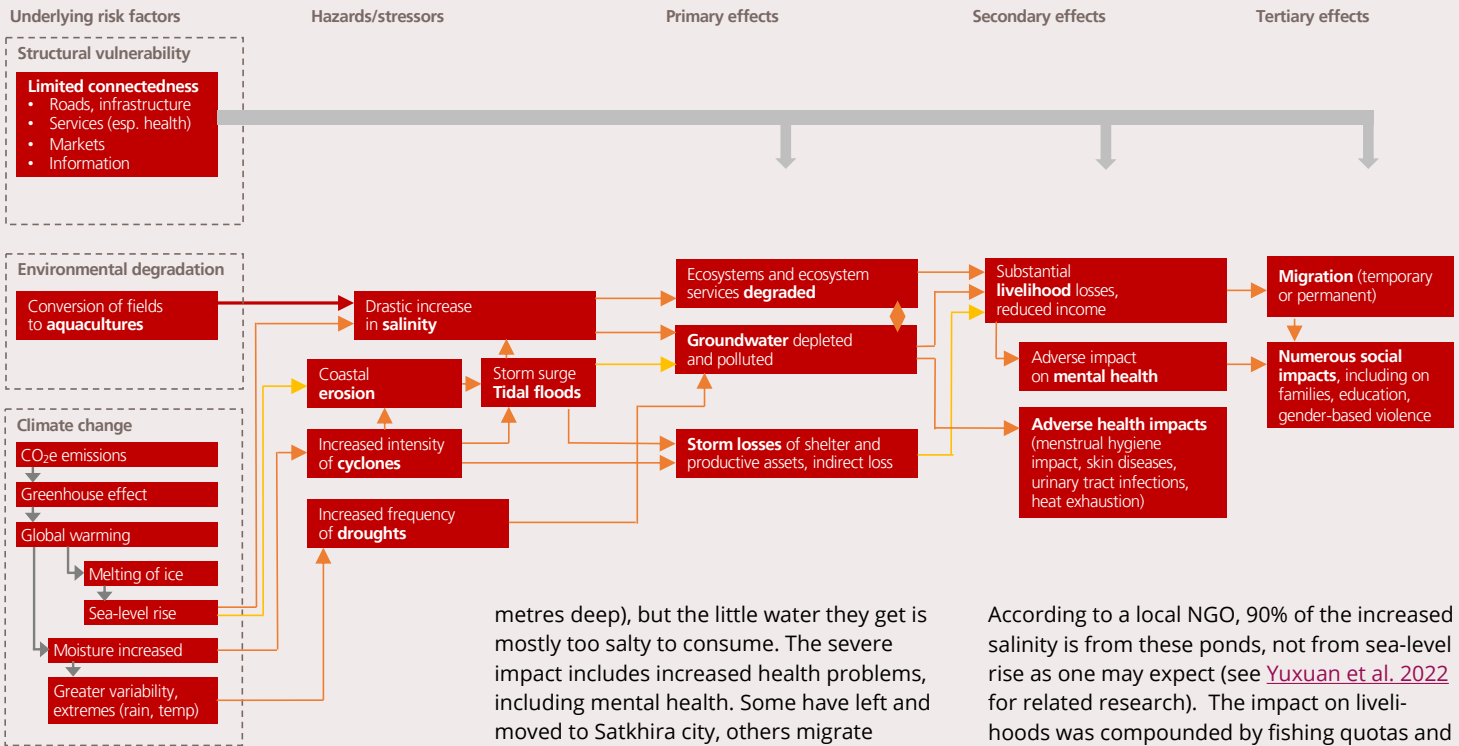
First, the local BDRCS branch has strong capacity and expressed its interest in such a programme. The organisational foundation for programming exists.

Second, there are good opportunities for partnering. Possible partners include Utturan, which already works in the area based on a community resilience approach, Danish Refugee Council, which has expertise in livelihoods and migration, and American Red Cross, which focuses on urban areas in the coastal belt (including Satkhira).

The local government is supportive of broad action, and many activities could be aligned with NAP and other plans. Additional technical expertise (e.g., on ecosystem assessments) could be sourced from nearby Khulna University.

Third, in an initial project phase, DRC may seek for some ‘**quick wins**’ to gain the trust of the community and quickly alleviate some of its main challenges. This may include:

- ▶ Promotion of and support to **rainwater harvesting**, as an effort to address water scarcity and associated health effects. Kitchen gardening could be added on as a supplementary food source.
- ▶ Enhancing conditions of **cyclone shelters** and reinforcing early warning systems under the existing CPP.
- ▶ **Safe shelter** promotion and support: homes are fragile and sensitive to cyclone damage. Local material already exists; demonstration homes should include considerations of trees around homes and assets.
- ▶ **Improving health** (including mental health) support to the community. Several gaps in services will need to be addressed in partnership with the local health department.
- ▶ **Enhancing connectedness**: efforts in the country, including those supported by Swiss Red Cross and British Red Cross (‘connec-



metres deep), but the little water they get is mostly too salty to consume. The severe impact includes increased health problems, including mental health. Some have left and moved to Satkhira city, others migrate seasonally to make ends meet.

According to a local NGO, 90% of the increased salinity is from these ponds, not from sea-level rise as one may expect (see [Yuxuan et al. 2022](#) for related research). The impact on livelihoods was compounded by fishing quotas and strict regulations of economic activities in the Sundarbans, say community members.

Located in the far south-west of Bangladesh, **Gabura** union is a community of 6,500 households in Shyamnagar upazilla of Satkhira district. An hour's drive south from the district capital plus a 45 minute boat ride, Gabura is on an island amidst by two rivers. The ocean is 20 kilometres away, an expanse covered by the dense mangrove forest known as the Sundarbans.

It was not always like this. But whereas climate change has played a role behind worsening conditions (droughts, coastal erosion and storm losses from more intense cyclones — Cyclone Amphan in 2020 was the most powerful storm to hit this area in living memory), by far the biggest damage was done by the widespread move to aquafarming.

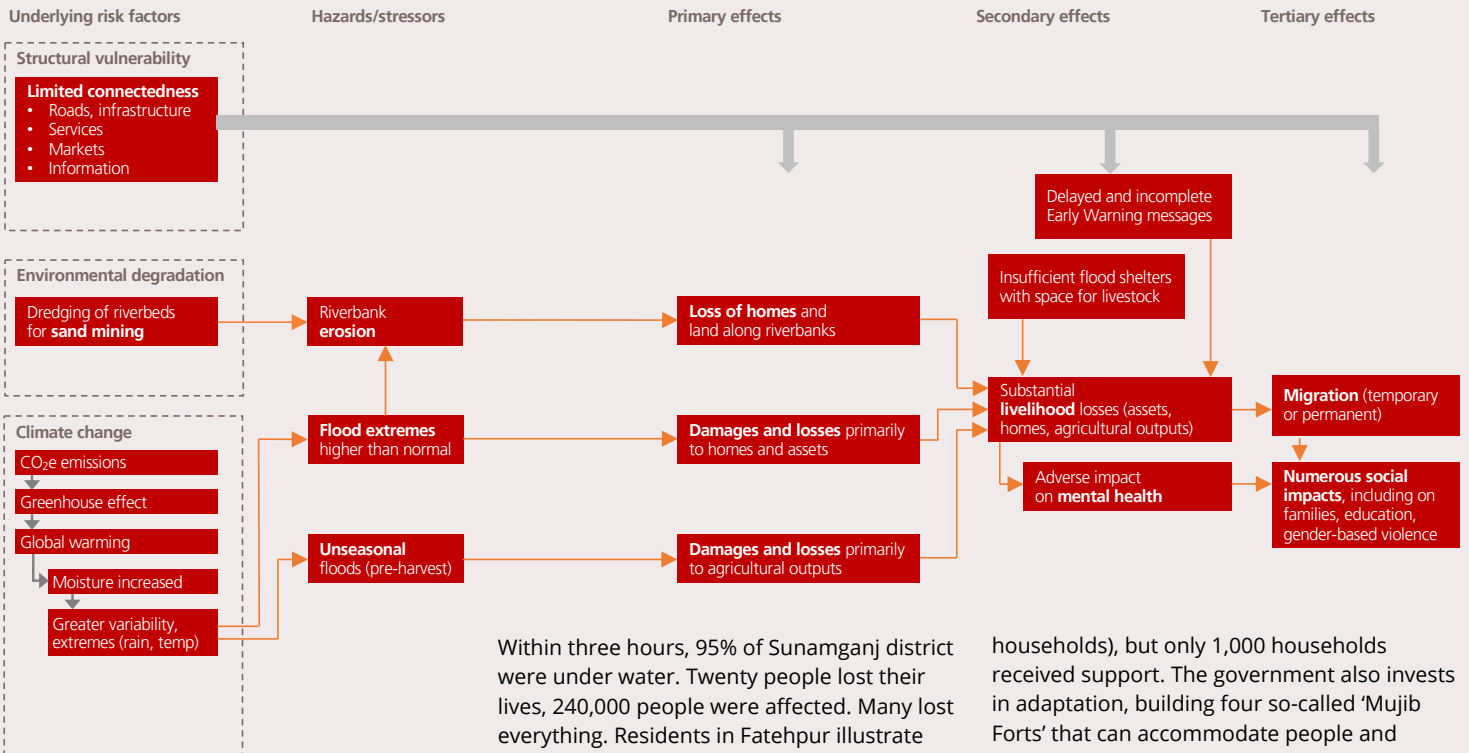
What does the future hold for Gabura? While the government offers some support and plans to reinforce coastal defences, community members would like to see more holistic support. "We want to address degradation but need more comprehensive support — not just cash after disasters", says a villager.

Visiting in May 2023, Gabura is in a desolate condition: people live from fishing and aquacultures, and some from paddy farming — but incomes are low, and 90% of households are below the poverty line.

Promoted by the government in the early 2000s partly as an adaptation measure, many paddy farmers converted their lands to shrimp and fish farms. But advice and technology inputs were limited. Many endeavours failed, others just get by with low yields. The broken dreams had another dramatic consequence: with seawater pumped into the inland ponds, groundwater salinity increased dramatically.

Created on the basis of FGD results, the problem tree above illustrates that programming may address and ameliorate some of the symptoms as initial 'quick wins' (such as rainwater harvesting, health support, or safe shelter promotion). However, re-converting aquafarms and restoring groundwater supplies may be the most important solution. This will take time, expertise, and robust networking.

The worst part is the lack of water: it has hardly rained in months, and most wells are empty. Some have dug deeper wells (up to 300



Floods are part of life in **Fatehpur union**: located in the Haor wetlands in the north-east of Bangladesh, people grow and harvest rice in the dry season, just in time before heavy monsoon rainfalls turn their fields into an inland sea. Fishing complements the community's income, particularly during and after the monsoon.

In past decades, however, patterns have changed, as floods now are more irregular and extreme. The changes have disastrous consequences, and were especially dramatic in the 2022 season. Whereas the first floods typically emerge in June, in 2022, the first flooding occurred in early April — long before the time to harvest. Most of the crops were lost. More floods followed in June, with the flood of June 16th being the highest in 123 years.

Within three hours, 95% of Sunamganj district were under water. Twenty people lost their lives, 240,000 people were affected. Many lost everything. Residents in Fatehpur illustrate what 'affected' means: with incomplete and late warnings, they could not bring their livestock to safe ground; many animals drowned. Tube wells were flooded and contaminated. Productive assets and homes were damaged or lost. Along river banks, many homes were washed away (villagers say that 1,500 households were affected by erosion over past years).

The short intervals between floods mean that people had not yet recovered from the last flood when they were hit by the next. Some have given up trying: some 500 families left Fatehpur, trying their luck in urban Gazipur or Dhaka. There, "they survive, they don't thrive", says a woman.

The government and NGOs provided flood relief (including pay-outs to erosion-affected

households), but only 1,000 households received support. The government also invests in adaptation, building four so-called 'Mujib Forts' that can accommodate people and livestock, upgrading flood relief centres, and supporting faster-growing seed types (earlier harvests reduce the risk from pre-harvest floods). The chairman of Bishwamvarpur also piloted floating homes ([see video](#)).

While these advances go into the right direction, there are huge response gaps to render Fatehpur more climate-resilient.

Here, solutions could include drastically improved early warning systems (the Start Network works on an Early Action Protocol for flash floods in the areas), a broader roll-out of the new seed types (many farmers were unaware of them or bought them from middle men at 600% higher prices), regulation of sand dredging (which contributes to erosion) and the creation of bio-dykes, as well as support to improved flood shelters.

ted citizens’) have been proven to be effective in facilitating a stronger community voice in planning (ward shavas, joint budget sessions).

Fourth, situations like those found in Gabura will require comprehensive solutions that address some of the root causes of climate vulnerability. Therefore, an initial community-based project as outlined above (Block 3) should be considered as a lead-in to a longer-term and holistic engagement. In particular, options may include the re-conversion or modification of aqua farms, investments in adapted or alternative livelihoods (including saline- and drought-tolerant crops), and some nature-based solutions (such as the creation of shelterbelts to reduce storm exposure). Long-term engagement must be well-prepared through networking, technical assessments, and planning.

DRR, livelihoods, natural resource management, health, as well as water and sanitation are considered priority dimensions in Satkhira.

Sunamganj

At the opposite corner of Bangladesh, we found a very different situation during our visit to Fatehpur union in Sunamganj district (see case study 4 opposite).

This area is part of the HFF climate stress zone identified in the NAP (compare fig.16), whose impact profile lists rainfall variability, flash floods, erosion, lightning, extreme cold and landslides as **high impacts** and storm surges as well as extreme heat as **medium impacts**.

Here, climate change comes primarily in the form of more extreme and unseasonal floods. While flooding as such is a natural occurrence in the Haor wetlands, **greater flood peaks** like those experienced in June 2022 exceed preparedness and coping capacities. These put lives and livelihoods at risk.

Unseasonal floods put livelihoods at risk when they occur prior to the rice harvest. As the case study illustrates, the combined effects of multiple floods in quick succession have been so severe that they led to permanent migration and numerous social effects.

Riverbank erosion is a compounding risk factor, exacerbated by higher discharge rates after extreme rainfall events as well as widespread and poorly regulated dredging of riverbeds.

What can be done to render Fatehpur and similar communities in the Haor region more climate-resilient? Several points should be considered by Danish Red Cross.

First, the local BDRCS branch in Sunamganj district is interested in climate resilience programming but has severely limited capacities. Programming in this district will require a strong NSD component, compounding direct climate resilience efforts.

Second, there are good opportunities for local networking. Possible partners active in the area include Uttaran and CARE. The FAO has a strong portfolio in climate-smart agriculture targeting the area. Oxfam has piloted crop insurance, and the Start Network has launched efforts to develop an Early Action Protocol (EAP) for flash floods as part of an **anticipatory action** initiative. The local governments at district, upazilla, and union levels (as well as line departments) have launched several climate resilience initiatives linked to NAP and Mujib Plan — rendering strong networking efforts feasible.

Third, there are several ‘quick wins’ that Danish Red Cross could seek in an initial project. These include:

- ▶ Addressing gaps in **early warning**: while lead times for flash floods are typically short, it was noted that messaging did not cover all communities. Systematically addressing gaps could be a precursor to more ambitious AA at a later stage, aligned with the Start Network’s upcoming EAP.
- ▶ **Support to new flood shelters** (some known as ‘Mujib Forts’ that can accommodate livestock) built by the government: similar to the CPP in the coastal belt, support services around these shelters could be strengthened.
- ▶ **Dissemination of fast-growth seeds**: the department of agriculture already provides rice seeds with a growth period that is reduced by two weeks. This reduces the risk of crop damages from pre-monsoon floods. However, few farmers in Fatehpur were aware of these, or bought them at a hugely inflated price.

Fourth, and as in Satkhira, there are several aspects that will require longer timeframes. Suitable options to increase climate resilience include:

- ▶ **Riparian restoration**: with river bank erosion being an increasingly damaging hazard, several options are feasible to reduce the scale and damage. These

include the riparian vegetation restoration (including bio-dykes in areas of greatest risk), as well as awareness-raising on the effects of dredging (and regulation).

- ▶ **Crop insurance:** weather-based insurance schemes that would partially compensate farmers for losses from unseasonal floods have been piloted and are listed in NAP and Mujib Plan. DRC should seek to integrate such efforts as a means to raise coping capacities.

Longer-term efforts could also include deeper and broader means to promote climate-smart agriculture, flood-resilient homes, wells, and assets, and anticipatory action.

7.4 Positioning

The RC/RC Movement has a strong and well-coordinated presence in Bangladesh. BDRCS has more than 90,000 volunteers across 68 branches. In addition to its Cyclone Preparedness Programme (CPP), it operates hospitals, blood services, and mother and child health centres. In its [Strategic Plan 2021-2025](#), BDRCS lays out its vision of transformation and highlights several humanitarian challenges related to climate change.

RC/RC Movement partners present in the country include ICRC, IFRC, American RC, British RC, Danish RC, German RC, Swedish RC, and Swiss RC. The multi-year country support plan 2023-25 provides an overview of existing PNS support and of support priorities of BDRCS.

The combination of a) a very strong local impact of the climate crisis, b) a well-developed policy context with concrete plans and targets, c) a wide range of suitable partners and networking opportunities, and d) the strong capacity of BDRCS and RC/RC Movement partners makes Bangladesh a good foundation for ambitious DRC programming.

Specifically, this should entail:

- ▶ **Block 1:** contribute to capacity-strengthening of BDRCS and Movement partners specific to climate resilience programming. BDRCS has already made a lot of progress — however, stronger networking, especially with MoEFCC, is recommended. The understanding of the overall policy response (NAP and associated plans) is seen as a precursor to well-aligned engagement. In branches like Sunamganj, more general NSD efforts will also be required.
- ▶ **Block 2:** as in Nepal, there are several opportunities to raise climate risk awareness and offer small solutions at scale. These could be facilitated through all target branches and should include Youth Red Crescent groups.
- ▶ **Block 3:** options to retrofit and further ‘climate-smarten’ current projects supported by DRC, especially the livelihood project in Kishoreganj, should be explored. In addition, new community-based projects should be developed, as outlined in *part 7.3* for Satkhira and Sunamganj. While these two areas were identified as climate hotspots, Block 3-type programming could be extended to further areas, given widespread needs and vulnerabilities.
- ▶ **Block 4:** to adequately address root causes of climate vulnerability, the opportunity for using community-based projects (under Block 3) as lead-ins for more comprehensive risk reduction, notably through NbS and AA and aligned with NAP, other plans and BDRCS priorities, should be explored as part of a country master plan.
- ▶ **Block 5:** addressing climate migration is a major gap in policy response and actual programming — migration is largely seen as something to be avoided. DRC should carefully explore opportunities to support and future climate migrants, as laid out in chapter 4. With up to 19.9 million climate migrants by 2050, there is a huge gap in need of a response that goes beyond the prevention of migration.

Myanmar

40

Basic data: Myanmar

Population	54.41 million (2023 estimate)
Land area	653,290 km²
Population density	83/km²
Per capita income	4,430 (USD PPP, World Bank 2021)
Human development (HDI)	0.585 (medium)
Per capita CO ₂ emissions	0.31 tonnes

Risk

Inform index score 2023	6.8 (very high)
Inform country profile	See here
Hazard & exposure	9.2 (very high)
Vulnerability	5.5 (high)
Lack of coping capacity	6.1 (high)

8. Myanmar

Disasters occur when hazards meet vulnerability — and this relation was illustrated when Cyclone Nargis hit Myanmar's coastline in May 2008. In terms of its physical force (topping 215 km/h sustained wind speeds), it was not as strong as many other tropical storms that have hit Asia's coastlines.⁷⁷

Yet, it killed at least 138,000 people, and with the storm surge reaching up to 40 kilometres inland, caused catastrophic destruction.

Following Nargis, Myanmar encountered a period of liberalisation that saw pro-democracy political reforms and significant socio-economic advances. These included progress towards risk reduction and resilience, which were supported by donors and partner agencies.

Since the coup d'état in February 2021, which sparked the current wave of conflict and unrest, this progress has come to a halt, as the current authorities' priorities have shifted to maintaining control. Many international agencies have left; for those who remain, severe restrictions render humanitarian efforts difficult and much development impossible.

Meanwhile, the impact of climate and environmental crises looms large: climate change already translates to heatwaves, drought, and flooding, and is set to get worse.

Disaster risk is exacerbated by widespread deforestation as well as the resurgent vulnerability that has gained hold in the wake of the political crisis.

In terms of a policy response to the climate and environmental crisis, Myanmar experiences a void.

8.1 Risk profile

In its 2023 rating, the Inform Risk Index was elevated to 6.8 (very high), up from 6.3 (high) in 2022. Due to conflict-related factors, Myanmar now ranks highest globally in terms of hazard and exposure.

The country sees enormous sub-national variations in overall present and future risk, which are the combined result of local hazard profiles,

variations in expected climate change impact, and local conflicts that overlay the country's generally volatile situation.

8.1.1 Present risk

As the map on this page illustrates, the sub-national distribution of risk is highly uneven, with **Kachin, Shan, Kayin, and Rakhine** States all featuring large areas with 'very high' risk.⁷⁸

Flooding is the country's most frequent and most damaging hazard, and accounted for half of all disasters between 1970 and 2020 (MIMU 2022:12). These include riverine floods, urban water logging, as well as coastal floods.

Cyclones and associated storm surges are a hazard mainly for coastal areas, especially those of Rakhine and Ayeyarwady.

Droughts regularly affect several parts of the country — notably the dry zone⁷⁹ as well as southern Ayeyarwaddy and western Bago Regions (ibid: 16).

Extreme heat frequently affects the country and is most severe in urban centres.⁸⁰

Other natural hazards include landslides and earthquakes, and epidemic outbreaks.

Conflict compounds natural risk factors and exacerbates vulnerabilities; since 2021, this has affected the entire country and rendered the population less secure.

8.1.2 Future risk

Depending on the climate pathway, Myanmar's climate will warm by a further 0.9 -2.7 °C by 2050, with **warming** more pronounced during the coolest (November - February) and warmest (March to May) periods of the year (MIMU 2022:7). This warming will increase evapotranspiration as well as the number of days with extreme heat.

While modelling is inconclusive with regard to total annual **precipitation**, rainfall patterns are expected to change — increasing the risk of both **droughts** and **floods**.

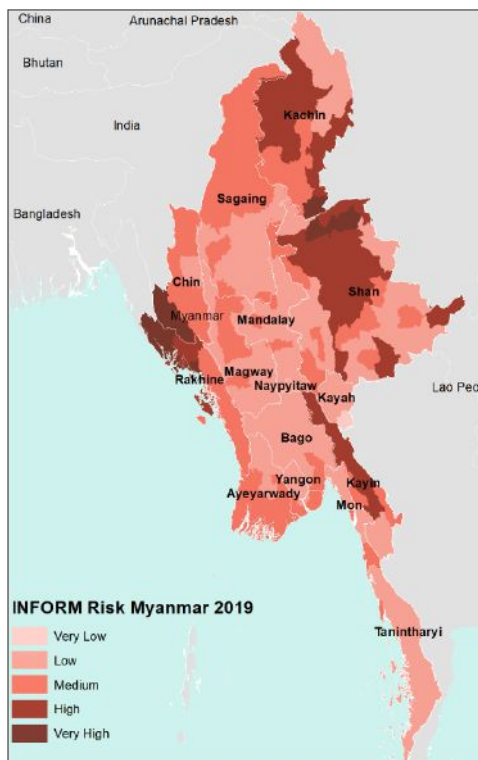
For coastal areas, the greater physical force of **cyclones** is a key concern. **Sea-level rise**, expected to be 20-41cm above today's level by 2050, will be a great challenge for the large and low-lying areas of Myanmar. This includes **saline intrusion** to groundwater and paddy

⁷⁷ These include, for instance, Cyclone Bhola in 2020 (270 km/h speed, Bangladesh/India, 128 fatalities), Typhoon Haiyan in 2013 (315 km/h speed, Philippines, 6,300 fatalities), and Cyclone Sidr in 2007 (260km/h speed, Bangladesh, 15,000 fatalities).

⁷⁸ The sub-national risk assessment was completed in 2019, looking at the township level; it is the most recent comprehensive risk assessment for Myanmar.

⁷⁹ Home to 11 million people and featuring extensive agriculture, the dry zone includes parts of Sagaing, Magway, and Mandalay Regions. Here, droughts have caused major crop failures in 1997, 2010, and 2014.

⁸⁰ Due to the 'heat island effect' of built-up areas, cities are most affected. Extreme heat has enormous impact on productivity and is associated with high rates of excess mortality. In the city of Mandalay, 230 deaths were attributed to a heatwave in 2010.



fields (especially during storm surges) and will lead to progressive inundation: **Rakhine** and **Mon States, Ayeyarwady** and **Yangon Regions** will lose parts to the sea in the decades to come.

The hydro-meteorological changes will have numerous effects on the country. They will challenge food security,⁸¹ pose direct health risks,⁸² undermine livelihoods, and lead to high levels of climate migration.⁸³

8.1.3 Risk drivers

The increasing risk is not only driven by climate change — environmental degradation plays a compounding role.

Deforestation and forest degradation are rampant in the country, in particular in the country's north (Shan and Kachin States and Sagaing Region). Between 2001 and 2021, Myanmar lost 43,000km² of forest cover, equal to Denmark's land area.⁸⁴

Along the coastline, **mangroves** were lost at alarming rates. Between 1996 and 2016, 52% of net national mangrove cover was lost, most of which in Rakhine State and Ayeyarwady Region (de Alban et al. 2020:5). Rice, oil palm and rubber expansion accounted for most of the loss.⁸⁵

Deforestation in upland areas greatly reduces the 'sponge' effect that is so critical for flood prevention, especially when more extreme rainfalls are projected. It also increases the risk of landslides in steep terrain. The loss of mangroves meanwhile means coastal areas are at greater risk from storm surges and saline intrusion.⁸⁶

In terms of overall **risk hotspots**, a MIMU report analysing the impact of climate change and environmental degradation identified densely populated districts with little infrastructure investment (MIMU 2022:2). Specifically, this points to **populous** coastal areas in **Rakhine State** as well as **Ayeyarwady** and **Yangon Regions**. These areas were found to be more at risk of a wider variety of destructive events than other areas.

For this study, two of these hotspots were shortlisted for closer analysis (Ayeyarwady and Yangon), while Bago, Kachin and Shan were added.⁸⁷

Eventually, at the request of MRCS, Mandalay was also added and selected for a study visit (see findings in part 8.2.3).

8.2 Response analysis

Throughout the 2010s, Myanmar saw many advances in terms of policies and plans relating to climate resilience. In 2017, the Myanmar Action Plan for DRR was updated and improved from its 2012 predecessor, and with international technical assistance, a set of three items were developed (climate change policy, strategy, and master plan). With these, the government had aimed for a climate-resilient and low-carbon society (DIIS 2022: 3). Post-coup, these efforts have ground to a halt.

8.2.1 Players and policies

Under the current authorities, key line ministries such as the Department of Disaster Management (DDM), the Ministry of Natural Resources and Environmental Conservation (MoNREC), and the Ministry of Health and Sports remain in charge of matters related to climate resilience. However, there was not enough time to obtain an interview with any ministry official during the course of the study.

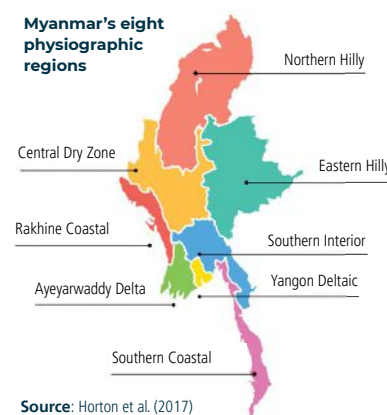
Many international and national agencies still operate in Myanmar, having different levels of access. Mapping partners has not been prioritised for this study, given that DRC and MRCS will not be able to partner with organisations outside the RC/RC for the time being (see part 8.4.3 for details). However, two organisations were interviewed — the **Centre for Development and Environment (CDE)** and the Mandalay-based **Drought Centre**.

The **CDE** is associated with the University of Berne; in Myanmar, it backs CSOs to support grassroots community actions at the village level. CDE stressed that it is possible to program for climate resilience in the current conflict and political landscape, as long as the activities are centred at the community or grassroots levels.

The **Drought Centre** monitors drought nationwide, although its main focus is in northern Myanmar (Mandalay, Sagaing and Magway Regions as well as Chin and Kachin States). It measures and predicts droughts (collecting data on precipitation, temperature, and soil moisture). The Centre monitors the standard precipitation index though soil moisture, groundwater levels, and satellite imagery.

The Centre is supported by the UN Economic and Social Commission for Asia and the Pacific (ESCAP), which provides software support for the data collection and monitoring of satellite images of the vegetation all over the country.

Myanmar's eight physiographic regions



Source: Horton et al. (2017)

81. The effects of climate change on key food production areas, notably coastal areas of Ayeyarwady (saline intrusion, flooding, drought) and the Dry Zone (drought) threatens to reduce the country's overall food production.

82. The most direct effect is heat stress: Heat index values (also known as wet bulb temperatures) of 33 (representing for instance 28 C air temperature at 90% humidity) make it difficult to exercise and survive.

83. Current migration patterns in Myanmar are primarily conflict-driven; the added climate risk is expected to exacerbate overall migration. See [Vigil et al. \(2022\):19](#).

84. World Resources Institute's [Global Forest Watch](#) dashboard, accessed on June 20th, 2023.

85. The study by de Alban et al. 2020 analysed satellite images and found that overall mangrove loss was far greater than had been previously estimated. The greatest overall losses were recorded in Rakhine State, which lost coverage three times the size of Singapore.

86. The protective effect of mangrove belts is well documented - see for instance [McIvor et al. \(2012\)](#) and [Spalding et al. \(2014\)](#).

87. These areas were added in discussions with DRC and MRCS, taking into account both risk patterns as well as operational factors.

UNDP and UN Habitat are also key players conducting and convening climate resilience programmes across the country. Once MRCS and DRC pinpoint how and where they would like to progress or strengthen their climate resilience programs, DRC could add support by mapping the activities of other organisations in those locations.

8.2.2 Plans and programmes

While MRCS does not have a comprehensive strategy on climate resilience, it runs several programmes in this regard. These are listed by topic below.

Heatwaves: In a 2019 scoping study and a 2020 feasibility study for anticipatory action (AA), MRCS included heatwaves as a priority hazard. It is currently seen as the only hazard with sufficient lead time (4-5 days) for early action protocols (EAP) in the country.

In May 2023, German Red Cross (GRC) supported MRCS to conduct a heatwave impact survey in Yangon. This study targeted outdoor workers and also included FGDs with vulnerable groups in orphanages, schools, elderly care homes, and public health clinics. The study results informed the “Urban Heatwave Simplified EAP Myanmar” and heat-related MRCS interventions.

MRCS has strong experience and skills in First Aid and health care that heatwave programmes can build on. The Heatwave Anticipatory Action Program currently has four key actions that include:

- ▶ Cash to vulnerable groups,
- ▶ First Aid posts set up with traditional water stands at Trishaw posts;
- ▶ Pre-heatwave awareness visits to vulnerable centres; and
- ▶ Dissemination of heatwave forecasts.

Flooding and cyclones:

In addition to usual DRR and emergency response programmes for flooding and cyclones, GRC and Finnish Red Cross (FRC) currently explore options for AA for flooding in Ayeyarwady Region⁸⁸ and Mon State.

GRC also has some data on floods for Bago city. Furthermore, GRC and FRC investigate options for AA for cyclones in Rakhine State.

Conflict: GRC and FRC furthermore are exploring AA options related to conflict-related events. Initial exploration focuses on Mandalay; programming in Rakhine and Kachin States is under consideration.

Climate-Smart Urban Resilience

Programme: Focussing on urban parts of Mandalay, this programme has been running for four years and is supported by IFRC and FRC. The Drought Centre provides data for this project. MRCS has invited DRC to support this programme by expanding to new communities under the same design.

8.2.3 Needs

Post-coup Myanmar has a plethora of needs across most areas. The findings from a community visit in **Amarapura** community in Mandalay Region illustrate some of these needs — these are listed below by issue area and complemented by notes of the nationwide situation.

Disaster risk management: In Amarapura, community members reported an observed trend towards heavier rainfall during shorter periods, resulting in extreme flooding. During the flood period, they said that up to 300,000 people were typically affected across Amarapura township. Many families seek shelter in temporary huts along a main highway for 4-6 months of the year.

They saw the regular heavy flooding as a result of unsystematic, unplanned, and rapid urbanisation. This flooding has been compounded by increasing intensity of rainfall in recent years. Community members listed flooding as their top concern.

Livelihoods have been affected in Amarapura by the electricity crisis that transcends the country since the 2021 coup, causing huge productivity losses to their weaving businesses. Rising costs have hit businesses hard, and community members listed this as their second priority issue.

Across Myanmar, already impoverished communities have been further hit by extraordinary cost-of-living rises since the coup and by other conflict-related livelihood stressors.

Health The Amarapura community reported increased cases of dengue haemorrhagic fever due to the pooled water during flooding

⁸⁸ The focus in Ayeyarwady is on Hnintada town-ship branch, which had been previously supported by American Red Cross and is considered a strong branch.



A young girl shows a snack of dried beans in Northern Shan State. Photo: Samadhi Marr

periods. They described that animals corpses contaminated the water, and increased prevalence of water and vector-borne diseases, such as diarrhoea and elephantiasis. Health services exist in this peri-urban area but medical care is disrupted due to the civil disobedience movement by medical personnel.

Across Myanmar, PNS reported the presence of dengue cases and other vector-borne diseases outside usual geographical areas, which may be related to increasing temperatures (mostly reported for Shan State).

Natural resource management Community members in Amarapura reported concerning issues around waste management, with chemicals and waste dumped into waterways, the cutting of trees for fuel,⁸⁹ and unplanned new settlements in areas that are sinking, affected by floods, erosion and other hazards due to urbanisation and conflict-induced movement of people.

In other areas of the country, PNS reported issues around general deforestation, lack of water source management and cutting trees for firewood (see also part 8.1.3).

Migration Myanmar has an overwhelming number of people affected by displacement due to widespread post-coup conflicts. The UN reported in May 2023 that more than 1.8 million remain displaced across the country.⁹⁰

In some parts of the country, MRCS can assist these groups, while the situation is more complex in other parts.

8.3 Positioning

Given the situation described in this chapter so far, how should Danish Red Cross position itself, especially in its efforts to raise climate resilience? Let us first summarise MRCS and the RC/RC Movement presence, as well as gaps and opportunities and then explore guidance for programming.

8.3.1 The Host National Society

Myanmar Red Cross Society (MRCS) has outlined its priorities in its Strategic Plan 2021-25 that is aligned with Strategy 2030 and sees climate and environmental crises as a key humanitarian challenge.

Its resilience framework 2019-2030 aims to foster community resilience through its branches, and to thus strengthen branch capacities to accompany, connect and enable communities.

MRCS is a member of the [Myanmar Climate Action Network \(MCAN\)](#) that was launched in March 2023 and is led by UN Habitat.

The Acting Director of the MRCS Disaster Management (DM) department outlined that despite ten years of awareness raising within MRCS on climate change adaptation, the issue had not been taken up by all MRCS departments.

A MRCS climate resilience strategy (like the resilience framework) was requested to harness the engagement of all departments on the issue of climate resilience, while relating it to the resilience framework.

Currently, most MRCS projects focus on DRR/resilience, livelihoods, and health. The Acting DM Director expressed the need to treat climate change adaptation as an additional key focus.

8.3.2 The RC/RC Movement

MRCS is supported by Danish Red Cross, German Red Cross (GRC), Norwegian Red Cross, Finnish Red Cross (FRC), Swedish Red Cross, and ICRC, as well as by Italian Red Cross, British Red Cross, American Red Cross, and Australian Red Cross through the IFRC Myanmar Delegation.

Three partners (IFRC, GRC and FRC) support climate resilience programmes. GRC is the technical lead for anticipatory action within the country.

8.3.3 Gaps and opportunities

While the response gaps in Myanmar are enormous and needs acute, operationalising programmes is fraught with complexity and challenges. These challenges limit the opportunities for climate resilience programming.

The main opportunity identified during discussions was partnering with GRC and FRC in their support for early action on heatwaves. In particular, they are looking for additional support to fund heatwave simulations in urban environments.

Another opportunity is direct support to the Drought Centre based in Mandalay, which has requested assistance to awareness-raising on drought projections (in Mandalay or beyond).

There is some positive momentum for programming in Bago (East) within MRCS. DRC should continue to plan for a scoping study in Bago when MRCS is able to facilitate it.

⁸⁹ The cutting of trees is restricted by local authorities, but the related law is not enforced in the current context.

⁹⁰ This figure is broken down into 1.5 million people currently displaced by clashes and insecurity since February 2021, and 328,000 people internally displaced due to conflict prior to February 2021, mainly in Rakhine, Kachin, Chin, and Shan States. See [UN OCHA 2023](#).

The most obvious and practical opportunity is for DRC to start with campaigns and messaging in existing programs in Shan and Kachin. This should begin with basic assessments, seeking to analyse key climate change issues and any compounding factors.

8.3.4 Programming guidance

Danish Red Cross should carefully and slowly proceed with **climate resilience scoping** in the coming 12 months. There are considerable operational challenges in Myanmar that should not be underestimated. Transfer of money is extremely difficult, with funds (millions of Euro) having been locked in the central bank for over nine months.

A new **Executive Committee** (EC) has been elected in 2023, with most of its 11 members being from outside of the Red Cross Movement. Given the intricacy of the RCRC Movement and the complexity of MRCS, delays in programme implementation are to be expected in the coming 6-12 months.

Any programming involving **cash** transfer is problematic and unpredictable in Myanmar. PNS report that authorities approve it in some locations and some do not. Processes are not predictable. This does not preclude DRC from continuing to try to program with cash, as long as expectations are in line with the operating environment.

Initiatives should focus on the community level, supported by township branches who are functioning well, avoiding large initiatives at the district, state/region or national level. Wider awareness raising or campaign initiatives like heatwave, drought, waste management preparation are all feasible.

The political situation in Myanmar makes **partnering** with actors outside the RC/RC Movement (NGOs and CSOs) very difficult and is currently not recommended.

MRCS is currently in a delicate position, trying to maintain its neutrality, impartiality and independence. Given the hundreds of involved actors (Army, ethnic armed groups, and People's Defence Force (PDF)), it is important for MRCS to maintain a balance and not risking association with any side involved in the conflict.

Despite these issues, it is recommended that DRC continue to build informal relationships with some strategic organisations like Dan Church Aid, Danish Refugee Council and WWF for future partnerships when the political climate allows for more active and conducive partnerships.

In terms of the regional climate resilience programme outlined in chapter 4, the focus in Myanmar will need to be limited to activities related to Blocks 1 and 2, with limited potential engagement in Block 3 and 5 activities.

8.3.5 Specific locations

Several insights were gathered from the areas chosen for closer investigation. These are listed below.

Mandalay

The community and branch visits highlighted many obstacles that stand in the way of DRC proceeding with new programming to branches and communities in Mandalay Region.

The Amarapura branch showed positive signs in terms of operations, and the visited community was clearly at risk and heavily impacted by floods and other climate-related hazards.

Despite these considerable limitations, one avenue for smaller action is providing direct support to the Drought Centre. In fact, it requested for Red Cross volunteers to deliver messages on drought to affected communities for awareness, preparation and eventually early action.

MRCS, IFRC, GRC and FRC already work with the Drought Centre and may have further information about this request. GRC also reported that there are opportunities to support simulations for heatwave actions.

Apart from minor direct support to the Drought Centre, or on wider drought information sharing and campaigns, it is



A woman carries water in West Bago, Myanmar. Photo: S. Marr

recommended that DRC look to other states and regions where they can better support MRCS in strengthening Climate Resilience.

"I would like assistance to break the bad news to the community. We have data, measurements and reports that belong to the public - they are public goods but we need the consumers."

We have many signs showing that drought is already here. I want MRCS or second or third partners to have the information channels to broadcast the drought data to the community so that the community can learn something and prepare."

U Kyaw Lwin Oo, Director of Hydrology and Meteorology Department, Upper Myanmar, Mandalay

Bago (East)

While this study initially planned to visit Bago Region with the support of MRCS, the Cyclone Mocha response operations and other issues for MRCS resulted in continuous delays and postponement of the research visit. Unfortunately, the study concluded before the Bago visit could be conducted.

However, it is recommended that DRC pursue further scoping studies and assessments in this region. The secondary data shows pressing needs in Bago (East), particularly in coastal areas. Kawa township was shortlisted as a vulnerable area, with MRCS (DM and Organisational Development Departments) approving further investigations for this township.

Bago should continue to be on DRC's radar for future climate resilience programming. Bago City could also be targeted for heatwave early action initiatives together with GRC/FRC.



Small child on staircase in Shan State, Myanmar. Photo: S. Marr

Ayeyarwady

Risk and climate projections show Ayeyarwady as one of the top three high risk areas for climate related hazards (along with Yangon and Rakhine).

Yangon seems to be somewhat covered by GRC in their programmes, and Rakhine is not an area that DRC wishes to begin support, due to complexities of operations as well as coverage by other actors. This leaves Ayeyarwady to still be explored.

MRCS reported that many branches have strong capacities. Activities like mangrove afforestation have previously been conducted in that area and could be replicated at the community level once assessments and climate foundational work is completed.⁹¹

The community forestry extension office provides technical support in mangrove afforestation, as GRC noted.⁹²

91. MRCS has some experience with Mangrove afforestation in Myabon township, Rakhine State, planting 2,000 mangroves, as reported by the MRCS Acting DM Director.

92. GRC provided the contact of the office's secretary, Mr. Htay Lin, htaylin@gmail.com



Trying to survive rising seas. Surrounded by water in Kurikahunia village in Satkhira, Bangladesh.

Photo: Rafiqul Montu

9. Conclusion

More floods, more droughts, more heat, more pain. The impact of the climate crisis is being felt in all four countries at the heart of this study. Warmer climates and shifted precipitation patterns translate to livelihood losses, water scarcity and health impacts, to greater damages from extreme weather events and increased vulnerability.

The impact chains are complex, and climatic factors intersect with structural vulnerability and environmental degradation. The result is plain: all countries and communities visited for this study have noted negative trends on livelihoods and living conditions.

As the world gets even warmer and wilder over future decades, more hardship and suffering is likely to ensue. Without dramatic shifts, many positive gains achieved over past decades — such as the reduction of disaster mortality — may be lost and trends reversed.

The imperative to be bold

The message is clear: above all, we must do everything in our power to reduce emissions and prevent RCP 8.5, climate-speak for the worst-case scenario, from materialising. Every decimal of a degree matters.

The climate crisis affects those the most who have least recourse to adapt to it. The communities at the frontline of the climate crisis must be enabled to adapt and prosper in the face of harsher conditions.

The new regional climate resilience programme that Danish Red Cross plans to roll out (and for which this study was conducted) is a chance to do exactly that.

Opportunities

There are encouraging trends, as this study demonstrated.

First, the Red Cross and Red Crescent Movement (including Danish Red Cross) has begun to shift priorities and approaches and now treats climate and environmental crises as a priority.

Second, many governments around the world, including those in Nepal and Bangladesh, have drawn up strong frameworks and policies for climate resilience that DRC efforts can be aligned with.

Third, funding for climate resilience is available and is expected to increase.

Finally, the impact patterns observed in communities give reason for hope. Net increases in risk are the combined result of global and local factors (climate change and environmental degradation, respectively). Communities and projects have great *potential* leverage to address local factors.

Programming considerations

Climate resilience programming should combine efforts in addressing root causes of adversity with measures to adapt to those over which there is no, or very limited, control.

The **lines of defence** model that seeks to reduce exposure, decrease sensitivity, improve preparedness, enhance coping capacity, lower social vulnerability, and raise adaptive capacity offers an analytical lens on what can be done in each specific setting.

Together with the **eleven dimensions of community resilience**, a holistic framework can thus be used to assess conditions, design solutions, and monitor performance.

While the **proposed outline of the regional climate resilience programme** features shared principles and building blocks, each country's programme will look very different in recognition of the vast contextual differences with their unique challenges and opportunities.

The logic of the regional programme that we propose is *not* based on sectors (as is the case with IFRC's Global Climate Resilience Programme). Neither is it based on specific tools or approaches, such as anticipatory action and nature-based solutions. Rather, it stresses a **flexible framework for progressive growth** over a decade-long timeframe.

Anticipatory action can and should be embedded into projects (under blocks 3 and 4) to raise coping capacity where conditions are right. In some cases, such as Bangladesh's Sunamganj district, **crop insurance** may be part of the parcel. And where possible, specific **nature-based solutions** such as bio-engineered slope stabilisation, recharge ponds, or landscape restoration, may come to the fore.

Migration

Migration is treated as a separate block but should be understood as a cross-cutting feature linked to Blocks 1-4 as suitable. With the

understanding that migration is often induced by vulnerability and/or climate stressors, migration is often adaptation — and migrants will require more support to foster their safety and beneficial outcomes.

DRC should explore bringing the migration needs in these countries under the [Global Route-Based Migration Programme](#). This multi-year programme is led by IFRC and "aims to save lives and improve the safety and dignity of migrants, refugees, and other displaced people along dangerous and deadly migratory routes."

While the programme currently focusses on land and sea-based migration routes in Africa, Europe, Middle East and North Africa, and the Americas, elements of the programme's approach can be used in Asia. This may include migration routes from Nepal to India and from Myanmar to Thailand and Bangladesh, and feature 'humanitarian service points'.⁹³

Go big, go small

Two of the countries in this study are fragile states and conflict environments. Despite the many barriers for programming in **Afghanistan** and **Myanmar**, DRC should persevere to serve those most vulnerable to climate change in both countries. There is no time to wait until the context improves, while environmental degradation continues and climate risk escalates. Progress might be slow, but efforts should persist and strengthen the 'base' (with blocks 1 and 2) so as to allow for scaling up efforts when the context will be more favourable.

Nepal and **Bangladesh** have more conducive environments, and investments should be prioritised here. Nepal in particular has all the foundational elements to start an impressive and effective long-term climate resilience programme.

Change along the way

Danish Red Cross has a strong foundation for climate resilience programming. Through ARCS, NRCS, BDRCS, and MRCS with their chapters and branches, it can work with a total of almost 250,000 volunteers and reach communities in most areas.

It has an experienced team that comprises its country delegations and Copenhagen-based

staff. Its experience in DRR, health, MHPSS, social inclusion, volunteer management and broader NSD are all entry doors for climate resilience programming. Danish Red Cross is a trusted interlocutor. Expertise in anticipatory action and migration will benefit the regional programme.

While this represents a good base, DRC should explore **four areas of strategic growth** in order to further strengthen its portfolio.

First, DRC capacity in each delegation may need to be strengthened with regard to certain themes that are critical for climate resilience. The impact of the climate crisis on **livelihoods** is central. Although DRC has some experience in livelihoods, the importance of this aspect is not sufficiently reflected in its international strategy and overall set-up.

Water and sanitation, as well as natural resource management, are similarly important for climate resilience. DRC is encouraged to strengthen its internal expertise through training, recruitment, and strategic re-orientation.

Second, climate resilience efforts should be holistic, and even with the capacity-strengthening described above, they should encompass partnerships that can complement efforts with specific technical expertise.

While DRC has partnered with technical actors in the past, the scale, scope, and depth of partnering should be progressively elevated.

These first two points address capacity strengthening through internal and external means, and should be seen as complementary to each other.

Third, advancing climate resilience should be seen as a complex and long-term process, especially if root causes of risk are to be addressed. The proposed ten-year timeframe of the regional programme may sound outlandish but will be necessary for broad solutions as envisaged under landscape resilience in Block 4.

DRC should devise master plans that combine 'quick wins' with preparations for longer-term and broad efforts. The time required for aligning efforts with local government priorities, conducting ecosystem assessments, and devising broad landscape plans requires time.

⁹³. A toolkit on humanitarian service points has been developed, which is [available here](#).

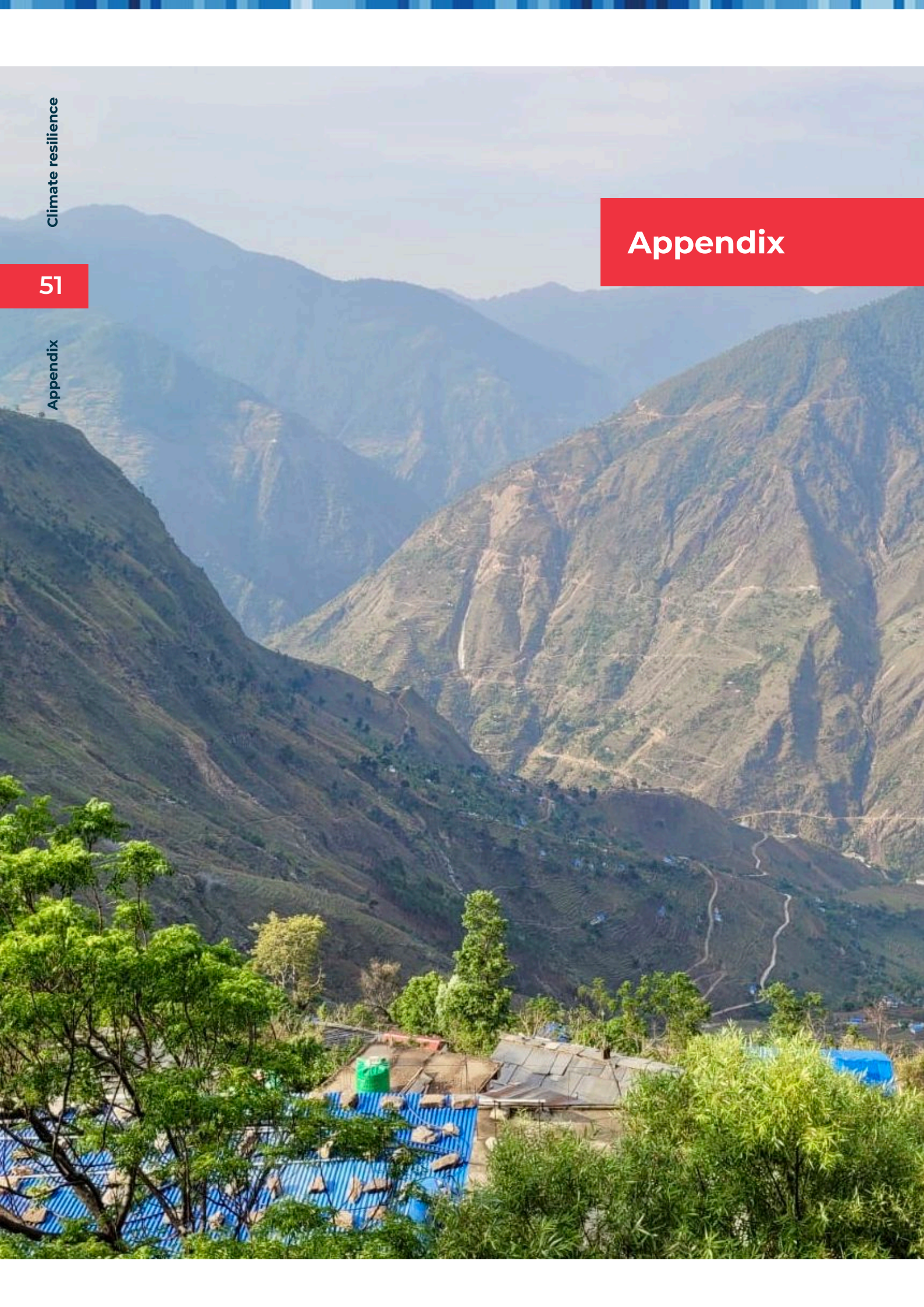
Fourth, there is the question of funding. While some activities, especially those included under Blocks 1 and 2, may not cost much and can be pursued with existing funding streams, broader efforts will require new sources. Exploring and tapping these will be a fundamental requirement for going to scale. In the cases of Nepal and Bangladesh, these may include the International Climate Initiative (for NbS) and the GEF small grants scheme (for which local branches are eligible).

Block 4 activities could be co-designed with local or national governments, who are eligible for many other sources of climate funding, including GCF and GEF.

As this study from the frontlines of the climate crisis has shown, there is both the imperative and the opportunity to support communities on their path to greater climate resilience.

With the areas of strategic growth addressed, DRC will be in an even better position to follow the imperative and tap the opportunity.

Appendix



A. List of interviews

Afghanistan

Afghanistan Red Crescent Society (*President, Vice-President, Director International Relations, Director Health Department, Director Disaster Management Department, Director Volunteer Management*), Aga Khan Foundation, Danish Red Cross, IFRC, National Environmental Protection Agency (NEPA), Norwegian Red Cross, Ministry of Public Health, Qatar Red Crescent, Turkish Red Crescent, UNICEF.

Nepal

Nepal Red Cross Society (*Executive Director*), IFRC (*Program Director, Senior DRM Officer*), American Red Cross (*Country manager*), British Red Cross (*Country manager*), Canadian Red Cross (*Country manager*), Danish Red Cross (*Country manager*), Finnish Red Cross (*Country manager*), DanChurchAid (*Senior Programme Advisor Resilience and Climate Change, Program manager*), ICIMOD, Hydrology and Meteorology Regional Office Kohalpur, Nepalgunj (*Office chief*), Ministry of Forest & Environment (*Under-secretary, NAP coordinator*), WWF (*Head, partnership development*). Focus group discussions: NRCS provincial office Birendra Nagar, Karnali province; Surkhet district chapter; Kalikot district chapter; Dailekh district chapter; Kailali district chapter; Chisapani school Junior Youth Circle.

Bangladesh

Bangladesh Red Crescent Society (*Director Disaster and Climate Unit*) Danish Red Cross (*Country manager*), American Red Cross (*Country manager*), British Red Cross (*Program delegate*), German Red Cross (*Program delegate*), IFRC (*Country manager*), Swedish Red Cross (*Country manager*), Swiss Red Cross (*Country manager*). Satkhira district: Gabura union (*FGD*), Shyamnagar upazilla (*Secretary*), BDRCS district branch (*FGD, with stakeholders*). Sunamganj district: Fatehpur union (*FGD*), Bishwamvarpur upazilla (*Secretary*), BDRCS district branch (*FGD, with stakeholders*), District DM department.

Myanmar

Myanmar Red Cross Society (*Director organisational development department, Acting director disaster management department*), Danish Red Cross (*Country manager, health delegate, program delegate*), Finnish Red Cross (*Country manager*), German Red Cross (*Country manager, program delegate*), Norwegian Red Cross (*Country manager*), Swedish Red Cross (*Program manager*), Centre for Development and Environment Studies (CDE). Mandalay: Hydrology and Meteorology department, Drought Centre, MRCS (*workshops at Mandalay district branch, Amarapura township branch, and Chanmya Thar Zi township branch*).

B. Literature

Anticipation Hub (2023). Anticipatory action in 2022. A global overview.

https://www.anticipation-hub.org/Documents/Reports/Overview-Report_2022_WEB.pdf

Aliyar, Q., Dhungana, S. & Shrestha, S. (2021). Spatio-temporal trend mapping of precipitation and its extremes across Afghanistan (1951-2010). *Theoretical and Applied Climatology*, 1-22.

ARUP (2019). Mass displacement. Host Cities and Urban systems. <https://www.arup.com/perspectives/publications/research/section/mass-displacement-host-cities-and-urban-systems>

Asian Development Bank (2021). Bangladesh climate and disaster risk atlas. Hazards - volume 1. Planning Commission, Ministry of Planning and Asian Development Bank.

<https://www.adb.org/publications/bangladesh-climate-disaster-risk-atlas-volume-1>

Asian Development Bank (2021a). Bangladesh climate and disaster risk atlas. Exposures, vulnerabilities, and risks - volume 2. Planning Commission, Ministry of Planning and Asian Development Bank. <https://www.adb.org/publications/bangladesh-climate-disaster-risk-atlas-volume-2>

- BDRCS** (2021). Strategic plan 2021-2025. Strengthening transformations for better humanitarian action.
- BDRCS and IFRC** (2022). Multi-year country support plan 2023-2025.
- Chapagain, D., Bharati, L. & Borgemeister, C.** (2022). Declining vulnerability but rising impacts: the trends of climatic disasters in Nepal. *Regional Environmental Change* 22(55). <https://link.springer.com/article/10.1007/s10113-022-01903-5#Tab1>
- Climate Centre** (2022). Afghanistan Climate Factsheet 2022.
- Climate Centre** (2022a). Myanmar Climate Factsheet 2022.
- Danish Red Cross** (2019). The benefits of being prepared. Impact, benefits, costs and outlook of disaster risk reduction in Nepal. <https://www.ifrc.org/media/13602>
- Danish Red Cross** (2020). Internal displacement and triggers of secondary movement. A lookback study on Malawi and Mozambique post Cyclone Idai and Cyclone Kenneth.
- Danish Red Cross** (2022). Ready to act. International Strategy, Danish Red Cross 2022-2025.
- Danish Red Cross** (2022a). Climate Change and Livelihood Assessment: Kishoreganj Bangladesh.
- Diwakar, V., I. Ghafoori. & O. Nemat** (2022). Vulnerability in Afghanistan before and during the shift in power. Working paper, Afghanistan Research and Evaluation Unit. <https://areu.org.af/wp-content/uploads/2022/12/Vulnerability-in-Afghanistan-before-and-during-the-shift-in-power-English-version.pdf/>
- General Economics Division** (2018). Bangladesh Delta Plan 2100. Bangladesh in the 21st century (abridged version). <https://bdp2100kp.gov.bd/>
- Government of Nepal** (2021). National Adaptation Plan 2021-2050. Summary for policymakers. <https://www.preventionweb.net/publication/national-adaption-plan-nap-2021-2050-nepal>
- Hou, Y., J. Yang, C. Russoniello, T. Zheng, M. Wu & X. Yu** (2022). Impacts of Coastal Shrimp Ponds on Saltwater Intrusion and Submarine Groundwater Discharge. *Water Resources Research*, 58(7). <https://doi.org/10.1029/2021WR031866>
- Karki, R., S. Hasson, U. Schickhoff, T. Scholten & J. Böhner** (2017). Rising precipitation extremes across Nepal. *Climate* 2017 5(1). <https://doi.org/10.3390/cli5010004>
- Mansfield, D.** (2020). When the Water Runs Dry: What is to be done with the 1.5 million settlers in the deserts of southwest Afghanistan when their livelihoods fail? <https://areu.org.af/when-the-water-runs-dry/>
- Mcivor, A., Möller, I., & Spencer, T.** (2012). Reduction of Wind and Swell Waves by Mangroves. Natural coastal Protection Series: Report 1. <https://www.conservationgateway.org/ConservationPractices/Marine/crr/library/Documents/wind-and-swell-wave-reduction-by-mangroves.pdf>
- MIMU** (2022). Climate, Environmental Degradation and Disaster Risk in Myanmar. A MIMU Analytical Brief. Yangon: Myanmar Information Management Unit. http://themimu.info/sites/themimu.info/files/documents/Report_Analytical_Brief_Climate_Environmental_Degradation_and_Disaster_Risk_MIMU_May2022_ENG.pdf
- NDMC** (2017). Myanmar Action Plan on Disaster Risk Reduction 2017. Nay Pyi Taw: National Disaster Management Committee (NDMC). https://themimu.info/sites/themimu.info/files/documents/Core_Doc_Myanmar_Action_Plan_on_Disaster_Risk_Reduction_2017.PDF
- NEPA** (2017). Second National Communication (SNC) under the United Nations Framework Convention on Climate Change (UNFCCC) Afghanistan.

- NEPA & UNEP (2016).** Climate change science perspectives. https://postconflict.unep.ch/publications/Afghanistan/UNEP_AFG_CC_Science_perspectives.pdf
- NEPA & UNEP (2020).** Current state of early warning systems in Afghanistan. An outlook of the flood early warning system.
- Rabbani, M.G., M. N. Uddin & S. Munira. (2022).** Changing climatic hazards in the coast: risks and impacts on Satkhira, one of the most vulnerable districts in Bangladesh, in: Climate Change in Asia and Africa - Examining the Biophysical and Social Consequences, and Society's Responses.
- Government of Nepal (2021).** National Adaptation Plan 2021-2050. Summary for policymakers. https://unfccc.int/sites/default/files/resource/NAP_Nepal.pdf
- ICG (2023).** Taliban Restrictions on Women's Rights Deepen Afghanistan's Crisis. Brussels: International Crisis Group. <https://icg-prod.s3.amazonaws.com/s3fs-public/2023-02/329-afghanistan-womens-rights.pdf>
- (2023a). A Road to Nowhere: The Myanmar Regime's Stage-managed Elections. Bangkok/Brussels: International Crisis Group. <https://icg-prod.s3.amazonaws.com/s3fs-public/2023-03/b175-myanmar-road-to-nowhere.pdf>
- IFRC (2011).** Breaking the waves. Impact analysis of coastal afforestation for disaster risk reduction in Viet Nam. https://www.preventionweb.net/files/globalplatform/entry_bg_paper~mangroveimpactreportfinalowapril2011.pdf
- (2014). IFRC framework for community resilience. <https://www.ifrc.org/sites/default/files/IFRC-Framework-for-Community-Resilience-EN-LR.pdf>
- (2018). Strategy 2030. Platform for change: Global reach, local action. <https://www.ifrc.org/sites/default/files/2021-06/S2030-EN.pdf>
- (2019). The cost of doing nothing. The humanitarian price of climate change and how it can be avoided. <https://www.ifrc.org/sites/default/files/2021-07/2019-IFRC-CODN-EN.pdf>
- (2020). Plan and budget 2021-2025. <https://www.ifrc.org/sites/default/files/Plan-and-Budget-promo-doc-FINAL.pdf>
- (2020a). Responding to Disasters and Displacement in a Changing Climate: Case Studies Asia Pacific National Societies in Action. <https://www.ifrc.org/document/responding-disasters-and-displacement-changing-climate-case-studies-asia-pacific-national>
- (2021). Road Map to Community Resilience v2. Operationalising the framework for community resilience through the Enhanced Vulnerability and Capacity Assessment (EVCA). https://www.ifrcr2r.org/_files/ugd/0e4ccc_1bf51f8d5f8542e29a924b0fb8f1b2b6.pdf
- (2021a). Climate change impacts on health and livelihoods: Afghanistan assessment.
- (2021b). Climate change impacts on health and livelihoods: Nepal assessment.
- (2022). The Nature Navigator. a handbook for disaster risk management practitioners. Draft public version, July 2022. <https://preparecenter.org/site/nbs/nbsresources/nature-navigator-handbook/>
- (2022a). Scaling up locally-led climate smart DRR and adaptation. IFRC Global Programme. <https://www.ifrc.org/sites/default/files/2022-08/220628-Global-Climate-Resilience-Programme-final.pdf>
- IPCC (2022).** Annex I. Global to Regional Atlas. https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Annex-I.pdf
- (2023). Summary for Policymakers. In: Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

- IUCN** (2016). Nature-based solutions to address global societal challenges. <https://portals.iucn.org/library/sites/library/files/documents/2016-036.pdf>
- (2020). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of Nbs. <https://portals.iucn.org/library/sites/library/files/documents/2020-020-En.pdf>
- Price, C.** (2009). Thunderstorms, lightning and climate change. In: *Lightning: Principles, Instruments and Applications*. https://link.springer.com/chapter/10.1007/978-1-4020-9079-0_24
- Rigaud, K., A. de Sherbinin, B. Jones, J. Bergmann, V. Clement, K. Ober, J. Schewe, S. Adamo, B. McCusker, S. Heuser, A. Midgley** (2018). Groundswell: Preparing for Internal Climate Migration. <http://hdl.handle.net/10986/29461>
- Schipper, L.** (2020). Maladaptation: when adaptation to climate change goes very wrong. *One Earth* 3. <https://doi.org/10.1016/j.oneear.2020.09.014>
- Spalding, M., Ruffo, S., Lacabra, C., Meliane, I., Hale, L., Shepard, C., & Beck, M.** (2014). The role of ecosystems in coastal protection: Adapting to climate change and coastal hazards. *Ocean & Coastal Management*, 90, 50–57. <https://doi.org/10.1016/j.ocecoaman.2013.09.007>
- Tanner, T., Surminski, S., Wilkinson, E., Reid, R., Rentschler, J., Rajput, S.** (2015). *The triple dividend of resilience. Realising development goals through the multiple benefits of disaster risk management*. Overseas development Institute. https://www.gfdr.org/sites/default/files/publication/The_Triple_Dividend_of_Resilience.pdf
- The Nature Conservancy** (2021). The Blue Guide to coastal resilience. Protecting coastal communities through nature-based solutions. A handbook for practitioners of disaster risk reduction. <https://floodresilience.net/resources/item/the-blue-guide-to-coastal-resilience/>
- Vigil, S., A.R. Torre & D. Kim** (2022). Exploring the environment-conflict-migration nexus in Asia. Danish Refugee Council and Stockholm Environment Institute. <https://pro.drc.ngo/media/0fhpbnhp/exploring-the-environment-conflict-migration-nexus-in-asia-2.pdf>
- Wisner, B., Balikie, P., Cannon, C., & Davis, I.** (2003). At risk. Second edition. Natural hazards, people's vulnerability and disasters. https://www.preventionweb.net/files/670_72351.pdf
- World Bank** (2017). Disaster risk profile Afghanistan. https://www.gfdr.org/sites/default/files/afghanistan_low_FINAL.pdf
- UNDRR** (2022). Global Assessment Report on Disaster Risk Reduction 2022. Our world at risk: transforming governance for a resilient future. <https://www.undrr.org/gar/gar2022-our-world-risk-gar#container-downloads>
- UNEP** (2021). State of finance for nature. Tripling investments in nature-based solutions by 2030. Nairobi: UNEP. <http://www.unep.org/resources/state-finance-nature-2021>
- UNISDR** (2015). Sendai Framework for Disaster Risk Reduction.

Discussing climate change typically has a future focus. Indeed, the scientific projections show that a warmer world means that regional climates will be warmer, wetter, wilder, drier in the decades to come.

But as this report highlights, the climate crisis has long begun. It is now. The four countries at the heart of this study have very different contexts. Yet, in all of them, creeping climate stresses and more frequent extreme weather events already push communities to the edge, testing and at times exceeding their coping capacities.

The imperative to act quickly and at scale is evident in all four countries. But in terms of opportunities to support climate resilience, the quartet of countries resembles two distinct pairs.

The first — Afghanistan and Myanmar — has severe operational constraints that limit programming opportunities. Here, basic options should be pursued that can be expanded and built upon when future situations allow.

The second pair — Nepal and Bangladesh — has favourable conditions that include comprehensive policy frameworks and strong networking options. Here, a mix of basic and large-scale approaches should be applied that together should aim for ambitious advances in climate resilience.

The study proposes a modular regional programming framework that has a logic of progressive growth (its five blocks build onto each other) and that can be contextualised for each country.